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*Impact of entrepreneurial competencies on the entrepreneurial intention:
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**IMPACT OF ENTREPRENEURIAL COMPETENCIES ON
THE ENTREPRENEURIAL INTENTION: MODERATING
ROLE OF COGNITIVE ADAPTABILITY**

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A Houcine Khemiri, Zakia Hamdi, Manel & Mouna khemiri

Vous êtes ma force, je vous aime de tout mon cœur.

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“وَأَنتَاطم مِّن كُلِّ مَا سَأَلْتُمُوهُ ۚ وَإِن تَعُدُّوا نِعْمَتَ اللَّهِ لَا تُحْصُوهَا ۗ إِنَّ الْإِنسَانَ لَظَلُومٌ كَفَّارٌ (14:34)”

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The best is yet to come...

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General introduction

Entrepreneurship is nowadays the main source of innovation and a crucial contributor to economic development and to society wellbeing through the creation of employment opportunities. Matter of fact, entrepreneurship can be considered as the motor of countries economy and that was concretized through the encouragement and support that countries all over the world offer to their citizens, especially the younger population such as students, to launch their own businesses. In the same context, encouraging entrepreneurship is equivalent to creating new employment opportunities, by which unemployment rates can be decreased, thus a possibility for countries to deal with unemployment problems. It also allows the development of new markets by innovation and creation of new products and services and increasing financials inputs to the governments through taxes. Matter of fact, the literature is rich when it comes to explain the important role that entrepreneurship plays within the context of emerging economies (Amanjee et al, 2006).

Although entrepreneurship seem to be a widely studied argument, authors such as Dvouletý and Orel (2019) argued that most of the literature available was focused more on entrepreneurial activities within Western and Asian societies, leaving limited insights on entrepreneurship in Africa. Thus, one of the motivations of taking entrepreneurship as a research subject is that it may allow to respond to the differences that exist between countries and within cultures and to the lack of transferability of the constructed knowledge from developed to developing countries (Dvouletý and Orel, 2019).

In the present dissertation, we took Tunisia as the general context. According to the agency for the promotion of industry and innovation, the Tunisian government worked in collaboration between the Tunisian ministry of Industry and SMEs and ministry of higher education and scientific research since 1999, where a contract was signed in order to place entrepreneurial support structures within higher education institutions. Such effort was based on the assumption that the knowledge of such structures is positively associated with the students' attitude towards entrepreneurship, as they represent a valuable tool in stimulating the entrepreneurial intention (Malebana, 2014). However, and according to the SALEEM project (2018), with more than 62 structures for promoting and financing entrepreneurial activities in the capital, the response rate of students that are conscious of their presence and the services they offer did not exceed the 6%. Such facts inform about the gap that exists between the expected outcomes of the governmental and institutional efforts and the real outcomes related to the rates of entrepreneurial initiatives within students.

We suggested that such gap is the result of centering the governmental efforts on the entrepreneurial action and less on its determinants. Searching the literature for the insights on what factors predict the entrepreneurial action, various models have been established to sort out the determinants of the entrepreneurial behavior, the most known and reliable models are those of Shapero and Sokol (1982) with their theory of reasoned action and Ajzen (1991) with his theory of planned behavior. The outcomes of the studies suggest that the entrepreneurial intention is a crucial determinant of the entrepreneurial behavior.

Nonetheless, the entrepreneurial intention alone cannot lead to an effective performance of the entrepreneurial behavior, as “it is common to see highly motivated people with a strong intention to perform an action being unable to perform the necessary actions to realize this intention” (Llouga et al., 2014, p.718). One of the reasons may be the necessity of acquiring and developing entrepreneurial competencies as they allow the performance of entrepreneurial tasks and guarantees future entrepreneurial performance and play a predictive role in the development of the entrepreneurial intention (Man et al., 2009; Sanchèz, 2011; Sanchèz, 2013, Peng et al., 2012; Tsakiridou and Stergiou, 2014; Koe, 2016). In fact, entrepreneurial competencies have always been considered as a set of capabilities necessary for the successful execution of a given number of tasks, in this context, with the right set of competencies, the individual is guaranteeing his or her ability to fulfill the required actions successfully.

For the matter, taking into account the aforementioned determinants can provide relevant insights both on the openness of Tunisian students to the entrepreneurial career, and what competencies do influence their desire to become an entrepreneur in the near future. Various authors studied such link (Louè and Baronet, 2012; Loué and Majdouline, 2015; Al Maun et al., 2016), few integrated moderating effects apart from demographic characteristics. According to Haynie and Shepherd (2009, p.695), scholars in the field of entrepreneurship widely suggested that cognition research would “serve as a process lens through which to reexamine the people side of entrepreneurship by investigating the memory, learning, problem identification, and decision-making abilities of entrepreneurs”. In fact, such call for considering cognition and metacognition started from Bird (1992) who stated that individual differences in cognitive style and emotional range, important to the bucketing or pacing decisions, relate to the entrepreneur’s learning style or problem-solving style.

In an effort to provide a deeper understanding of the impact of entrepreneurial competencies on the entrepreneurial intention, a review of the literature provided suggestions on the importance of cognitive adaptability in learning contexts, and especially in entrepreneurial activities as it

provides the entrepreneur with the capacity to adapt his or her decision policies according to the feedback they receive from a changing environment as supported by the works of Haynie and collaborators (2005, 2009, 2010, 2012). As cognitive adaptability is still a relatively under-researched concept when it comes to its impact on the formulation of the entrepreneurial intention and the development of entrepreneurial competencies, we assume that if it is defined as a key resource for entrepreneurs (Haynie and Shepherd, 2009) and it is taken from the metacognition theory based on the works of Flavell (1979) and was operationalized and tested in learning context since 1994 by Schraw and Dennison (1994), it may represent a different lens to analyze and understand the entrepreneurial intention of students as few studies took it into account and it is still considered as under-researched (Urban, 2012; Botha and Bignotti, 2017), and what directives should entrepreneurship education take into account in order to meet the expectations of the governmental and institutional efforts.

All the above being said, the present dissertation takes as an objective to explore, on a first level, the impact of entrepreneurial competencies on the entrepreneurial intentions of students in their third year of university studies in the Tunisian context. On a second level, it also aims to explore the moderating role that cognitive adaptability plays in the aforementioned relationship. The aim being to fill the gap that exists in literature in relationship with the lack of studies in the entrepreneurial field related to developing countries, as well as explaining the entrepreneurial intention of Tunisian students.

Focusing on such variables is motivated by the fact that such combination of variables was not studied in the literature related to entrepreneurship. In fact, cognitive adaptability did gain interest with the studies advanced by Haynie and collaborators since 2005, its relationship with the entrepreneurial intention was studied mostly by Urban (2012) and Botha and Bignotti (2017) and is still considered as under-researched. Its impact on entrepreneurial competencies did not receive any interest of entrepreneurship researches, taking into consideration that cognitive adaptability was considered as a key resource for the entrepreneur, allowing him to perform effectively and adapt decision policies to an uncertain and continuously changing environment (Haynie and Shepherd, 2009).

Moreover, the present dissertation will provide more insights on the importance and relevance of developing the metacognitive abilities of students especially in a context of entrepreneurship education. Earlier researches did point out that metacognition is teachable and is a great resource for learning efficiency, as metacognitively aware learners are considered as good

learners (Schraw and Moshman, 1995) but it received relatively low attention in developing countries, especially in Tunisia.

The research problem is, thus, proposed as following:

- *To what extent do entrepreneurial competencies influence the entrepreneurial intentions of Tunisian students, taking into account their levels of cognitive adaptability?*

Responding to the research problem can be operationalized through answering the two following research questions:

- *What influence do entrepreneurial competencies have on the entrepreneurial intentions of Tunisian students?*
- *Does a high cognitive adaptability lead to a greater influence of entrepreneurial competencies on the entrepreneurial intentions of Tunisian students?*

Chapter I:
Entrepreneurial intention

Introduction

Entrepreneurship being a large research field from many years ago, knew a considerable evolution through the literature. As Entrepreneurs saw the environment changing, customers' needs and nature of products and especially the demand on the market; being an entrepreneur as an individual and as an active agent in the economic and social levels experienced a great evolution in the way of acting within the market but also in the way of being.

This being said, many authors such as Fayolle (2009) suggest that research in the entrepreneurship field is still "fragmented" even if entrepreneurship is considered as a science on its own and gained legitimacy and recognition over the years.

Matter of fact, many studies attempted to understand the entrepreneurial process and present it in a processual order to explain, why some individuals would become entrepreneurs and are highly interested in pursuing an entrepreneurial career while others do not consider the choice. Other authors also tried to explain why in the entrepreneurs' community some individuals succeed while others fail, as an attempt to explain the short life of many startups, but also to explain the great growth that some companies have known.

In the same context, there was a great interest in promoting entrepreneurship as well as "creating" entrepreneurs. Thus, a great part of the literature focused on entrepreneurial intention as it is the first step towards creating a new company and the first step in the entrepreneurial process but also for the fact that entrepreneurial intention has been considered as a reliable indicator to predict the entrepreneurial behavior as well as its performance (Ajzen, 2002).

For this matter and taking into account the importance of entrepreneurship nowadays as an effective economic motor, we will in this chapter start by presenting relevant definitions and approaches to studying entrepreneurship according to the existing literature.

Then, for a second section, we will be focusing on studying entrepreneurial intention; its definitions, related concepts and relevant models attempting to explain its development, to, finally, finish with presenting a summary of results that studies on the matter obtained in different context.

Section I: Entrepreneurship: a state of the art

A wide range of authors in the literature define entrepreneurship as the motor of the economy and a crucial factor in reducing unemployment and participating in the wellbeing of societies. In fact, entrepreneurship is associated with innovation and economic development. Schumpeter and Weber have been considered as the first scholars to systematically explain the role of the entrepreneur in the productive enterprise. Matter of fact, Schumpeter, as one of the pioneers, described it as using resources in a different way and for a new purpose. The European Innovation Scoreboards project (2015), on the other hand, focused on the innovative dimension of positing that “firm activities capture the innovation efforts at the level of the firm, grouped in three innovation dimensions: Firm investments, Linkages and entrepreneurship and intellectual assets”.

1. Entrepreneurship paradigms

Shane and Venkataraman (2000) defined the entrepreneurial function as discovering, assessing and exploiting business opportunities. They explained that opportunities are unexpected but yet unvalued and can come into different forms, such as new services and products, new organizational forms, new processes of production and so on.

Still, “the largest obstacle in creating a conceptual framework for the entrepreneurship field has been its definition.” (Shane and Venkataraman, 2000, p.218). Matter of fact, even though the term entrepreneurship is widely used and “has been embraced by most industry sectors particularly for its resultant job creation and associated economic benefits” (Amanjee et al, 2006, p.26), defining it is not as easy as it seems, as each researcher tends to define it and describe it through his own research lenses. Thus, even if there is not a real consensus about the definition of entrepreneurship, since it varies according to each author’s research field, there are nonetheless concepts that tend to be directly linked to it. In fact, concepts such as opportunity seizing, innovation and economic development are found in almost every research held to explain entrepreneurial activities.

Hernandez (1995) suggested that to study entrepreneurship we have to study the emergence of new businesses within the market and the activities leading an individual to create a company instead of the mechanisms that help developing an already constituted one. Thus, the author explained that it is more relevant to focus on the first step of the entrepreneurial process, which is the creation, more than the development or expansion of the company. On the other hand, Bruyat and Julien (2001, p.165), quoted that studying the field of entrepreneurship tantamount

to studying “the dialogic between the individual and new value creation, within an ongoing process and within an environment that has specific characteristics”, thus, understanding entrepreneurship through the dynamics between the individual and the creation process within their specific context.

All being said, it is relevant to quote that despite the fact that, as a research discipline, entrepreneurship is widely established and fully accepted as a core subject within the academic array, it is still considered as a young research field in rapid development from research topics and methodological perspectives (Kuckertz and Prochotta, 2018).

The divergence of attitudes towards how entrepreneurship should be defined opened a large debate between academics and researchers, but also entrepreneurs and governments because, as quoted previously, defining entrepreneurship is tightly linked and strictly dependent of the perspective and field of research of authors.

The field of entrepreneurship can be defined as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited (Venkataraman, 1997). Thus, from this perspective, entrepreneurship is defined based on the individual behind the entrepreneurial action, who he is, how he acts and what is it that he is creating, taking into account the importance of identifying and seizing opportunities and creating something new through innovation.

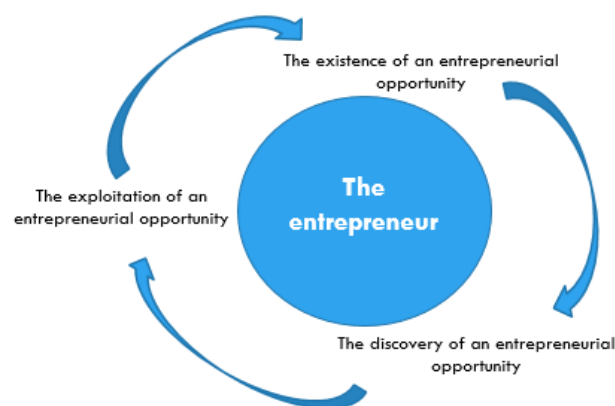
Moreover, Fayolle (2007), countering the opportunist definition of entrepreneurship, which was mainly based on profit seeking and individual material accomplishments, took it to a higher level translating it into governments and markets’ needs and not only a matter of individual dimensions. He explained that the need to prove the importance of entrepreneurship is no longer possible since it consists of creating new businesses and new employment opportunities, but also a strong mechanism for adapting to the consistent changing environment and a constant and important source of innovation.

Through this point of view, the individual dimension is fused into the organizational dimension, as it is not a matter of personal gain and individual lucrative motivation, but a matter of governments that encourage this creation mechanism to fulfill economic and social wellbeing. In the same context, four main paradigms have emerged throughout the debate about entrepreneurial approaches. According to Fayolle and Verstraete (2005), these paradigms are as following:

**Business opportunity:* Shane and Venkataraman (2000) defined the entrepreneur as an individual capable of discovering and exploiting an existing entrepreneurial opportunity within a closed cycle as explained in the figure down below. This perspective puts the entrepreneur in the center of the entrepreneurial process, conceptualized as an unending process, insisting on the fact that business opportunities are “existing” and the entrepreneur uses his capability to identify it and exploit it.

This approach in particular has been criticized for its reductionism and omission of the importance of information. In fact, opportunities do not come by accident and are not as available as the latter definition described. Instead, opportunities are created through research and accumulation of information (Fayolle and Verstraete, 2005) and require the execution of a rigorous process starting from the identification, the evaluation and the seizing of the discovered, well studied opportunity.

Figure 1: Business opportunity according to Shane and Venkataraman (2000)



**Business creation:* Bygrave and Hofer (1991) developed their approach in the same perspective of Shane and Venkataraman (2000), in a way that individuals need to be organized to seize opportunities. In addition, by organization they meant the creation of a new entity. Verstaete (2003) added that a clear distinction must be found between entrepreneurship as a process, and entrepreneurship as a phenomenon. Matter of fact, the demonstration of the phenomenon is a lot larger than the single fact of creating a firm. Creation then, must be replaced by “impulsion”. In other terms, the process of enterprising is the different steps an individual has to fulfill to create a new entity, which is the company, while the entrepreneurship as a phenomenon is way larger than the creation process in itself.

In the same context, Bruyat and Julien (2001) explained that it is not possible to understand entrepreneurship as a phenomenon if we do not consider all the intervening agents and the context in which business creation is accomplished. In the terms of the latter authors, comprehending the phenomenon tantamount to taking into consideration the individual entrepreneur, the entrepreneurial project or idea, the environment in which the entrepreneurial action is meant to be exercised and all the links and dynamics existing between them, taking into account the evolution over time.

**Value and wealth creation:* various authors did converge when considering this particular approach. Economists in the literature defined the entrepreneur as a profit seeker in a way that the unique motive behind searching, identifying and seizing opportunities is wealth creation. Cantiollon (1755, as cited in Filion, 1997) joined the latter perspective and described the entrepreneur as a calculator creating new ventures for the unique objective of profit. These affirmations built the economical approach of entrepreneurship, which will be defined in the following subsection.

**Innovation:* Innovation was and still a central concept when trying to define entrepreneurship. In linking entrepreneurship to innovation, Schumpeter was one of the first to emphasize this relationship. In his words, entrepreneurship is “bringing about a different use of national resources in that they are withdrawn from their traditional employ and subjected to new combinations” (Schumpeter, 1928 as cited in Hartmann, 1959). Entrepreneurship, according to this paradigm, is the process of collecting existing resources and transforming the way they are used and exploited to create new or different products, services or innovate the way they are produced through modifying the production processes. Thus, innovation according to this perspective is using what is already available, subject it to new combinations and new transformation processes to create new and different products and services. Schumpeter also directly linked the continuity of being entrepreneur to the capacity of innovating. In fact, he explained that being an entrepreneur is being an individual able to execute a function of reforming or revolutionizing of the productive system and if this function is no longer performed, the individual can no longer be considered as an entrepreneur (Bruyat and Julien, 2001). Moreover, entrepreneurs, through the identification and exploitation of entrepreneurial opportunities, often create a new organization, which is a new entity and directly implies the creation of a new economic activity, (Reynolds, 2005). The latter author also described the creation of new economic entities as being the main function of entrepreneurs.

With each of the previous paradigms, the authors explained their own manner of perceiving the entrepreneurial process, its inputs, the motivations behind the entrepreneurial action, but most of all its outputs.

2. Approaches to study entrepreneurship.

Entrepreneurship is considered as one of the key development initiatives, that lead to employment and therefore, reduce poverty and inequality, (Al Mamun et al., 2016) thus, entrepreneurial activities play quite important roles in promoting economic development as well as social wellbeing, which explains the important interest in entrepreneurship.

Entrepreneurship, being a rich and continuously developing research field for decades, knew a considerable evolution through the literature. As Entrepreneurs experienced the continuous change and development of the environment, customers' needs and nature of products and especially the demand on the market, the role of the entrepreneur as an individual and as an active agent in the economic and social levels, experienced a great evolution in the way of acting within the market but also in the way of being as an individual entrepreneur.

The individual dimension of entrepreneurship was first perceived in a more mechanic way with financial incomes as the unique and main objective. With the development of the market and the continuous changes in the environment, the literature started to adapt and focus the interest on the person behind the “calculator”. It did in fact try to provide more insights about individual characteristics that push an individual to choose entrepreneurship as a career, as well as trying to explain the reasons why some individuals become entrepreneurs and successful ones, while others do not seem to be qualified to launch or maintain a business venture.

2.1. Economic approach of entrepreneurship

The economic approach focused mainly on opportunity and profit seeking. In fact, many pioneers of this approach in particular describe the entrepreneur as a profit seeker, a calculator and an opportunity seizer.

As explained by Filion (1997, p.3) with reference to Cantillon (1755) the entrepreneur is “a man seeking business opportunities, with a concern for shrewd, economic management and obtaining optimal yields on invested capital”. This definition of the entrepreneur portrays him as an individual who chose entrepreneurship solely for-profit gain, thus, entrepreneurship as an activity is mainly based on wealth creation for individuals without linking it to states and governments and the decision of launching a business strongly depends on the expected return on investment.

Authors such as Schumpeter (1928) and Fillion (1997) focused more on the innovativeness of the individual as an entrepreneur. In fact, Schumpeter (2008) focused on the actions undertaken by entrepreneurs to renew economic activities through introducing and creating new ideas, products or processes in the sake of developing those latter activities. Thus, the entrepreneur was mainly in the service of innovation as he presented the function and role of entrepreneurs as reforming or revolutionizing productive processes either through inventions, using “untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on” (Schumpeter, 2008, p.129).

From this perspective, the individual is more of a creator than a profiteer, and is an important agent in the economy. Matter of fact, the perspective adopted by Schumpeter to explain entrepreneurship still serves to explain the entrepreneurial activity to this day. According to Śledzik (2013), Schumpeter presented innovation in the center – him, entrepreneurship is based on innovating through the creation of new goods and services and offering them to the market, the innovation should, thus, be either through the product itself, the methods and processes to create it, the resources used to create it or the way the industry is organized or the market it is presented to. Adding to the latter affirmation, that in this approach it is not eligible to define entrepreneurship without recurring to innovation and presenting the entrepreneur’s role as mainly focused on finding new methods to function and that he is less motivated in gaining profit as a first preoccupation than he is in improving the functioning of the organization, market and economy.

Nonetheless, the economic approach received a strong criticism due to neglecting the personal and individual aspects of the entrepreneur and focusing mainly on “understanding the role assumed by the entrepreneur as the motor of economic systems” (Fillion, 1997, p.4).

The person behind the entrepreneur was extremely neglected in the economical approach as the main goals were demonstrating either the calculating behavior or innovative actions of entrepreneurs. The personal characteristics of the entrepreneur and his psychological and behavioral predispositions to choose an entrepreneurial career did not seem to be part of the arguments presented by the latter approach but the entrepreneurial activity was more in the center. For this sake, new approaches appeared to fill the gaps of the economical one.

2.2. Psychological approach of entrepreneurship

The psychological approach to entrepreneurship aims to explain the influence of social structures on the attitudes of individuals within a specific society, in other terms, if these social structures encourage or inhibit entrepreneurship incentives.

McClelland along with Schumpeter conducted one of the first studies; he was mainly interested in the factors that influence entrepreneurial activities based on examining the personality characteristics of entrepreneurs as well as the motivational factors affecting the entrepreneurial action. In fact, McClelland (1961) conducted his studies about motivational orientations, throughout which, he concluded that the need for achievement is highly related to and definitely results in the success of the undertaken economic activity.

He posited two main objectives for entrepreneurship, as it helps renewing the way things are done by choosing a better way for doing them, but also the decision-making process which is characterized by a high uncertainty. His efforts concluded in a conclusion, which posits that individuals with a strong need for achievement are well fitted and more likely to engage in a new business venture creation and are more likely to perform an entrepreneurial career. He stressed that these entrepreneurs in particular are not seeking profit as a main objective, but as a scale to determine the level of success of their entrepreneurial actions.

Matter of fact, the literature presented many efforts of portraying the entrepreneur as an individual and a set of personality characteristics and traits. It is obvious in the literature that, as widely demonstrated, the entrepreneur is no normal and usual individual, but a person holding many specific characteristics making him different and able to be an entrepreneur going from his aversion to risk to his affective factors and specific goals and visions.

Frese and Gielnik (2014) argued that psychological concepts intervene and play a role in each phase of the entrepreneurial process. They argued that the influence of the entrepreneur is greater in the first phase, which is the prelaunch, and opportunity identification, but gets weaker the more he develops the company. In other terms, even if the weight of the individual characteristics is indisputable, it is nonetheless variable according to at which step of the entrepreneurial process the individual is.

The interest of researches in the individual behind the entrepreneur is explained by the need to understand who is capable of becoming an entrepreneur and why an individual becomes an entrepreneur. In fact, the psychological approach to entrepreneurship tried to analyze what

individual variables lead to the appearance and development of entrepreneurs such as the psychological profile through aversion to risks, control capacity or need for achievement.

In the same context, Obschonka and Stuetzer (2017) posited that the individual behind the entrepreneurial activity represents the center of the entrepreneurial process and is in fact its key agent. Thus, to understand and clarify how the individual entrepreneur develop and his psychological characteristics and nature still to this day at the core of contemporary entrepreneurship research, and for it to be done researches should focus more on the individual dimension to have a wider understanding of the entrepreneurial process according to the latter authors.

The psychological approach helps widening the scope of perceiving the individual behind the entrepreneur as not just a “blind machine” instinctively responding to the stimuli of the environment, most of the time related to profit, but a “human being capable of creating, learning and influencing the environment” (Bruyat and Julien, 2001, p.165).

2.3. Sociological approach to entrepreneurship

Scholars based on a sociological approach to entrepreneurship are interested in explaining to what extent the social structures can mold economic development and entrepreneurship. Matter of fact, this approach focuses on the influence the social group the individual belongs to on his perception of entrepreneurship as well as his willingness to pursue an entrepreneurial career.

In the same context, the latter approach assumes that “the presence of entrepreneurship-compatible culture, social class or a group is capable of engendering behaviors that facilitate and enhance entrepreneurial activities” (Edewor et al, 2014, p.19). This affirmation suggests that the socio-cultural context determines entrepreneurial incentives as it has the potency to stimulate as well as inhibit entrepreneurial activities.

Matter of fact, the social context represents a crucial leverage for the entrepreneur, this can be clearly depicted from the importance of social networks in both the creation and growth phases of companies. As according to Schumpeter, the entrepreneur is sensitive the social environment as he is an agent of change both in the economic and social environments (Litch and Siegel, 2005), this suggests that the entrepreneur is immersed into the social environment and thus, dependent and susceptible to be influenced by its changes.

This being said, the literature contains a wide range of reasons why socialization determines entrepreneurial motivations. Reference to the family background, peers and ethnic groups was

usually made to respond to the central question in entrepreneurship, as why some individuals become entrepreneurs while others do not, as well as, why specific ethnic groups are more known for their propensity to hold a greater number of entrepreneurs.

With reference to the entrepreneurial event model of Shapero and Sokol (1982), the change in the life path is a product of events, negative or positive, or a transition state. These latter influence the desirability towards pursuing an entrepreneurial career, matched with feasibility, the whole set of conditions leads to the accomplishment of the behavior and thus the creation of a new company.

It is relevant to explain that the factors displayed in the model range from negative displacements such as being fired or bearing a loss, transition situation such as finishing school or being out of jail, to positive pulls from investors, partners or mentors. Thus, “the shift from a life path to another can be accounted for by socio-cultural factors embedded in social contexts, [and for that fact the entrepreneurial event is the] the product of the situation and of a socially and culturally implanted predispositions”. (Shapero and Sokol, 1982, p.75).

It is, thus, possible to say that the emergence of entrepreneurial activities is tightly linked to the social context and the social group the individual belongs to, as well as the cultural values that the state circulates about entrepreneurship. For the continuity and development of entrepreneurial activities, the entrepreneur has to build a good reputation allowing him to persist and gain support from his social environment by bonding himself and affiliating with a specific social network (Litch and Siegel, 2005) offering him the financial and communal support.

2.4. Political approach to entrepreneurship

The political approach serves as a lens to describe the relationship between the state and entrepreneurship. Matter of fact, the government is the first agent influencing entrepreneurship through either investment laws, interest rates, entrepreneurship initiative encouragement as well as providing support and funds for entrepreneurs. In fact, economic policies of government define and offers a framework for investments and economic development. In other terms, a state that offers the right entrepreneurial support, facility in obtaining funds and a legal and cultural framework promoting entrepreneurship and providing the right incentives will be having greater numbers of entrepreneurs as well as greater number of individuals interested in launching business ventures.

The role that the state plays in setting and putting in place a framework for the different actors to interact is central and crucial. Moreover, this framework does contain power unbalances and

dynamics and thus the state has to provide institutional constraints to make it possible for actors to work together despite the power asymmetries (Campbell, 1997 as cited in Alvi et al., 2017). Özkan (2017) quoted that “entrepreneurship is a politically charged discourse” as he explains that entrepreneurship although it is a socio-economic process, it is also a tool for reinforcing or reproducing conservative actions and assumptions. Matter of fact, and in the terms of the latter author, entrepreneurship helps shaping the public policies and perceptions in a way to serve political ends since it functions as a political ideology (Özkan, 2017). Matter of fact, entrepreneurship can be considered as a tool for political and social end intervening in shaping policies to provoke either positive or negative implications such as promoting emancipation of subjugation of minorities, ethnic groups or women.

McCaffrey and Salerno (2011, p.553) on the other hand, tried to define political entrepreneurship, which they ended up presenting as “the direction of coercively obtained resources by the state toward processes of production which would not otherwise have taken place”.

It is nonetheless crucial to specify that the political approach to entrepreneurship is completely distinct from political entrepreneurship as the approach is englobing the policies that government put into use regarding entrepreneurship and the role that plays the state towards encouraging the entrepreneurial activity. In other terms, the political approach to entrepreneurship is focusing on the relationship between the state and entrepreneurs.

On the other hand, political entrepreneurship is based on theories of the market and extends them to the political sphere of action. Matter of fact, authors such as McCaffrey and Salerno (2011, p.553) explained that even though the term “political entrepreneurship” may be widely used as a metaphorical fashion, it is matter of fact an economical function as for the reason that “the entrepreneurial theory can be applied to the political realm without sacrificing realism and without reference to analogy and metaphor”.

Matter of fact, political entrepreneurship is a type of entrepreneurship holding all the respective characteristics such as profit and loss, ownership, investment and production as well as uncertainty bearing. In the terms of McCaffrey and Salerno (2011, p.553) is defined as “the direction of coercively obtained resources by the state toward processes of production which would not otherwise have taken place”.

Thus, the political entrepreneur is an individual who performs exactly the same activities and functions as the entrepreneur is the free market but in the political sphere but these similarities

do not allow him to be a market entrepreneur as the political entrepreneur diverts the production away from the path which the market did set for it. Finally, yet most importantly, political entrepreneurship is more of an economic function and not an economic personality.

Even though entrepreneurship does not have a generic definition yet, it is benefiting, as a research field, of the multidisciplinary approaches to studying it. Matter of fact, the multidisciplinary has a lot to offer to a field as young and continuously expanding as entrepreneurship.

Moreover, as it is known that phenomenon create needs, the great interest in entrepreneurship as a research field as well as a resource of development for states, was created through the need to understand it, to contextualize it but also to teach it as it will serve to guide and form future entrepreneurs in launching new businesses and participating in the development of the country.

Thus, it is crucial to study in depth the entrepreneurial phenomenon and guide governmental policies as well as educational contents towards correctly fulfilling the diverse needs taking into account the different characteristics and specificities of each country on the economic, cultural and sociopolitical levels.

In the upcoming section, we will be interested in understanding, from different perspectives, what is an entrepreneurial intention, how is it developed and where is the state of the literature concerning it nowadays.

Section II: Understanding entrepreneurial intention

In this section, we will explore the literature about the entrepreneurial intention. As some authors, such as Fayolle (2005), explained that the process of creating a new company goes through different steps. In fact, the individual starts first by the triggering process, which is mainly based on the commitment towards launching a new business venture and providing the follow-up. The individual then goes through a step of project development in which he develops his ideas and provides for himself a clear business plan in which he controls the different sides of the project and finally the effective constitution of the company.

It is then relevant to understand the process of, first, the emergence and development of the entrepreneurial intention revisiting important concepts such as the entrepreneurial vision and entrepreneurial action.

Thus, this section will try to answer the following set of research questions through the exploration of the theoretical framework related to the entrepreneurial intention:

- 1. What are the personal and contextual factors that predispose individuals to engage in a venture creation?*
- 2. What are the variables that have a direct or indirect effect on the development of entrepreneurial intention?*

1. Entrepreneurial intention: Theoretical framework

Entrepreneurial intention is considered, by most of the authors and researchers in the field of entrepreneurship, as an important and reliable indicator to predict the entrepreneurial behavior and the performance of this behavior (Ajzen, 2002), it is really relevant to value it as a strong antecedent of the entrepreneurial action and launching a new venture.

In fact, entrepreneurial intention is defined as a set of inner and personal factors that drives an individual to engage in an entrepreneurial action. The intention to create a business has always been considered as an important antecedent of actual efforts to start a business. Business creation, in turn, is perceived as an important driver of the economic prosperity of countries (Reynolds et al., 2000 as cited in Iakovleva and Kolvereid, 2009)

The importance of entrepreneurial intention is well shown within the entrepreneurial action in itself. In fact, and as Kyro and Carrier (2005) stated, entrepreneurship is a process that occurs over a period of time. It is a longitudinal process with a beginning, development, expansion and an end. Krueger and Norris (2007) joined the latter perspective as they stated that the

entrepreneurial action never happens by accident but only by a choice, and for this, the intention has its place and “entrepreneurship is intentional in nature”.

Moreover, entrepreneurial intention tells about the effort that an individual is “willing to make to carry out that entrepreneurial behavior” (Linan and Chen, 2009, p.596).

Though this concept was wide studied, authors did agree on three determinants that can explain entrepreneurial intention. According to Bird (1992) numerous factors determine the choice to engage in an action and adopt a certain behavior, these factors such as beliefs, needs, habits and values appears at the individual level. For Linan and Chen (2009) these factors are defined as motivational factors that are the attitude, the social norms and perceived behavioral control.

Going through these different definitions offered by the literature it is relevant to conclude that the entrepreneurial intention is a psychological state and an inner need to launch, create or put in place an entrepreneurial action accompanied with a decision to start it in a defined time frame.

In this context in particular, an important question is asked, is entrepreneurial intention measured through entrepreneurial action? Matter of fact, various researches, especially empirical surveys, did mingle entrepreneurial intention and action by measuring this latter based on its manifestation in venture creation.

According to Saleh (2011), a potential entrepreneur is an individual with an entrepreneurial attitude in a context, which reflects social norms that encourage entrepreneurial spirit, giving him competences to master the entrepreneurial process. By entrepreneurial attitude, the author evoked the intentional approach defined as the interaction between desirability and feasibility, and entitled, as “strategic intent”. This term was used in the beginning of the 80s replacing the concept of “intention”.

Hamel and Prahalad (1989) stated that “the strategic intent envisions a desired leadership position and establishes the criterion the organization will use to chart its progress”. Matter of fact, individual differences in cognitive style and emotional range, important to the bucketing or pacing decisions, relate to the entrepreneur’s learning style or problem-solving style (Brid, 1992).

Verraut (1998) defined the strategic intent as a set of tasks in-hand characterized by a mental state that leads the manager’s intention towards research and putting in place particular resources in the aim of realizing a specific strategic project. In fact, the intention to launch a

new business venture “reflects factors like organizational innovative climate, incentives and rewards and above all individual’s innovative orientation” (Kamariah et al., 2015, p.350).

On the other hand, Verstraete (1999) defined the strategic intent as being conditioned by mental conceptualization of present and future situation, these latter lead to transform the intention into a coherent behavior. The latter perspective joins the explanation of Ajzen and Fishbein (1975) who stated that the intention is a motor leading and predicting a certain behavior.

In the same context of the above and going further with his explanation, Thompson, (2009, p.676) included the concept of individual entrepreneurial intent, suggesting that the concept was widely used by authors in the literature but the meaning of it was divergent. Matter of fact, Thompson clarified the concept by defining it as “a self-acknowledged conviction by a person that they will set up a new business venture and consciously plan to do so at some point in the future”. The author, by his definition, suggests that defining the individual entrepreneurial intent helps clear out the concept from other synonymies and prevent its use out of context; as such a concept, has been used by authors to mean other constructs such as the desirability to be self-employed but also the entrepreneurial orientation.

Such a clarification helps to understand better the limits of the intent concept and the efficient way to use it providing measures that are more representative and avoiding confusion between multiple concepts used in several different contexts.

2. The place of intention in the entrepreneurial process:

Within all the different theoretical statements listed in the previous subsection, emerges a certain confusion between different concepts. Is intention a decision, an attitude, a behavior or a psychological commitment towards an idea? For this it is extremely relevant to go through the different concepts and define the link they have with the intention in general and then with entrepreneurial intention in particular.

2.1. Entrepreneurial intention; from the vision to the decision:

Creating a new venture is considered as a decision, which consists of two processes, one is intentional and the other is the effective launch (Marchais-Roubelat, 2000). In fact, and according to Vesper (1990), the entrepreneur develops a vision and a mental projection of the business he wants to launch way before acting. Thus, the vision is considered to be the starting point when it comes to creating a new venture. (Amboise and Nkongola-Bakenda, 1993).

According to the above, the individual goes through a process of projection by the means of the vision within which he projects himself in the future situation he wants to create or a favorable situation in which he would like to be.

This being said, it is apparent that before the intentional process begins, in other terms, before that the individual expresses his motivation towards launching a new venture, he goes through a process of visualizing the state in which he prefers to be and after obtaining a clear projection he goes through the intentional process to create his own business.

Greenberger and Sexton (1988) have explained the latter idea through their model of the decision to create a new company. In fact, it is a dynamic model positing that the creation of a new venture is the result of an interaction between multiple factors such as the entrepreneurial spirit, personality traits and the freedom to act (Hernandez, 1995).

According to the latter author, this interactive model is composed of three factors and four catalyzers moderating the decision of launching a new venture. The three main factors can influence the decision of launching a new venture altogether or individually.

Thus, these factors are, as shown below:

**The entrepreneurial vision:* which is the image that the entrepreneur is hoping to realize and the mental representation of a favorable situation he would like to obtain.

**The personality traits of the entrepreneur:* Personal characteristics and predispositions to become an entrepreneur and launch a new business venture.

**The desired control:* personal control is considered as the perception that an individual has of the relationship between his actions and the desired results, thus his perception of his own ability to realize a certain goal.

The decision to launch a new business venture is a complex process in which the final mental decision is conditioned by a set of various factors that are interactive and can act individually or together. Thus, these factors moderate the transition from the vision to the decision as they can both assist or inhibit it.

Thus, it is either the entrepreneurial vision, the personality traits and the desired control or only one of these factors condition the individual decision to create a business. Matter of fact; it is very pertinent to understand how these factors influence the pathway towards deciding to constitute a company. The pathway to the decision making goes then into a series of catalyzers

defining its intensity. These are the past events and experiences, self-perception, social support and increasing the desired control.

In others terms, an individual is more likely to make the decision of creating a new company if he had positive or significant past experiences and perceives himself as an individual who is likely to become an entrepreneur and manage a company on his own. He should also benefit of the support of his family, friends, colleagues or people from his community and perceive the creation of a new business venture as a means to increase the desired control.

In this perspective, the intention is not in the center of the focus as it is conditioned by numerous factors and the importance is deliberately given to the pathway leading to the decision to create the business. In other terms, the process is way more relevant than the intention itself.

This being said, Hernandez (2006) clearly stated that even though the literature in the field of entrepreneurship is very large and rich, the authors did not, still, give importance to the entrepreneurial decision even if it is, in fact, an essential step for the entrepreneur and an important part of the entrepreneurial process.

In the same context, the latter author explained that, going through the literature it is noticeable that the decision making is absent in most of the model and that the entrepreneur appears to be an agent that is pushed into an entrepreneurial context rather than being an active actor with conscious decision-making processes and mild reflection.

Many authors on the other hand gave much importance to the entrepreneurial vision as a starting point from which the decision of starting a business takes effect. In fact, Mintzberg et al. (2000) define the vision as an intellectual representation that the manager creates in his own mind and how he expresses it. Karabulut (2016) posits that entrepreneurship starts with the entrepreneurial intentions that are based on visions, dreams and feelings of entrepreneurs.

Filion (1990) on his turn stated that the vision is defined as a projection of an image of the future state where the entrepreneur sees himself, but also the place that his products should occupy. In other terms, the entrepreneurial vision is the place where the company should be on the market and a projection of the entrepreneur's objectives in the long term. The entrepreneur develops in fact a clear mental projection of his company way before starting the business itself.

Hurst et al., (2008) gave much importance to the vision in their research about an entrepreneur counseling process developed and used by the Acadia Centre for Social and Business Entrepreneurship. They did in fact suggest that "individuals who proactively

accommodate factors that push and pull them into entrepreneurship, align their personal and entrepreneurial visions, and to some extent, build emotional intelligence, are more likely to succeed”. In the same context, they divided the vision into two dimensions, the entrepreneurial vision and the personal vision. Through the study they made, they explained that the more the entrepreneurial vision is lined up with the personal vision of the entrepreneur, the more the entrepreneurial project is likely to realize a future success.

Matter of fact, and taking back the definition of vision as a mental projection, aligning the two mental projections seems to offer more coherence, and the entrepreneurial success is more likely to be perceived as a personal success. Moreover, since entrepreneurship is a material and emotional investment at the same time, performance is more likely to be accomplished if the individual is emotionally aligned with his own entrepreneurial behavior and actions.

Altiney and Wang (2011) the skills and knowledge with which managers have been equipped, as a result of educational attainment, help business owners to manage their organizations with a strong strategic forward-looking vision that enables them to systematically monitor customer needs and broader market trends and act upon them. The latter authors quote confirms once again the importance of this “forward looking vision” on the entrepreneurial behavior in itself and on the accomplishment of this behavior in the long term.

2.2. From a simple intention to action; which pathway?

Fayolle (2007) has put the emphasize on the individual characteristics that make individuals transform their intentions into effective behaviors, while others do not even if they have “what it takes to succeed”. The author posits that the questions relevant to this confusion in particular have been subject to many researches throughout the literature, and, matter of fact, answering those questions is not as obvious as it seems for the fact that “the venture creation phenomenon is a complex one” and is “covering a wide variety of situations” (Fayolle, 2007, p.201).

In the terms of Lebusa (2014) with reference to Linan and Chen (2009, p.595), the “intention of carrying out entrepreneurial behaviors may be affected by several factors, such as needs, values, wants, habits, and beliefs”. Shapero and Sokol (1982 as cited in Peterman and Kennedy, 2003) model hypothesizes that an individual’s intent to start a business is influenced by perceived desirability, perceived feasibility, and propensity to act.

According to the literature, there is a huge amount of uncertainty in the link between the intention and the action. Matter of fact, not all intentions lead to actions, and the pathway from

a simple idea or a motivation to become an entrepreneur is subject to interactions with a large set of factors that intervene with different types of influence.

By revisiting various researches that were made on this precise link, authors suggest many factors that can determine the transformation of the intention into action or the abortion of the idea to launch a new venture. Matter of fact, Saleh (2011) explained that the transformation of the entrepreneurial intention into an entrepreneurial behavior requires the intervention of multiple factors that will either reinforce it or inhibit it. This suggests that the transformation of the entrepreneurial intention into an action is dependent of multiple psychological and environmental factors that condition the entrepreneurial behavior.

Hmieleski and Corbett (2006, p.46) suggest that the “entrepreneurial action occurs in at least four different ways, depending on the novelty of the situation and the resource constraints of the individual or the firm”. The latter authors as well as others such as Bruyat (2001) integrated the commitment as a determinant variable and as a necessary factor to fulfill the action.

Matter of fact, Bruyat (2001) confirms that the entrepreneurial process can be perceived as triggered only if the individual seriously considers to launch a new business venture. In the latter author’s terms, the individual must invest time and resources to explore the possibility of constituting the company. The effective starting of the action begins when the process becomes irreversible in a matter of investment, but also because of the fact that any disengagement costs both on the financial and emotional levels.

According to the process approach of Fayolle (2005), creating a new company goes through different steps that can be divided into three; The individual starts first by the triggering process which is mainly based on the commitment towards launching a new business venture and provide the follow-up. The individual then goes through a step of project development in which he develops his ideas and provides for himself a clear business plan in which he controls the different sides of the project and finally the effective constitution of the company.

For Brännback et al. (2007, p.26) “the completion of an action can be seen as an intermediate goal en route to the primary goal of launching a venture”. The authors presented a point of view linking intention, goals and actions depending on the impediments that an individual is likely to face on the pathway. They posited that the literature regarding the entrepreneurial intention models assumed that, a deliberative process leading to a conscious decision to act precedes the action in itself. Moreover, the literature neglected the possibility of impediments and the consideration of the latter leads, according to the authors, to consider the action as a goal.

Llouga et al. (2014, p.718) posited, that “it is common to see highly motivated people with a strong intention to perform an action being unable to perform the necessary actions to realize this intention”. In fact, the intention alone cannot predict exactly if the behavior will be performed or not, and when it will be performed.

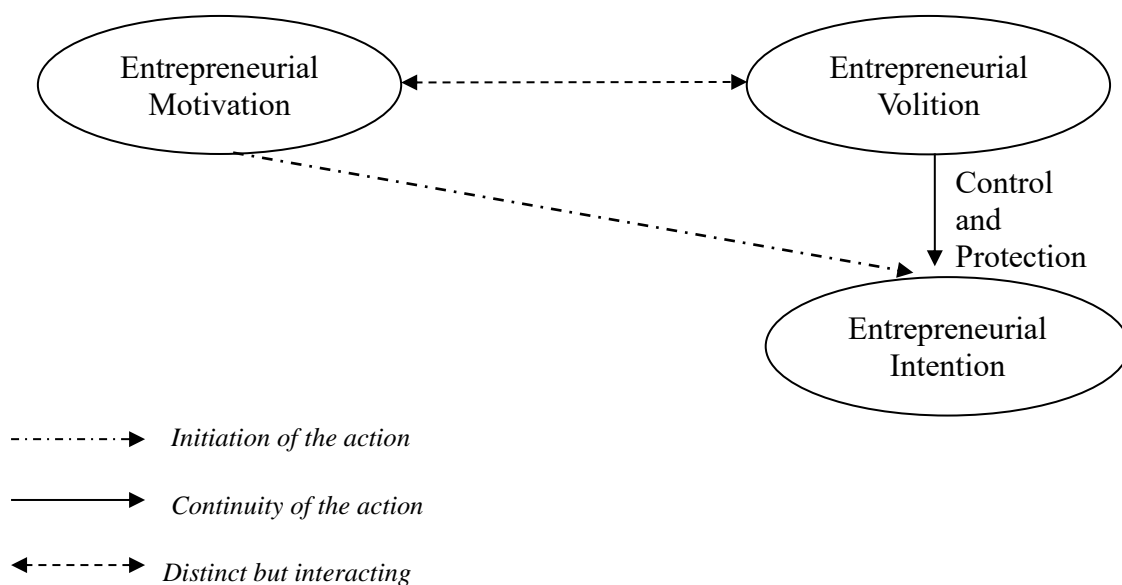
In this context, the latter authors integrated the concept of volition as a necessary variable for the fulfillment of objectives, especially entrepreneurial ones.

Through their study of volition, the authors posited that motivation and volition have been used equally leading to confusion, and suggested a definition to both of the concepts with an emphasize put on their link with intention.

Matter of fact, Llouga et al. (2014) defined motivation as, when emerging, a means that “helps people to choose and set a goal to pursue” and volition, when triggered, “pushes the individual to progress towards his or her goal”. The intention is, therefore, in-between the interaction of motivation and volition. Thus, in their research they proved that volition has a key role in binding an individual commitment to an ambitious career objective. In other terms, volition is a key factor that determines and moderates the degree of commitment towards fulfilling the behavior, in this case the entrepreneurial behavior which is the action of creating a new venture.

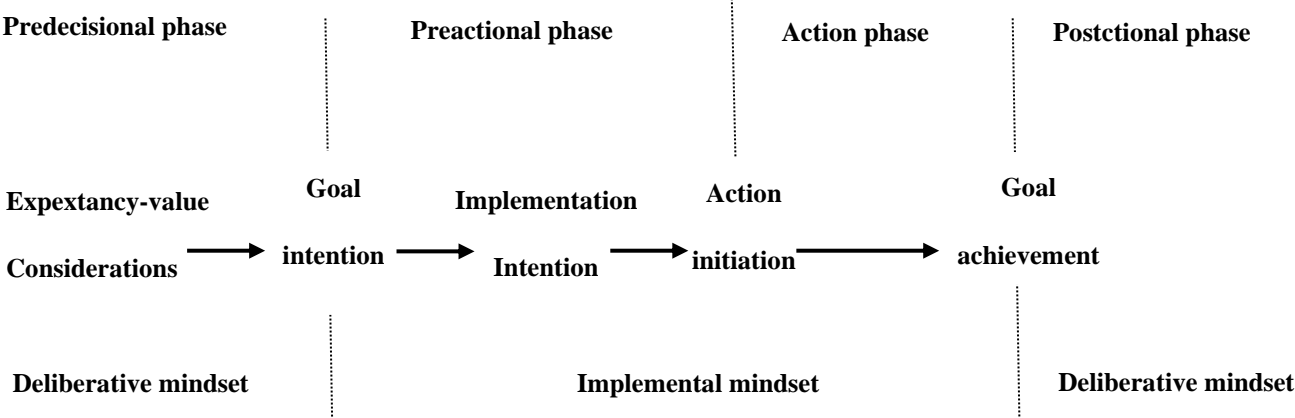
With reference to Broonen (2007; 2009), the authors posited that volition is the process that determines the transition from intention to action.

Figure 2: The link between motivation, volition and intention Adapted from Llouga et al., (2014)



Broonen (2013) explained that the volition is necessary, as there are students that highly motivated by the choice of clear goals, but still have difficulties to transform their motivations into actions. From the latter point of view, we can notice that the existence of the intention to act and the motivation to fulfill a certain behavior are not enough for effectively performing the behavior, and for that, the volition is, for Broonen too, a key factor for performing the behavior. Gollwitzer (1996 as cited in Brandstatter et al., 2003) have set an action phase model, which consists of four phases describing the process that the individual goes through from the intention until the realization of the action as seen in the figure below:

Figure 3: Postulated sequence of action phases with their cognitive characteristics



(Source: Brandstatter et al., 2003)

As seen in the figure above, Llouga et al. (2014) suggested that the implementation of the volition provokes the succession of the four phases of the model. Each phase is characterized by a proper mindset and cognitive characteristics.

**The pre-decisional phase:* This phase is all about the mental processes happening into the individuals mind. The result being fixing a goal intention through the mediation of perceived feasibility and perceived desirability, and thus creating a commitment towards setting a specific behavior or action in a way to pursue and fulfill a determined objective.

Brandstatter et al. (2003) posited that individuals are more likely to have desires and wishes that are more than they can effectively realize, as the first task is to choose between the competing wishes to transform a number of them into goals; these goals are the goal intentions. The formation of the goal intention is in fact a crucial “transition point” since it leads to a deep change in the mindset of the individual.

Linking this process to the commitment, the authors explained that individuals deliberate the feasibility and desirability of the actions' outcomes and then commit themselves to a valued outcome when the subjective probability of achieving the goal or its expected value is high in a sufficient way for them.

**The pre-action phase:* This phase is characterized by the involvement of volitional control processes and the determination of the objective's implementation. In fact, the pre-action marks the transition from a motivational phase to a volitional phase, from the pre-decision to the pre-action phases, as the decision making puts the individual in a state of execution (Llouga et al., 2014). Matter of fact, the result of the pre-action phase is the creation of an implementation intention, which leads to the creation of "a mental link [...] between a specific future situation and the intended goal-directed response" (Brandstatter, 2003). The latter author also stated that implementation intentions are formed in the service of goal intentions and specify the when (time) and the how (the manner) of goal-directed responses in a way that they support the action and promote the achievement of the goal.

**The action phase:* This phase is when the individual consciously and concretely performs the behavior through realizing the intended goal. Once the actions have been performed, the withdrawal is difficult since the individual already invested himself by initiating different actions towards the intended goal. Matter of fact, if the individual comes across obstacles and difficulties, which is almost certain, he does not consider the possibility of withdrawal since it induces high financial and emotional costs, but on the other hand he considers the resumption.

**The post-action phase:* This phase consists of evaluating the undertaken actions by comparing the intended and awaited outcomes to the effectively realized goals and their outcomes. The result of the post-action phase determines if the individual will keep performing the behavior or change his path. In other terms, whether the individual chooses to correct his intentions and performs new actions towards the development of his project, or withdraw himself from the project by abandoning it.

Through this comprehensive action phase model of Gollwitzer (1996), we are able to have a deeper view of the transformation process from the entrepreneurial intention into the entrepreneurial action continuing to the evaluation phase and the different modes by which the behavior can be interrupted or continued.

2.3. Conceptualization of the entrepreneurial intention: the evolution of models through the literature

According to Ozaralli and Rivenburgh (2016, p.6), “an entrepreneurial career decision can be considered as a planned behavior that can be explained by intention models”, thus the choice of perusing an entrepreneurial career can be modeled, demonstrated and predicted by intention-based models.

For this, it is very interesting to study to what extent the intention antecedents can determine the behavior and future performance of this behavior in question. Thus, various models have been established to sort out the determinants of intentions, the most known and reliable models are those of Shapero and Sokol (1982) within the theory of reasoned action and Ajzen (1991) within the theory of planned behavior.

According to each model, the intent can be determined and measured according to a certain number of factors, going from intrinsic, to social, economic and cultural determinants.

According to Ajzen (2002), the intentional phase must necessarily occur prior to performing a behavior. In fact, the intention is a direct antecedent of the action in a way that, an individual with strong intentions is more likely to act, but most importantly, the stronger the intent, the more it is likely to predict the behavior and its future performance.

In the same context, Krueger et al. (2000) confirmed that the intention is the only good predictor of planned behaviors. Considering that the entrepreneurial behavior is a planned behavior, the entrepreneurial intention is the strongest predictor of entrepreneurial behavior.

Lebusa (2014) added that it is more relevant to focus on the entrepreneurial intention for the fact that researches proved that personal characteristics and psychological attributes are unreliable indicators of entrepreneurship.

Still, it is very relevant to study and revisit the notions related to entrepreneurial intention in the literature. In fact, when trying to understand the precursors of entrepreneurial intention it is evident to come across various notions and concepts. These latter are tightly related to intention such as the concept of vision, the decisional process, commitment, the notion of behavior and many other relevant theories that explain in depth the entrepreneurial process as a back and forth movement between the individual dimension and the environmental dimension (society, organizations, political contest, culture etc...)

To be able to understand the intentional process it is necessary to study its antecedents, for these latter are means to explain this process but also measure it as well according to the various researches that were based on measuring entrepreneurial intentions. For this, visiting the development of the different studies stands to be extremely relevant.

The theory of reasoned action, a referential when it comes to studying the entrepreneurial intention, is a theory that was first developed by Fishbein and Ajzen in 1975. The core of this theory states that intentions have two major determinants that are the individual attitude towards the behavior and the perceived pressures of subjective norms. These determinants are considered not only as pressures but also as forces that determine the individual's motives and actions (Shapero and Sokol, 1982).

In fact, these factors were long considered as beliefs that “shape the formation of attitudes towards any prospective behavior, these attitudes drive the formation of the intent to perform the behavior and that intent causes the individual to act” (Valliere, 2015, p.133).

According to Ajzen (1991), the theory of reasoned action posits that an individual behavior is a result of a prior intention. The latter defined intentions as a set of motives that are influenced by two main factors; the attitude toward the behavior and the subjective social norms. According to Downs and Hausenblas (2005), the attitude toward the behavior is defined as the individual's feeling, whether they are positive or negative, according to the evaluation developed from behavioral beliefs and subjective social norms. Adding that, social norms are defined as “the perceived social pressures to comply with important other's wishes formed from normative beliefs” (Downs and Hausenblas, 2005, p.77).

Moreover, the theory of reasoned action helps to understand attitudes and predict human behavior. In fact, this theory assumes that individuals are more likely to perform a specific behavior if they do intend to do it (Fishbein and Ajzen, 1975).

This statement explains well the importance of intention as a key factor determining a specific behavior. Applied to the entrepreneurial process, entrepreneurial intention is then the major determinant of the entrepreneurial behavior and the entrepreneurial action.

The latter approach in particular puts the emphasize on the source of the entrepreneurial intention as being strictly related to the individual in a way that it is created at an individual and personal level before being translated in a specific behavior or into particular actions.

All the above said leads to a central question and a rich source of criticism; if a performed behavior is certainly made and is a result of a prior intention; is every intention, no matter the motive is, is it automatically translated to the performance of a behavior?

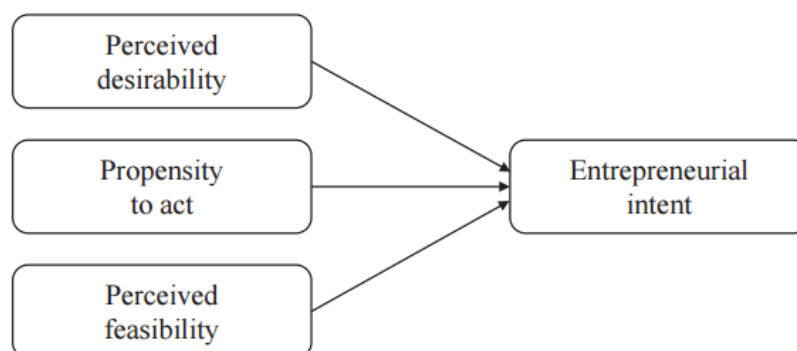
To this question, pioneering work of Ajzen (1991) provided a further explanation to the transformation of the behavior. He stated that “it should be clear however that a behavioral intention can find expression in behavior only if the behavior in question is under volitional control, i.e. if the person can decide at will to perform or not to perform the behavior” (Ajzen 1991, p.287). Thus, this statement clears out the confusion between entrepreneurial intention and entrepreneurial action since most of researchers did in fact fuse the two concepts especially in empirical surveys through measuring entrepreneurial intention by the means of launching a new venture.

This theory assumes then, that people are more likely to engage in a specific behavior when they have high intentions, and these intentions are increased when they evaluate a behavior positively (attitude) and believe that significant others want them to engage in it (subjective norms) (Downs and Hausenblas, 2005).

2.3.1. The entrepreneurial event model:

The entrepreneurial event model was developed by Shapero and Sokol in 1982 and came as an extension of the theory of reasoned action and the theory of planned behavior adjusting the predictive ability of these two theories to explain the entrepreneurial behavior and the entrepreneurial intent. As seen in the figure below, the entrepreneurial event model describes the entrepreneurial intention as a result of three main factors that are perceived desirability, propensity to act and perceived feasibility.

Figure 4: The entrepreneurial event model



(Source: Schlaegel and Koenig, 2014)

According to Shapero and Sokol (1982, as cited in Schlaegel and Koenig, 2014), the definition of the three factors is as below:

* *Perceived desirability* refers to degree to which an individual can feel attracted to become an entrepreneur and reflects individual preferences for entrepreneurial behavior. In other terms, the extent to which an individual wants to choose entrepreneurship as a career and launch a new business venture.

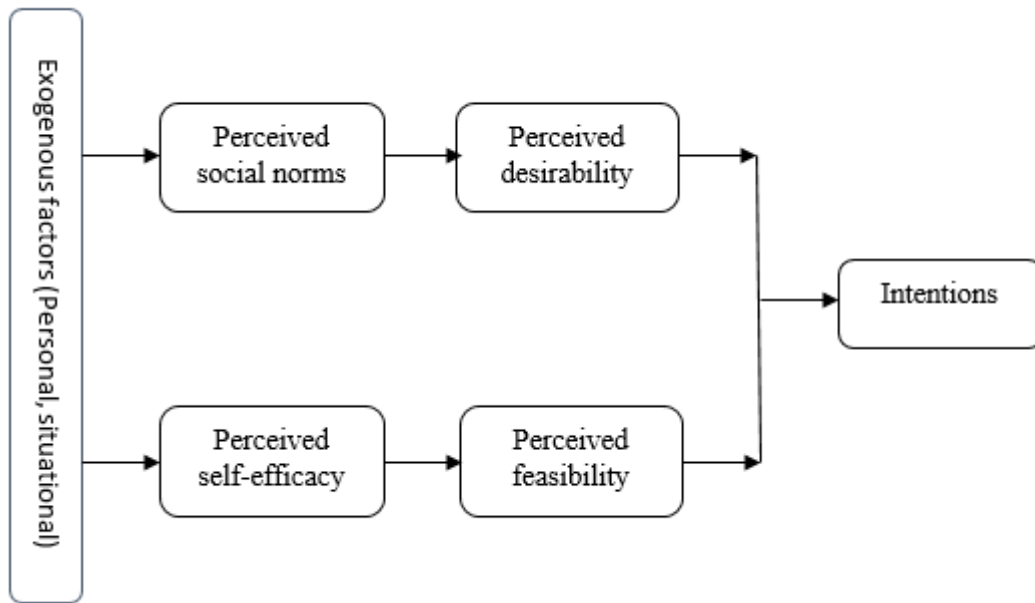
* *Propensity to act* upon opportunities refers to the individual's personal disposition to act on decisions. In other terms, it is the individual's disposition to act upon his own choices, depending of his perception on to what extent he can control the consequences of his behavior on the environment.

* *Perceived feasibility* alludes to what extent an individual is personally confident that he is able to start a business and consider as feasible the possibility to become an entrepreneur. Thus, to what extent the individual believes that he is capable of creating a company.

Sajjad et al. (2012) with reference to Mitchell et al. (2002) noted that to start a new business various factors influence entrepreneurial intention such as desirability, feasibility, and entrepreneurial experience. Still, it varies according to the country's culture. In fact, each country culture, values, beliefs and norms affect entrepreneurial intention.

The entrepreneurial intention model below as created by Krueger (1993, 1994, 2000) as referenced by Elfving et al. (2009) represents the different factors that influence and leads to entrepreneurial intentions. This latter took the theory of the entrepreneurial event of Shapero (1982) to a new level.

Figure 5: Entrepreneurial intention model



(Source : Elfving et al., 2009)

Krueger et al. (2000) added perceived self-efficacy factor as a determinant of entrepreneurial intentions. They defined the variable as the individual's perception of a given situation and the perceived competence to control processes and outcomes of such situation, when performance requires persistence. They also explained that, how individuals think and behave is linked far more closely to their perceptions.

The authors did not put the emphasis on the individual's perception of how events will unfold and how able the person is to perform and persist, on the other hand, they did confirm that competence and skills have an impact but noted that it is not as significant as perceptions.

2.3.2. The theory of planned behavior (Ajzen 1991)

The theory of planned behavior is considered as one of the most comprehensive and validated theories allowing the understanding and prediction of the behavior (Downs and Hausenblas, 2005), which made it a guide for most of researches taking intention as a subject.

Ajzen (1991) explained, "Intentions are assumed to capture the motivational factors that influence a behavior". He described them, intentions, as "indications of how people are willing to try and how much effort they are planning to exert in order to perform the behavior" (Ajzen, 1991, p.181).

Applying the theory of planned behavior, researchers have found a positive link between high intentions for achieving something and a person's behavior (Boyd et al., 2015). The same

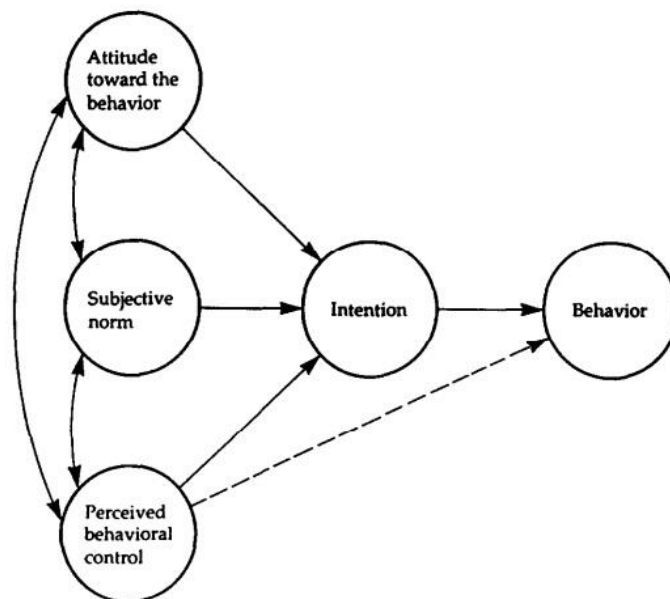
authors explained, as others did, that this theory came as an extension to the theory of reasoned action since the latter received a lot of criticism for the fact that it was specifically developed to explain volitional behaviors.

By volitional behaviors, they meant that the behavior depends on and is developed from a personal need and power to engage in it. In other terms, “a behavioral intention will be expressed as a behavior only if the behavior in question is under volitional control that is, if the person can decide at will whether to perform the behavior” (Lin, 2015, p.13163), on the other hand non-volitional behaviors are ones expressed through the inability to engage in a behavior.

To this loophole, Ajzen (1991) proposed to add a new factor which is perceived behavioral control, explaining the individual’s evaluation of how easy or hard it is to engage or adopt a specific behavior.

As shown in the figure down below, there is a dynamic link between each factor, this relationship is what creates or leads to the development of the intention.

Figure 6: theory of planned behavior



(Source: Ajzen, 1991)

The “ambiguity in defining perceived behavioral control prompted researches to examine the contribution of self-efficacy” which has been found to predict the behavior more than perceived behavioral control (Downs and Hausenblas, 2005, p.79).

Self-efficacy is defined as “the belief in one’s ability to succeed in a given task [that] drives individuals to prefer more challenging tasks and persist more in the face of such challenges” (Reed et al., 2012, p.173).

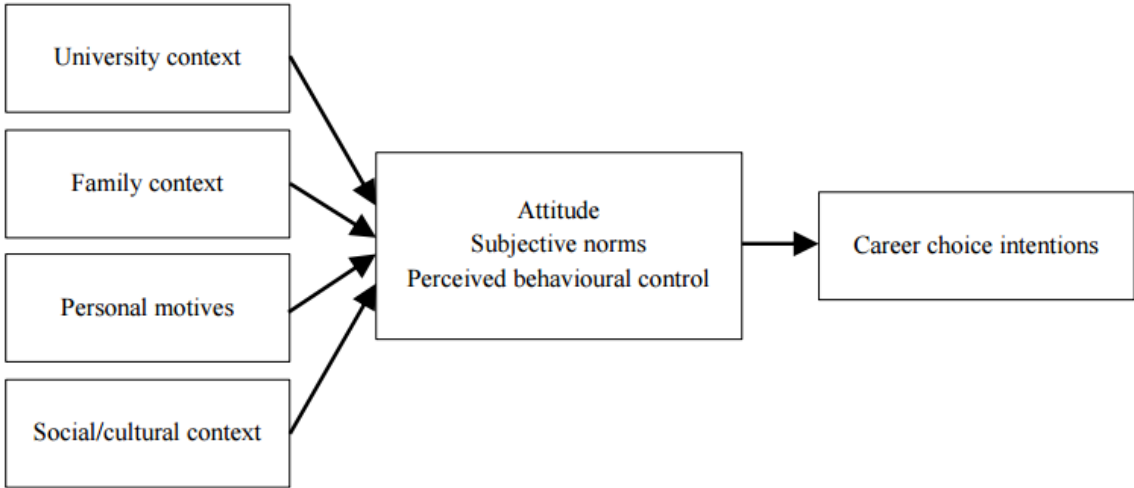
The theory of planned behavior received a lot of criticism due to “its exclusive focus on rational reasoning, excluding unconscious influences on behavior and the role of emotions beyond anticipated affective outcomes” (Sniehotta et al. 2014, p.2). This theory has been considered as static due to the fact that it does not clearly help understanding “the evidenced effects of behavior on cognitions and future behavior Since those two models were established a great number of empirical researches emerged” (Sniehotta et al. 2014, p.2).

2.3.3. The GUESSS survey

The GUESSS survey was first established in 2003 as an abbreviation to the *Global University Entrepreneurial Spirit Students’ Survey*. It is based on Ajzen’s (1991) theory of planned behavior, in a way that it uses the latter theory to explain career choice intentions in general and entrepreneurial intentions in particular (Boyd et al., 2015).

The model of the GUESSS survey is as shown in the figure down below;

Figure 7: Theoretical framework of the Guesss survey



(Source: Boyd et al., 2015)

According to Boyd et al. (2015), entrepreneurial intention is determined by four factors:
* *The University context*: This factor is mainly based on the role of the university in developing entrepreneurial intention within students. In fact, it focuses on entrepreneurship related courses

and how important they are in showing the students' entrepreneurial intention leading to the conclusion that students who do attend entrepreneurship related courses are more likely to have intentions to pursue an entrepreneurial career than those who do not.

It focuses also on the entrepreneurial climate at the university. It stipulates that the university's atmosphere is directly related to the motivation of self-employment, and this, by programs encouraging students in engaging in entrepreneurial activities.

In this context in particular, it is well noted that it is important to pay attention to the learning process. In other words, evaluating if students did in fact accumulate knowledge giving them the ability to develop entrepreneurial intentions and pursue an entrepreneurial career.

This knowledge is mainly based on understanding the attitudes, values and motivations of entrepreneurs; the actions that an individual has to take and the management skills that are necessary to start a business and finally the ability to develop networks and the ability of identifying entrepreneurial opportunities.

* *The Family context:* Students with entrepreneurial family background are more likely to considerate pursuing an entrepreneurial career or being successors in their family business. This statement has been well justified through literature as individuals with entrepreneur parents are way more likely to become entrepreneur by succession.

* *Personal motives:* or also entitled career motives are mainly based on the intent of achieving a certain behavior. It puts the emphasis on career motives as an indicator for self-employment. According to the last version of the GUESSS survey (2015), the most important motives behind choosing entrepreneurship as a career are having an exciting, challenging job, and realizing one's dreams. This does in fact explain that personal motives are effective sources of the entrepreneurial intention.

* *The social and cultural context:* Networks were perceived to higher entrepreneurial intention, but still, their negative effect had not been proved. On the other hand, the cultural context is known to have a great impact on the motivation to become entrepreneur as "the presence of entrepreneurship-compatible culture, social class or a group is capable of engendering behaviors that facilitate and enhance entrepreneurial activities" (Edewor et al., 2014, p.20).

2.4. Comparative study of various entrepreneurial intention measures

Although various models, as previously presented, conceptualized entrepreneurial intentions and provided indicators for it to be measured, various authors in the literature tried to complete

them by adding other factors they perceived as having a great impact but have not been receiving attention, neither were not taken into consideration.

Paul and Shrivatava (2016) enounced a new set of variables that determine the entrepreneurial intention which are;

* *Pro-active behavior and personality*: Proactive personality and proactive behavior are considered as crucial for the effectiveness of individuals, teams, and organizations Sun and Zing (2014). Matter of fact, Trifiletti et al. (2009) defined proactive personality as type of challenge to the status quo, expressed both at the in-role and extra-role levels of performance. Proactive behavior on the other hand “entails a dynamic approach toward work seeking to improvise the existing job along with developing personal prerequisites for furthering career success and organizational effectiveness” (Prabhu, 2013, p.11).

* *Country culture*: Liñán and Serrano (2014) defined culture as a multidimensional phenomenon. More precisely, Inglehart (1997) defined culture is a set of values, shared by various individuals and shaping their behavior in society.

* *Institutional framework*: According to Donnellan et al. (2012), an institutional framework is “generally understood to mean the systems of formal laws, regulations, and procedures, and informal conventions, customs and norms that broaden, mound and restrain socio-economic activity and behavior” (Donnellan et al., 2012, p.1). In other terms, it represents all forms of rules that organize and regulate behaviors and activities.

* *Business environment*: This variable is defined as the set business climate, corporate governance and laws added to the economic, political and social environment of a particular country (OECD, 2011). In fact, the business environment is a set of external factors such as the political, economic or political climate and internal factors such as financial, physical or human resources influence each other and have an impact on the functioning of a business

* *Seed capital*: Seed capital is defined as “funds invested to support new and young companies without fully established commercial operations, launch new products, or continue research and product development” (Heard and Sibert, 2000). Matter of fact, it is considered as the primary funding of any company that is not yet fully functioning as it is meant for starting the activity. The OCDE (2013) defined seed capital as providing funding with the aim of reducing the project’s investment risk.

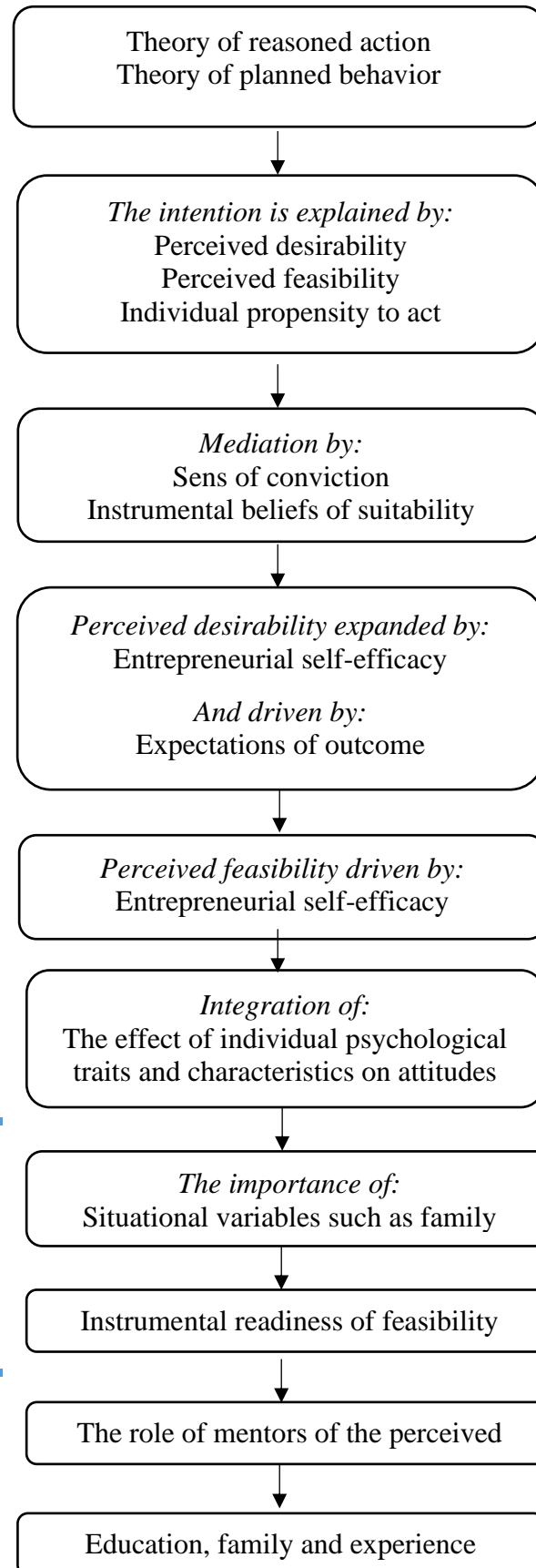
* *Knowledge and experience*: This factor is all about the acquisition and accumulation of knowledge and experience. In other terms, individuals with prior experiences or having already

acquired enough knowledge about entrepreneurship are more likely to develop entrepreneurial intentions (Paul and Shrivatava, 2016).

* *Ideas and business plan*: According to Paul and Srivastava (2016), this determinant is defined as any idea related to entrepreneurship accompanied by a visual translation within a business plan. . Moreover, a business plan is defined as a written document that describes the current state and the presupposed future of an organization (Arasti et al., 2012, Honig, 2004).

Each author, through his own survey and approaches, got different results and this is due to the variability of country culture, empirical context and the nature and characteristics of the studied sample. Matter of fact, “different cultures have different ways to influence the entrepreneur intention and different ways to impact on intentions towards perceived feasibility and perceived desirability” (Sajjad et al., 2012, p.33). As shown in the figure below, depending on the evolution of the context, each author depicted various factors that intervene in the development of entrepreneurial intention.

Figure 8: the evolution of the entrepreneurial intention conception according to Valliere (2014)



Ajzen (1987 / 1991)

Shapero (1982)

Krueger (1993)

Davidson (1995)

Chen et al. (1998)

Krueger et al. (2000)

Shapero, Priem et al. (2003)

Lüthje (2003)

*Kennedy, Drennan et al.
(2003)*

*Kristiansen and Indarti
(2004)*

*Van Auken, Fry, and
Stephens, (2006)*

Carr and Sequeira (2007)

In the same context, we can evoke the importance of risk taking which is a factor related to cultural beliefs. Through literature, it has been proven that individuals living in countries where cultural beliefs are more open and encouraging policies and investment incentives are being provided, are more likely to engage in entrepreneurial careers.

While Hofstede (1980, p.15) defined culture as “the collective programming of the mind which distinguishes the members of one human group from another and includes systems of values”, other authors concluded that the country’s cultural context has a significant impact on career decisions. In fact, the impact is applied “through social norms, valuations and practices and there exist consistent cross-cultural differences in people's willingness to become an entrepreneur” (Bosma et al., 2008, as cited in Ozaralli and Rivenburgh, 2016, p.4).

As shown in the table down below, authors; from pioneering work of Ajzen and Fishbein to the latest years have been testing the different models that were established to explain the entrepreneurial intention, and more specifically, entrepreneurial intentions within students.

In fact, each author, according to the context and era where he conducted his research obtained different results, ones uphold the previous results and affirmations and others did add new factors and variables that are, in their own point of view, more explanatory.

Table 1: determinants of entrepreneurial intention

Entrepreneurial intention	
Authors	Results
Martin Fishbein and Icek Ajzen in (1975); Theory of reasoned action (TRA)	The entrepreneurial intention is a product of the individual’s attitude towards the behavior and the perceived pressures of subjective norms
Shapero and Sokol in (1982): Entrepreneurial Event Model	The entrepreneurial intention is determined by the individual’s perceived desirability, propensity to act and perceived feasibility.
Davidsson (1985)	The intention is influenced by cultural, structural and economical environments
Ajzen (1991) : Theory of planned behavior (TPB)	Entrepreneurial intention is conditioned by the attitude towards the behavior, subjective norms and perceived behavioral control

Autio et al., (1997)	The perception of entrepreneurship and wealth is important to build entrepreneurial intentions
The GUESSS survey 2003	University context, family context, personal motives and social and cultural context condition the development of entrepreneurial intention.
Filion et al., (2003)	The perception of entrepreneurship as a mean to financial independence The fact that the individual is willing to manage his life according to his beliefs and values.
Audet (2004)	Desirability and feasibility are important but only in the short run, and these two forces lose their influence in the long run. Job satisfaction, for already employed individuals, reduces entrepreneurial intention
Minniti and Schad (2007)	Entrepreneurial intention is influenced by the increased perception of control and positive attitude towards socially accepted norms
Paul and Shrivatava (2016)	Entrepreneurial intention is influence by: Pro-active behavior and personality Country culture Institutional framework Business environment Seed capital Knowledge and experience Ideas and business plan
Carsrud, Olm, and Eddy, (1987) Busenitz and Lau, (1996); Choi and Shepherd, (2004); Mitchell, Smith, Seawright, and Morse, (2000) Hunger, Korsching, and Van Auken, (2002);	Entrepreneurial intention is a product of: Parental background and educational level The individual cognitions of new business opportunities Broader environmental factors at both individual and national institutional levels

Korunka et al.,(2003); Westlund and Bolton, (2003)	
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(Adapted from Saleh, 2011; Minniti, 2007)

3. Where is the entrepreneurial intention today? A critical perspective

Studies on entrepreneurial intention seem to be going in the same pathway, and this can be noticed through the literature where studying entrepreneurial intention goes through the measuring of the effect of the precursors on the actual intention.

Thus, models, which have been presented in the prior section, have been exhaustively used especially the schematization of the theory of planned behavior by Ajzen (1991). This use in particular have received hard criticism for the fact that these researches tend to study a phenomenon that is dynamic by the means of models that were widely considered as static.

In fact, it is not a matter of defining the circumstances that allow an individual to become an entrepreneur, such as the economic environment and social pressures, but it is mainly a matter of how to become entrepreneur, or precisely how to “try” to be an entrepreneur (Brännback et al., 2007).

The latter authors argued also that “ the relatively static modeling of entrepreneurial intentions must yield to more dynamic modeling”, they thus explained that the emergence processes are highly dynamic and studying intentions within a static model framework inhibits the possibility to understand why “ some intentions get enacted and other do not” (Brännback et al., 2007, p.2).

Johnsen and Sørensen (2017) argued that the entrepreneur has been too much valued to a point that the literature praised the individual and allowed the emergence of the “fantasy of the heroic entrepreneur”. Matter of fact, the latter authors suggested a critical vision towards the emergence of the individual entrepreneur, as the literature, medias and social medias presented the entrepreneur only through success stories such as, as the authors suggested, Mark Zuckerberg, Steve Jobs, Bill Gates and Richard Branson.

They also added that according to this fantasy, “the entrepreneurial subject seeks to remain within the confines of the true self and stay loyal to its intentions”. Such a fantasy presents the figure of the entrepreneur as an individual who considers the true self to be an inner moral voice

that provides the basis for ethical behavior. It leads to presenting the individual as caught between the desire to overcome himself through a transgressive reaction, and desires, at the same time, to stay true to himself and protect his authenticity. “In this light, the heroic figure of the entrepreneur dwells in a crisis that results from being constituted across contradictory structures of desire” (Johnsen and Sørensen 2017).

While other authors argue that, the traditional models were static and have a limited explanatory potency regarding the entrepreneurial intention, Buana (2016) stated that the entrepreneurial intention was and still considered as “the best predictor of planned behavior”. For these reasons, the phenomenon of entrepreneurship “can be expressed as a type of planned behavior that can be analyzed with the help of intentions’ models” Buana (2016, p.121).

Maresch et al. (2016), in the same context, referred to recent longitudinal studies that rely on the theoretical framework of the theory of planned behavior to argue their choice of the theoretical framework to study the entrepreneurial intention. These studies proved that “within a one-year time frame only about 30% of intenders took steps toward entrepreneurship”. These results led to the identification of the variables responsible of the inhibition of the entrepreneurial intention such as action uncertainty, action fear, and competing interests. These studies referred to the latter variables as “the main barriers against turning the entrepreneurial intention into entrepreneurial action”. (Maresch et al., 2016, p.177)

As an essay to add more explanatory potency to the literature on entrepreneurial intention, Wang et al. (2016) suggested that motivation in both its forms, which are intrinsic and extrinsic, may be helpful to the debate on whether personality is able to predict entrepreneurial intentions. Thus, it is relevant, in the terms of the latter authors, to include motivations and to take into account that the effects of the personality on entrepreneurial intention are mediated by motivations.

When tested in a cross-cultural context, and more precisely, in a context of comparison between developing and developed countries, the theory of planned behavior, which is considered to be the most used model to measure the entrepreneurial intention, does not hold true in predicting entrepreneurial intention in the case of individuals from all developing and all developed countries. Thus, students who have not acquired any prior work experience do not constitute a matured sample to measure entrepreneurial intention and for that matter, Paul and Shrivatava (2016) stated that “findings based on young managers would be more appropriate as a basis for future research”.

Still, the greater progress that the field of entrepreneurship has encountered was the emergence of a new theory, which is the theory of effectuation first introduced by professor Saras D. Sarasvathy in 2001 through her internationally famous article “What makes entrepreneurs entrepreneurial?”.

Through her work, Sarasvathy made exhaustive interviews with 30 founders of companies ranging in size from 200 million dollars to 6.5 billion dollars in different industries. The objective guiding her study was not to interview the entrepreneurs and obtain responses but to explain how their reasoning functions, and to discover if there is a type of rationality specific to entrepreneurs.

From her studies, the author puts in place the effectuation theory, which is contradictory to the causality one; knowing that all the entrepreneurs nowadays and all the programs use causality reasoning to create a new business venture. Matter of fact, the effectuation theory supposes that entrepreneurs do not start with prefixed goals and business plans, but start, in fact, with the means they already have and the resources that are already available with them.

According to the above, the entrepreneur is no longer presented as the individual described in the different theories that identified him as a set of personality traits and various mechanisms and processes of launching a new company. Thus, the importance of business plans, competencies and funds' search is reduced and they are replaced by creativity, openness to strategic partnerships.

Table 2: Comparison between causal and effectual reasoning in entrepreneurship

	Causal reasoning	Effectual reasoning
Goals	Given/ Pre-determined Goal	Imagined ends
Means	Selection between the given means	Use of all the available and given means
Strategy	Pre-determined strategy using the selected means to achieve the pre-determined goal.	Emerging strategy depending on the partnerships, the definition of the customers and the imagined ends/ consequences.
Market	Existing market Market rules	Created market
Customers	Pre-defined customers	The first customer is the base of the segmentation process Discovery of the potential customers
Competitors	Known competitors, use of information about competitors to control the environment	In the start-up phase, there is no consideration for competitors.

The greatest change that the theory of effectuation integrated in the entrepreneurship field, is being completely opposite to the ulterior theories that used to represent the most important guidelines in studying the entrepreneur and his characteristics.

Matter of fact, Ajzen (1991) and Sokol (1994) posited that the entrepreneurial intention has fixed antecedents that determine, on a first level the intention itself, but also can predict the performance of the behavior and if the entrepreneurial action is going to occur or not. The theory of effectuation draws a line on the strongest variables that predict the entrepreneurial behavior.

Sarasvathy (2001) explained that while individuals and students are being taught how to resonate with a causal process, how to define the business plan, the feasibility of the project and all the actual methods to prepare a new business venture, actual performant entrepreneurs did not go through that process.

Matter of fact, following a causal reasoning, individuals will face infeasibility. In the proper words of the author, “when students today set out to write a business plan for this venture (using causal processes), they conclude that the plan is financially infeasible, or even psychologically infeasible”. This infeasibility is due to the requirement of a “large and risky capital outlay, most of which gets locked up in relatively worthless assets such as trucks and location rental” (Sarasvathy 2001).

The effectuation theory comes, thus, extremely handy to explain why some individuals become entrepreneurs while others do not, what are the reasons and if the entrepreneurial reasoning is teachable and learnable or not.

Sarasvathy (2001) suppose that the most important means that the entrepreneur uses to launch his new business venture is not the capital or the business plan, but actually, who he is, what he knows and whom he knows. The initial investment of the entrepreneur is then consisting of his traits, abilities and tastes defining him as an individual, his education, experience, expertise and training defining the individual’s knowledge and finally his professional and social network.

through the previous set of means defined by Sarasvathy in her theory of effectuation, the entrepreneur start imagining and implementing the possible effects that his set of means can create, starting with the closest ones at hand and moving directly to the effective performance of the action without the elaboration of a plan. Matter of fact, the effectual reasoning stands purely on execution while causal reasoning, on the other hand, stands on rigorous planning and “*subsequent execution*”.

This does not, in any means, deny the existing of a planning and elaboration of strategies, still, the strategies are not predefined but emergent. In other terms, planning is effectuated, interrupted and revised constantly through interactions and actions. Through this action, entrepreneurs with an effectual reasoning change and reconfigure their set of means to transform the possible effects of the actions into clearly achievable and desirable goals.

In the same context of the above, Holland (2006) explained that entrepreneurs are used to adversity, and it present a challenging context for them when making effective decision in a complex and uncertain environment. For this matter, when entrepreneurs face a challenging situation or serious difficulties, they have different decisions to make that would modify their primary path other than simply quitting altogether. According to the metaphoric explanation of the latter author, the entrepreneurs may either persist or speed up keeping the same direction, slowdown in hope to minimize the damage, search for a path that is more suitable than the

actual one and change. He describes the first two solutions as either the escalation of commitment and threat rigidity, while he defined the third possibility as resilience. Matter of fact, resilience is defined as “the capacity for adaptability, positive functioning, or competence following chronic stress or prolonged trauma” (Sutcliffe and Vogus, 2003 as cited in Holland 2006, p.1) and it is considered as a trait of successful entrepreneurs.

Entrepreneurial intention has received a lot of attention from scholars, as it is perceived as the most reliable predictor of the entrepreneurial behavior (Ajzen 2002). Matter of fact, many authors in the literature tried to demonstrate that the intention of launching a new venture that an individual develops helps predicting if that individual will perform the entrepreneurial action or not. The entrepreneurial event (Shapero and Sokol 1982) and the theory of planned behavior (Ajzen 1991) represented the basis of all the emerging researches studying the matter as they were considered as the most used et accurate conceptualization and modeling of the intention. Still, these models received harsh criticism as they were and still are static means to study a complex and dynamic phenomenon that it the development of the entrepreneurial intention.

Moreover, entrepreneurial intentions has been show to play a crucial role in the entrepreneurial process and in the process of creating a new company. Through the previous section, we tried to explain how intentions, as important as they seem, do predict the behavior but do not assure if that behavior will be effectively executed and when will that behavior take place. As some authors argue that these intentions may not automatically, result in pursuing an entrepreneurial career. In fact, many other factors can inhibit the desire to launch a new business venture such as environmental factors, or pressures emanating from families, peers or coworkers.

Conclusion

Entrepreneurship has always been considered as a vital source to the development and success of modern societies that would be, otherwise, facing enormous challenges both on the economic and social levels, thus entrepreneurs and the promotion of entrepreneurship are presented as a solution to unemployment and low economic growth (Ferreira et al. 2018).

The affirmation above supports the reasons behind the great interest that has been offered to entrepreneurship as a research field and how to develop it as an economical phenomenon. Entrepreneurial intention, considered as a crucial determinant of the entrepreneurial behavior, received as much attention from scholars. Matter of fact, various authors tried to demonstrate what the necessary conditions to produce a behavior from a simple intention to act. Numerous categories of factors were presented to address the matter, such as networks, resources and environmental conditions and individual characteristics such as personality traits, skills and competencies.

In this context, authors such as Sanchez (2011) explained that acquiring competencies related to entrepreneurship can help develop entrepreneurial intention. Matter of fact, the latter author has confirmed that the more entrepreneurial competencies are developed, the more the individual is likely to have entrepreneurial intentions.

Matter of fact, entrepreneurial intention is considered as an entrepreneurial behavior and as a construct of the individual. Thus, studying the link between entrepreneurial intentions and entrepreneurial competencies can be well appreciated if the focus is put on the fact that competencies are conceptualized as encompassing three types of characteristics including traits, skills, and knowledge (Lau et al., 2000 as cited in Sanchèz, 2011). For the matter, studying this specific link in depth would provide great insights. In other terms, it is relevant to take consideration of each component of the two concepts, entrepreneurial intention and entrepreneurial competencies, and determine what influence does each component have on the others.

Chapter II:
**Contextualizing the impact
of entrepreneurial competencies
on the entrepreneurial intention**

Introduction

Individuals, in most cases, are able to identify clear goals they would like to pursue and objectives they would like to realize in the future (Rezaei, 2017). The probability that these future situation representations would be attained is subject to the influence of numerous factors related to the individual's beliefs and capabilities. Matter of fact, the individual's personal beliefs and perceptions of his own capabilities can have a great impact on starting a business, as they are the extent to which he believes in his own capacity to perform a behavior, his motivation and affective states (Rezaei, 2017). Thus, lack of beliefs and lack of one's trust in his own capacity to perform a behavior are tightly related to the action, as it can eventually inhibit the desire to perform the behavior and thus its effective performance.

These beliefs and the confidence that an individual can gain in his own capacities can be translated in the terms of Ajzen (1991) as antecedents of the entrepreneurial intention. As Ajzen posited in the theory of planned behavior that the development of an entrepreneurial intention is subject to determinants that are the attitude towards the behavior, perceived behavioral control and subjective norms. In fact, these factors were long considered as beliefs that "shape the formation of attitudes towards any prospective behavior; these attitudes drive the formation of the intent to perform the behavior and that intent causes the individual to act" (Valliere, 2015, p: 133).

In the same context, Man et al. (2009) defined entrepreneurial competencies as a set of personality traits, attitudes and knowledge influenced by experience, education, the social status and other factors related to demographic data. Linking the latter affirmation to the above, entrepreneurial competencies, including attitude, personality traits and knowledge, may have an impact on the desire to launch a new business venture and thus on the entrepreneurial intention. In the same context, Sanchez (2011) explained that acquiring competencies related to entrepreneurship could help develop entrepreneurial intention.

Moreover, education, knowledge and experience may have an impact on entrepreneurial competencies and thus, by analogy and according to Sanchèz (2011), the development of entrepreneurial competencies help developing the intention to launch a new business venture. In fact, Sanchèz (2011; 2014) argued that, the more competencies are developed, the more the individual is likely to have entrepreneurial intentions, and on the other hand, an individual with entrepreneurial intentions is more likely to develop entrepreneurial competencies.

In this context, the second chapter will be a continuation of the previous one, as the first section will be interested in defining entrepreneurial competencies, the different and most relevant models related to them. Then, we will explore the link existing between entrepreneurial competencies and the entrepreneurial intention as the relationship between both concepts has not been proven empirically for the fact that most of conducted researches were limited to treating the subject from a theoretical perspective. Matter of fact, few are the studies that addressed the matter based on empirical surveys (Sanchez, 2011). The second section will be contextualizing the link between entrepreneurial competencies and entrepreneurial intentions through defining entrepreneurial education as it is considered, in this research work as well as in the literature, as an important source of knowledge and entrepreneurial competencies development.

Section I: Defining entrepreneurial competencies

Wickramaratne et al. (2014) explained that for an entrepreneur to succeed in creating his own business venture and guarantee future success, it is crucial for him to set up his competencies in order to succeed in the entrepreneurial actions that he executes. In other terms, competencies are considered as the main asset to starting a new business venture and provide a basis for its future performance. This puts the light on the importance of entrepreneurial competencies in regards to the constitution of the business as well as its viability and performance.

In the same context, McMullen and Shepherd (2006), with reference to Higgins and Kruglanski, (2000), highlighted the importance of competencies as they explained that “an individual must ultimately act to become an entrepreneur [and] action involves knowledge and innovation”. The latter quote informs us that knowledge related to entrepreneurship, as part of competencies, is involved in the effective action, thus competencies represent a crucial determinant for actions.

In this section, we will try to answer the following set questions through the exploration of the theoretical framework related to entrepreneurial competencies:

- 1. What are the competencies needed to launch a new venture? (Competencies' Models)*
- 2. What is the influence of such competencies on future performance?*

1. Entrepreneurial competencies: definition, components and models

Competency as a term “has been used in management literature for a long time now [...] however, its role and importance have been understood only in the recent decade” (Shenura et al., 2016). In fact, according to Mitchelmore and Rowley (2010), the term competency was first used in education to describe trainee teachers' behaviors. To respond to the confusion occurring between the terms, the literature did widely treat the comparison between competence and competency as for the fact that even though the two terms seem alike, their meaning and existence greatly vary.

1.1. Competence and competency: is there any difference?

Competence and competency are, in the terms of Mitchelmore and Rowley (2010), two different terms that are “linked but distant” since the first one is related to the evaluation of performance in a specific field of activities while the second is an individual attribute.

In other terms, competence is distinct from the individual's skills, knowledge and abilities, in that it is not only an attribute of individuals but also depends on situations and social definitions.

The second construct, which is competency, is all about the parameters that can be used to characterize individuals and their behaviors. Still, competency is not considered as a task, it is mainly described as the set of essential personal traits, knowledge, motives and skills leading to a superior performance.

Pioneering work of Boyatzis in 1982 have put competencies into 3 levels being; motives and traits, social role and self-concept and finally role transitions, in a way to express that, the concept of competency is an underlying characteristic of a person which leads to effective action and superior performance in a job. A competency is then considered as the behavior that individuals demonstrate and the minimum standard of performance required by the job (Strebler et al. 1997).

In fact, Boyatzis, in his research, was first to underline the great importance of competencies through his survey that took as subject hundreds of managers. The aim was to determine and classify which set of competencies is necessary for a manager to achieve performance. In his terms, competencies are defined as the existing capacity in an individual, which leads his behaviors into meeting the job requirements in organizational parameters, and thus leads to meeting the expected results.

Mitchelmore and Rowley (2010, p.94) defined competencies as interactional constructs. Matter of fact, they consider competency as “an underlying characteristic of a person which results in effective action and effective performance in a job” in contrast with competence which is consider as a “description of an action, behavior or outcome which a person should be able to demonstrate” (Nová 2015, p.3920). In other terms, competence is described as the ability to achieve an action or the accomplishment in a given field (Cheng et al. 2003).

Mulder et al. (2009, p.757) defined competence as a “series of integrated competencies consisting of clusters of knowledge, skills and attitudes necessarily conditional for task performance, problem solving and for being able to function effectively in a certain profession, organization, job, role and situation”.

They also provided a comparison between competence and competencies, describing competence as an “integrated set of competencies” while competencies are behavior and task oriented and are meaningful in a specific field or context only.

For Pioneer Boytazis (1982, as cited in Salajegheh et al. 2014), the comparison was made on an even deeper perspective. In fact, they defined competence as, at first, a term “which is widely

used but which has come to mean different things to different people”. They stated that it is, in fact, generally perceived and accepted as encompassing knowledge, skills, attitudes and behaviors that are casually related to superior job performance. Competencies, on the other hand, are the “knowledge, understanding and practical thinking skills” essential for the effective performance according to the standards required in employment. They are in fact “identified and demonstrated through sets of behaviors that encompass skills, knowledge, abilities and personal attributes that are critical to successful role accomplishment (Salajegheh et al. 2014).

Wan and Lame (2015) posited that competencies are considered to be underlying characteristics brought by the individual enabling him to achieve an effective or superior performance in a job or a certain job situation. It is also the individual’s ability to “turn ideas into action depending on his creativity, innovation and risk taking as well as the ability to plan and manage projects in order to achieve objectives” (Wan and Lame 2015, p.165). Thus, competencies can be defined as “sets of behavior that are instrumental in the delivery of desired results or outcomes” Bartram et al. (2002, as cited in Bartram 2005, p.1185).

Through the literature, it is clear that a great number of authors gave attention to the distinction between competence and competency and each one of them tried to develop his own definition of what a competency is. A relevant definition of competencies, through the literature review, focuses on the set of knowledge, skills, abilities and specific individual characteristics that are likely to be observed and are highly needed to accomplish a successful work and high performance in a determined function.

Hayton and McEvoy (2006) focused on the interactional aspects of the competency as a construct. They divided competencies into three sets, starting with the individual differences, situationally defined behaviors and socially designed criteria for performance. Mitchelmore and Rowley (2010), on the other hand, classified the concept of competency into two types; casually related and criterion referenced. In fact, the first batch is responsible for causing or predicting the behavior and its performance, while the second one, determines which individual is more willing to practice the behavior properly.

Moreover, Lazar and Paul (2015) described competency as a “wider concept” which includes a set of ideas helping the individual to transform his own ideas into reality. In other terms, competencies are the pathway towards developing the behavior and acting according to its components to engage in a reflexive and active attitude leading to performance.

1.2. Entrepreneurial competencies: Conceptual precision

The question *Are we born entrepreneurs or do we become ones?* has always been a central question in the literature, especially with the divergence between the different theoretical fields and frameworks, and between economical and psychological approaches to entrepreneurship. In fact, the latter question gained even greater interest from scholars with the growing interest in entrepreneurial education as its main goal was to teach students how to become entrepreneurs, as well as giving them the sufficient tools, thus leading them to consider entrepreneurship as an alternative future career.

Answering to questions such as, if the unicity and greatness involved in being an entrepreneur are innate qualities or acquired ones, can be done through literature for sure, but also through reality acknowledgment.

Various studies, such as Ellis and Willams (2011), focused on the entrepreneur's profile. In fact, the literature about this theme in particular is very rich and each author presented his own vision of the entrepreneur according to his era and the research field he is specialized in.

Still, the various definitions that were elaborated starting from Cantillon (1931) to later studies such as Ireland et al. (2003) converge towards characteristics like foresight, speculation and opportunity seizing within the economic market.

The economical approach to study entrepreneurship is centered on the fact that, to become an entrepreneur, the individual must be able to identify, seize and exploit opportunities available on the market considering that fundamental skills and knowledge could be gained through multiple courses and entrepreneurial training programs. While scholars who belong to the psychological approach tend to focus on the individual characteristics and personality traits explaining that, being an entrepreneur is an inner nature. The latter approach posits that individuals are born with predispositions that are developed afterwards through the shared ideals and values as well as the beliefs and expectations of families and societies.

The entrepreneur received a great attention from scholars, as different models were developed to determine if a person has the required characteristics of an entrepreneur or not. Matter of fact, various measurement scales for personality traits and measurement for entrepreneurial motivation and intention were developed starting from the pioneering work of Ajzen (1991).

The entrepreneur was first defined as a profit seeker, observing a need in the market, he engages in an entrepreneurial action in response to existing and available opportunities. Various

economists such as Shumpeter, Knight and Casson perceived the entrepreneur as an economic man and a calculator whose main motivation is profit.

Cantiollon (1755 as cited in Fillion 1997), in the same perspective, defined the entrepreneur as “a man seeking business opportunities, with a concern for shrewd, economic management and obtaining optimal yields on invested capital”.

Shumpeter (1928), on the other hand, integrated the concept of innovation in the field of entrepreneurship as an important part of the entrepreneurial action. He explained that the individual entrepreneur creates a new way of using the environment resources producing and presenting a new output (product, service) on the market.

Hamilton and Harper (1994, p.11) referenced McClelland’s (1961) study as one of the early studies identifying the psychological drives of entrepreneurship especially the dependence between entrepreneurship and the need of achievement stating that it is “more important than the desire for money even though monetary rewards may constitute a symbol of achievement for entrepreneurs”.

McMullen and Shepherd (2006, p.133) with reference to Higgins and Kruglanski (2000) highlighted the importance of the action, knowledge and innovation by explaining that, to become an entrepreneur, an individual “must ultimately act [...] because action involves knowledge and innovation”.

Such evolution in the definition of entrepreneur brought to surface various determinants of entrepreneurship and added characteristics specific to the entrepreneur as an individual. From this perspective, studies were conducted with the aim to elaborate a generic profile of the entrepreneur and determinants of the entrepreneurial potential, action and future performance. Matter of fact, a great attention was shed on competencies and personalities traits.

As Mitchelmore and Rowley (2010, p.94) stated, the concept of entrepreneurial competencies has been widely used but its measurement and its relationship with “entrepreneurial performance and business success is in need of further rigorous research and development in practice”.

Interest in understanding and classifying competencies started with the pioneering work of Boyatzis in 1997 as he conducted a study to identify the key managerial competencies focusing mainly on a wide sample of established managers.

Zahra (2011, p.30) went further and stated that entrepreneurial competencies are a “means of sensing, selecting, shaping, and synchronizing internal and external conditions for the exploration and exploitation of opportunities”. Nuthall (2006), on the other hand, posited that entrepreneurial competencies are considered as a specific set of competencies linked to the exercise of successful entrepreneurship.

In the same context, Wu (2009, p.281), with reference to Man et al. (2002), defined entrepreneurial competencies as a “set of higher-level characteristics involving personality traits, skills and knowledge and the total ability of the entrepreneur to perform his role successfully”. Thus, entrepreneurial competencies are personal attributes tightly linked to the individual’s capacity to attain performance through the skills and knowledge he gained and the personal characteristics he has. Besides, the latter authors insisted on the fact that entrepreneurial competencies are essential to start a business, and provided a comparison between entrepreneurial competencies and managerial skills.

Matter of fact, Mitchelmore and Rowley (2010, p.93) stated that managerial skills are needed later to provide growth and sustainability to the newly launched business, and finished by concluding that “competence in entrepreneurship requires competencies in both areas”. Thus, entrepreneurial competencies allow the individual to launch a new business venture while managerial skills are the personal resources that are needed for the company’s management, performance and sustainability.

In fact, entrepreneurial competencies refer to the combination of the entrepreneur’s attributes, allowing a sustainable and successful entrepreneurship and represent a critical factor directly influencing the success, performance and sustainability of a business in a competitive environment (Phelar and Sharplay, 2011).

The approach to entrepreneurial competencies helps define the role that must be performed by the entrepreneur in the process of a new business venture creation. Thus, the entrepreneur will be expected to fulfill three main roles, considered as critical for the growth and sustainability of a company, that are the managerial role, the technical and functional role and of course the entrepreneurial role (Baum, et al. 2001).

Paladan (2015, p.391) with reference to Inyang (2009) decorticated competencies into as set that he entitled as “clusters of related knowledge, attitudes and skills which an entrepreneur must acquire through managerial training and development” allowing him to attain outstanding performance and profit maximization while managing a business venture.

Entrepreneurial competencies are then essential and are described as the combination of five distinct types; opportunity seizing competency, conceptual competency, organizing and managing competency, technical competency and behavioral competency (Lazar and Paul 2015).

**Opportunity seizing competency*: it is defined as seeking opportunities according to three attributes such as spotting the opportunity, actively seeking new ones and developing it in the business enterprise (Seabela et al. 2014). McClelland (1987) stated that seeing and acting on opportunities is definitely the most important competency enabling the entrepreneur to be successful.

**Conceptual competency*: this competency is all about risk taking, innovativeness, and decision-making skills. Man et al. (2002) described these characteristics as significant among the conceptual competencies of entrepreneurs. Seabela et al. (2014) on the other hand defined conceptual competencies as demonstrating the possession of cognitive ability and decision-making skills, ability to predict and weight risks, analytic thinking and the capacity to reduce risks.

**Organizing and managing competency*: this competency is built around eight managerial roles such as being a mentor, a facilitator, a monitor, a coordinator, a producer, a broker and an innovator (Quinn et al. 1996 as cited in Lazar and Paul 2015). It is in fact the ability to coordinate, control, monitor, lead and organize internal and external resources of the company (Seabela et al. 2014).

**Technical competency*: Kaur et al. (2013) defined this competency as being up-to-date in technical knowledge. Moreover, they described it as the ability to use and adopt technical skills including the techniques and tools handling that are relevant to the business but also the mastery of the tasks and the content of work.

**Behavioral competency*: this competency in particular answers the question *how to be an entrepreneur*. In fact, it is conducting the entrepreneurial behavior in a way that it holds in personal and learnable competences related to the entrepreneurial and enterprising behavior.

Those different definitions converge into a common axis, being the set of behaviors, attitudes, personality traits and knowledge that are oriented towards a specific task and necessary for entrepreneurial actions and achievements. Matter of fact, strong entrepreneurial characteristics will root the higher competence of the entrepreneur, which will ultimately lead to higher

business performance and are, also, observable and measurable and thus allowing the distinction between higher and lower performance (Lazar and Paul 2015).

Nonetheless, Rezaei et al. (2014) stated that questions about the key competencies that the entrepreneur needs to develop are still unanswered, and that the teachability of these competencies is questionable. These competencies vary according to the entrepreneur's personality traits, academic background, training but also social norms and pressures. Matter of fact, Kyndt and Herman (2015) agree that entrepreneurial competencies are not fixed traits but can be developed and learned through experience and training.

All the above being said, entrepreneurial competencies are the motor of entrepreneurial behavior, they are developed, changed and updated according to the entrepreneur needs and the project requirements. In fact, they “enable behaviors of different qualities, but they are not behavior themselves”, in a way that entrepreneurs have to “shift from deploying existing competencies to developing new ones in response to market conditions” (Volery et al. 2015, p.113). As a conclusion, the pertinence in identifying and studying these competencies is clearer when the focus is directed towards the resulting advantages.

2. Entrepreneurial competencies models

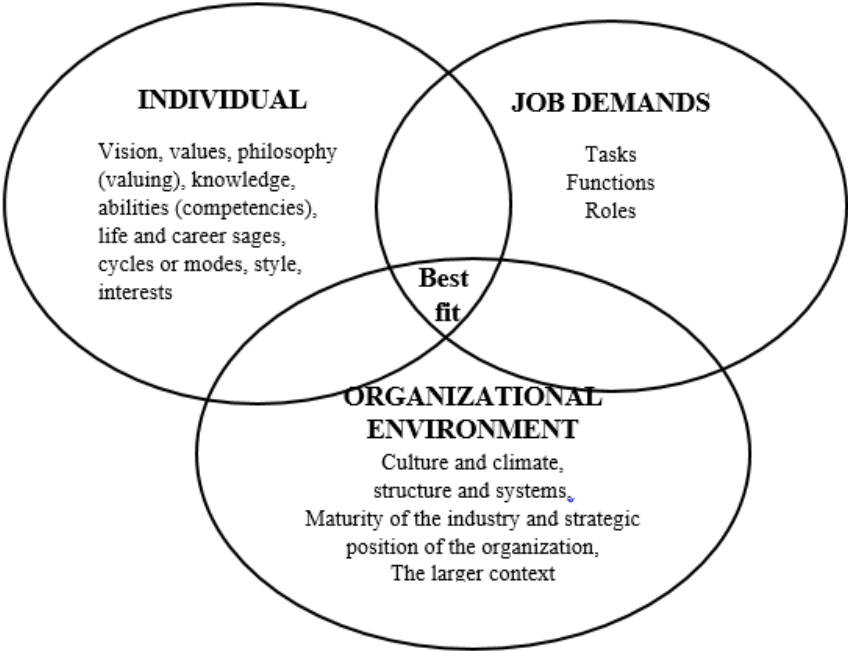
A competency model is defined as a “collection of competencies that together define successful performance in a particular work setting” (Lazar and Paul 2015). It can also be described as a descriptive tool that identifies the competencies needed to operate in a specific role within a job, occupation, organization or industry (Shippman et al. 2000). In other terms, a competency model is a behavioral job description that must be defined by each occupational function and each job, depending on the work and organizational environment.

Matter of fact, the efforts directed towards creating models of competencies and identifying what competencies entrepreneurs should acquire in accordance to their environment, country and sector of activity, may guarantee, at a certain point, future entrepreneurial performance. Moreover, it can help guide entrepreneurial support activities to identify and focus on the specific entrepreneurial competencies that should be developed in future entrepreneurs (Loué and Majdouline 2015).

In the same context, putting efforts in identifying these competencies will only tend to develop and optimize entrepreneurial support structures activities, promote entrepreneurship and guarantee a more sustainable development offering small and medium enterprises stronger chances to survive during their first years, and evolve with sound and fair foundations.

Various entrepreneurial competencies' models have been constructed and each researcher, based on his specific approach, presented a number of key entrepreneurial competencies. First research to be conducted and considered to these days as a reference, is pioneering work of Boyatzis (1982). Through his study, the contingency theory of action and performance, he defined a specific context in which conditions are favorable to attain performance with the aim of predicting its level. Thus, the competency-based approach is perceived as a behavioral approach focusing on creativity but also on social, emotional and cognitive intelligence competencies. Moreover, personality traits, personal characteristics and motivation go along with the previously quoted components and account as factors of equal importance (Gakova and Nikitina 2014).

Figure 9: Contingency theory of action and job performance



(Source: Boytazis et al. 1999)

In the same context, Boytazis's comprehensive study, which was conducted in 1982 and took as subject over 2000 managers, had as a central objective to identify potential competencies that guarantee performance and effectiveness.

The contingency theory of action and job performance, as a result of the study, was established in a way that it helps providing a context to analyze the effectiveness of employees. Thus, Boytazis and his associates took into consideration three dimensions to explain future performance rather than focusing solely on job-related factors. As seen in the model illustrated

above, they did in fact add cultural and individual variables to the job demands obtaining by such intersection point, which represents the best fit for the job and organizational performance. The best-fit section is, in fact, defined as the area of maximum stimulation, challenge and performance.

The result of this study was of a great importance for the entrepreneurship research field since the nature of entrepreneurship is to proactively produce effective resolution of problems and opportunities (Frese 2009). According to the latter author, the action theory is well fitted for the entrepreneurship context, since he stated that every action could be decomposed into three components of actions, which are; sequence, structure and focus. He defined those dimensions as following: sequence refers to how actions do unfold, structure involves the numerous levels of regulation, and action's focus may contain the task, the social context in which the task is exerted, and the self. Accordingly, he insisted on the fact that a full understanding of entrepreneurs' actions must be based on integrating all the components of these aspects.

The pertinence of this theory remains in the fact that it goes beyond the individual level to take in consideration the alternance, overlap and interference of that individual dimension with the organizational context as an environment and the job requirements and demands.

Salazr et al. (2005 as cited in Nova 2015) on the other hand, proposed seven axes for competencies as following:

Table 3: Competencies axes by Nova (2015)

Identifying business opportunities
Evaluating business opportunities
Decision making
Networking
Identifying and solving problems
Oral communication abilities
Innovative thinking

On the other hand, Loué and Baronet (2012) developed a 44 competencies model, which they tested in France, Algeria and Quebec. They divided their model in seven7 axes as following:

Table 4: Competencies axes by Loué and Baronet (2012)

Human resources management
behavioral competencies
Identifying business opportunities
Marketing and commercial competencies
Financial management
Marketing and strategic management
Team management

Each axis consists of a group of specific competencies, and the whole group of axes defines the competencies' model of the entrepreneur. Loué and Bronet (2012), then, added an eighth axis, that is intuition and vision.

Priyanto and Sandjojo (2005) defined entrepreneurial competency as a set of four components starting with opportunity skills, management skills, technical skills and industry skills. While Man et al. (2002) attempted to identify the key competency areas through their work as it led them to determining six main competency areas that are, opportunity seizing, organizing, conceptual competencies, strategic reflection, relationship and commitment.

Mitchelmore and Rowley (2010), proposed a cluster of competencies represented as a framework for key competencies and a summary for previous researches. In their summary of key competencies, the authors presented four principal axes that are, entrepreneurial competencies, business and managerial competencies, human relations competencies and conceptual and relationship competencies. As presented in the following table, each set is composed of various competencies that define it.

Table 5: Towards an entrepreneurial competency framework

Competencies' set	components
Entrepreneurial competencies	Identification and definition of a viable market niche Development of products of services appropriate to the firms chosen market niche/product innovation Idea generation Environmental scanning Recognizing and envisioning taking advantage of opportunities

	Formulating strategies for taking advantage of opportunities
Business and managerial competencies	<p>Development of the management system necessary for the long-term functioning of the organization</p> <p>Acquisition and development of resources required to operate the firm</p> <p>Business operational skills</p> <p>Previous involvement with start-ups</p> <p>Managerial experience</p> <p>Familiarity with industry</p> <p>Financial and budgeting skills</p> <p>Previous experience</p> <p>Management style</p> <p>Marketing skills</p> <p>Technical skills</p> <p>Industry skills</p> <p>The ability to implement strategy (develop programs, budgets, procedures, evaluate performance)</p> <p>Familiarity with the market</p> <p>Business plan preparation</p> <p>Goal setting skills</p> <p>Management skills</p>
Human relations competencies	<p>Development of the organizational culture management feel is necessary to guide the firm</p> <p>Delegation skills</p> <p>The ability to motivate others individual and in groups</p> <p>Hiring skills</p> <p>Human relations skills</p> <p>Leadership skills</p>
Conceptual and relationship competencies	<p>Conceptual competencies</p> <p>Organizational skills</p> <p>Interpersonal skills</p> <p>The ability to manage customers</p>

	Mental ability to coordinate activities Written communication skills Oral communication skills Decision making skills Analytical skills Logical thinking skills Deal-making skills Commitment competencies
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(Source: Mitchelmore and Rowley, 2010)

The latter table of competencies presents a certain convergence in the different models provided by the literature. Still, going through the different published studies, it is well confirmed that competencies related to opportunity recognition and exploitation are the core competencies in, almost, every model in the literature. This being said, competencies related to opportunity identification have been the first to surface in the entrepreneurship literature starting from Schumpeter (1928), Hartmann (1959), Cantillon (1755), and Fillion (1997), arriving to the latest studies taking the entrepreneur as a subject.

While such a great variety of studies propose a fixed set of competencies, other authors, such as Sarasvathy (2001), tried to understand why would some entrepreneurs, with no evident existence of such entrepreneurial competencies, can still succeed. As for, for illiterate individuals and for entrepreneurs that effectively constituted companies and realized a great success. Sarasvathy (2001) did explain a portion of this question through the theory of effectuation. As the author stated that an entrepreneur starts with the means, he has available in his hands. These means are his own personality traits and personal characteristics as well as his social network and the knowledge he acquired. The latter theory suggests, through the explanation of the author, that entrepreneurs have a special way of thinking that differentiate them from other individuals, which is the effectual reasoning. These individuals have powerful selling skills as they start selling products they did not produce yet, contact customers and identify them according to the first potential customer they receive and do not wait for the customers and partners to discover the business, but go personally to discover which market is appropriate for the project they aim to start. Through this perspective, as a conclusion, competencies such as seeking, identifying and exploiting opportunities are necessary for individuals aiming to pursue an entrepreneurial career. In the same context, entrepreneurial competencies may not be present as a complete and exhaustive set in the business-launching

phase and that refers to the learnability of entrepreneurial competencies. As for, entrepreneurs, while exercising the entrepreneurial activity, will develop and augment their entrepreneurial competencies through practice.

3. Entrepreneurial competencies and future performance

Business performance is defined as “the operational ability to satisfy the desires of the company’s major shareholders” (Smith and Reece, 1999 as cited in Zulkiffli and Perera,2001), it does in fact measure if the company effectively realized the fixed objectives, by assessing its accomplishments. These latter are ranging from benefits and profit, the number of customers, the product improvement and the return on investment which has always been considered as an accurate measure to determine if the business venture is performant or not.

Sonnentag and Frese (2001, p.5) stated that “relatively little effort has been spent on clarifying the performance concept”, explaining that to define the concept of performance, it is relevant to assess the difference between the action aspect of performance and the outcome aspect of the performance. In this perspective, performance is a result of evaluation and appreciation of the individual’s actions within an organizational framework.

In the same context, the authors explained that the behavioral aspect, which is the action aspect of performance, is directly related to the actions that an individual fulfills in a job situation. Nevertheless, these actions can be taken into consideration in the framework of performance only if they represent relevance to the organizational goals. Thus, “performance is not defined by the action itself but by judge mental and evaluative processes” (Sonnentag and Frese, 2001, p.5). The outcome aspect of performance, on the other hand, is tightly related to the evaluation of the results emerging from the behavioral aspect of performance. Still, the latter authors argue that a relevant behavioral performance cannot necessary predict a high outcome due to the interference of other variables and factors that regulate the outcomes.

From the previous explanation, it is relevant to say that, performance is in fact tightly related to the behavior of the individual in an organizational context, the behavior being a direct expression of the individual background, skills and competencies in a given job situation or task to be done. This being said, performance should, then, be mediated and determined by the set of competencies that one has acquired according to the job situation he is executing.

Davidsson et al. (2001, p.252) stated that “there is a need for performance assessment [...] to be a key focus of entrepreneurship research”. The authors argue that the discovery and exploitation of opportunities contribute to the company’s performance level is just one of

various aspects. This being said, it emphasizes more the importance of performance in the field of entrepreneurship but also the different aspects of performance. Opportunity identification and exploitation has always been considered as an important competency to be held by any entrepreneur. Matter of fact, Zahra (2011, p.3) stated that entrepreneurial competencies are a “means of sensing, selecting, shaping, and synchronizing internal and external conditions for the exploration and exploitation of opportunities”.

When comparing the statements of the latter authors, it is relevant to say that entrepreneurial competencies such as identifying and exploiting opportunities are, in fact, directly linked to performance, as they represent an important determinant of the entrepreneurial activity as well as an important indicator to predict and evaluate future entrepreneurial performance. In fact, entrepreneurial competencies have always been considered as a set of capabilities necessary for the successful execution of a given number of tasks, in this context, with the right set of competencies, the individual is guaranteeing his ability to fulfill the required actions successfully.

By referring to the general definition of performance, executing an action with a positive income or realizing the intended objectives has to be accompanied by the respective competencies. Performance in the entrepreneurial action is, then, granted by the existence and the use of entrepreneurial competencies.

According to Wickramaratne et al. (2014), for an entrepreneur to succeed in creating his own business venture and guarantee its future success and performance, it is crucial for him to set up his competencies in order to succeed in the entrepreneurial actions that he will be required to execute.

However, even if the authors clearly stated that entrepreneurial competencies are an essential means to achieve the required level of performance, they argued that the entrepreneurial literature discussions about competencies are still in their early stages, as “few researches have been conducted to identify the relationship between managerial or entrepreneurial competencies and performance of the firm” (Wickramaratne et al. 2014).

Future and actual performance of business ventures has, also, been tightly linked to competencies when analyzing firms’ activities, especially for the case of small and medium enterprises. In fact, the latter link still arises when researchers try to answer the question of how and why there are successful new ventures while others cannot exceed few years of activity or do not meet the awaited results.

The pertinence in answering the latter question, is in the effort of providing an understandable framework for potential and futures entrepreneurs and understanding how to predict and guarantee a brighter future for the newly launched business ventures and thus, predicting if the business ventures will be effectively performant and how. It is important to note that the performance of the newly constituted company is represented by the performance of the individual who launched it. In other terms, the figure of the entrepreneur who effectively executed the constitution of the company. That means that, to understand the future business's performance, it is relevant to understand the specific characteristics of the individuals who are more luckily to succeed, but also understand the reason why others tend to fail.

As Aldrich and Martinez (2001 as cited in Davidsson et al. 2001) explained that understanding how and why some entrepreneurs succeed remains a major challenge for the entrepreneurship research community. This challenge was subject to a great number of studies, as for some, authors tried to understand the reasons behind the success of large companies' managers such as Saras Sarasvathy, the creator of the effectuation theory, who presented great findings about how successful entrepreneurs have a common point. The latter being the effectual reasoning, which consists of a special manner of thinking identified within the successful entrepreneurs the author interviewed.

Quoted by the latter author, Davidsson and Wiklund (2001) suggest that, the individual's characteristics and the behaviors he performs are somehow related to his entrepreneurial career performance or something approaching that ideal. Davidsson et al. (2001) clearly explained that even though an individual can be dominant in an entrepreneurial venture, other studies proved that they often involve partners and various sources of finance.

Thus, the authors highlighted, firstly, the network competencies through the creation of partners and building tight relationships with already established organizations that will bring a help of any type to the newly constituted company. This explanation is in fact in the same pathway of the effectuation theory, as this theory suggested that the entrepreneur starts selling his products and contracting with collaborators way before starting the business. Secondly, they stated that the real importance of partners' contribution was not rigorously determined, as it is the "result of work at the entrepreneur level with analysis that focused on the entrepreneur's characteristics" (Davidsson et al. 2001, p.256).

On the other hand, Man et al. (2002) stated that individual competencies are related to performance as entrepreneurial competencies are obviously related to managerial competencies. With reference to individual competencies, the authors highlight the importance

of the employee's skills and to what extent it intervenes in the performance of the business. They also argued the factors that have the greater impact on the performance of small and medium enterprises are mostly the technical and managerial competencies along with the individual's personal characteristics such as his attitudes and behaviors.

Moreover, Man et al. (2002, p.131) expressed that there is an "urgent need for long-lasting individual characteristics leading to success, rather than simply skills and abilities, in facing increasing competition". In other terms, they pointed out that the simple existence of competencies does not create a competent individual and more precisely a competent entrepreneur. In fact, the expression and demonstration of the individual's competencies into behaviors and actions are a guarantee for the actual performance, as the "behavior is closer to performance than other entrepreneurial characteristics, such as personality traits, intentions or motivations" (Man et al. 2002).

As a matter of fact, various researchers have explained that entrepreneurial activities, based on the characteristics of the entrepreneur, is considered as a central determinant of small and medium enterprises' performance (Man et al. 2008). Through their study, the latter authors concluded that, the role that the entrepreneur plays is considered as a crucial determinant of the small and medium enterprises' performance. In fact, the authors explained that through their research they were able to provide a "supporting evidence of the direct or indirect effects of different competencies on a firm's long-term performance". As the findings were correspondent to other previous researches in demonstrating the entrepreneur's ability to be alert and his interpretation of the environmental conditions, his ability to gather and use various external as well as internal resources for the advantage of the firm and his ability to plan for the long-term success of the firm he constituted.

In the context of the research conducted by Man et al. (2008), entrepreneurial competencies play a great role in predicting, as well as guaranteeing, the actual and future performance of the business venture, as they define entrepreneurial competencies as higher-level characteristics that are closely linked to the performance of small and medium enterprises. Linking competitiveness to the performance of the company, the authors emphasized the importance of entrepreneurial competencies by stating that it is difficult to develop a competitive scope and organizational performance "without the respective entrepreneurial competencies including relational, innovative, opportunity and human competencies" (Man et al. 2008). In this context, without the demanded set of entrepreneurial competencies, the entrepreneur cannot guarantee the competitiveness and thus the performance of the business

venture. As for, “greater levels of competencies will achieve greater performance outcomes” (Sanchèz 2013).

Serious efforts were demonstrated, in the literature, to define and model entrepreneurial competencies with the aim of providing an exhaustive list of competencies. This interest in competencies arises from the concern about what makes an individual an entrepreneur as well as questioning about the teachability of these competencies. In other terms, scholars were interested in understanding what makes an individual an entrepreneur, how is he able to succeed and is it possible to replicate such curriculum to train individuals into accomplishing a successful entrepreneurial career.

Through the different results of previous researches, it appears to be relevant to consider without a doubt that to guarantee a fruitful entrepreneurial career, it is important for the entrepreneur to be in possession of the right set of competencies. In other words, the right set of entrepreneurial competencies will guarantee to the entrepreneur a greater execution of the entrepreneurial behavior as well as prepare for a greater organizational performance.

Still, is the act of training individuals, according to a generalized set of entrepreneurial competencies, enough to encourage them to pursue an entrepreneurial career? In the next section we will be interested in exploring the impact of acquiring entrepreneurial competencies on the development of the intention to launch a new business venture.

Section II: Entrepreneurial competencies and entrepreneurial intention: a dynamic link

As explained in the previous chapter, entrepreneurial intention is a psychological state and an inner need to launch, create or put in place an entrepreneurial action accompanied with a decision to start it in a defined period of time.

On the other hand, entrepreneurial competencies are a set of behaviors and attitudes, personality traits and knowledge that are oriented toward a specific task of field and necessary for entrepreneurial actions and achievements and strong entrepreneurial characteristics will root the higher competence of the entrepreneur, which will ultimately lead to a higher business performance (Lazar and Paul, 2015).

Both of these concepts are mainly based on individual aspects. In other terms, they emerge and are developed within and through the individual, potential entrepreneur or the owner of a newly launched business venture.

As an expression of interest and encouragement, states around the world included educational programs about entrepreneurship to help young students acquire knowledge about and for entrepreneurship. This effort can be translated into the fact that governments invested in providing students with entrepreneurship training and content for the aim of encouraging them and inciting them into considering entrepreneurship as an alternative career. Such governmental reforms imply that acquiring knowledge and skills about entrepreneurship can lead to a higher number of individuals interested in entrepreneurship and thus, a greater number of companies.

This section will be, thus, dedicated to exploring and studying the possible impact that entrepreneurial competencies have on the development of entrepreneurial intentions of students within an educational context.

1. The dynamic link between acquiring entrepreneurial competencies and the development of entrepreneurial intentions

The literature is somehow limited in this subject in particular, the link between entrepreneurial intention and entrepreneurial competencies has been in fact explored and studied through literature reviews, and researchers tried to confirm the existence of dynamics between both concepts. Still, the relationship has not been proven empirically for the fact that most of conducted researches were limited to treating the subject from a theoretical perspective. Matter of fact, few are the studies that addressed the matter based on empirical surveys (Sanchez,

2011). The latter author has confirmed that the more entrepreneurial competencies are developed, the more individuals are likely to have entrepreneurial intentions, on the other hand, individuals with strong entrepreneurial intentions and with the idea of planning to launch a business venture are more likely to be interested in developing entrepreneurial competencies.

The development of cognitive skills in the entrepreneurship field is more likely to implement and develop intentions towards launching a new business venture. As the cognitive entrepreneurial skills are essential for any individual to become an entrepreneur, they consist of understanding what it is to be an entrepreneur, as it is the first step to start with. Through this reflection operation, the individual prepares himself and gains awareness of the environment in which he will act, the opportunities that are available in the market and the possible threats he or she should avoid (Tsakiridou and Stergiou, 2014).

Matter of fact, the entrepreneurial intention is considered as an entrepreneurial behavior and as a construct of the individual. Thus, studying the link between entrepreneurial intentions and entrepreneurial competencies can be well appreciated if the focus is put on the fact that competencies are conceptualized as encompassing three types of characteristics including traits, skills, and knowledge (Lau et al., 2000 as cited in Sanchèz, 2011). Moreover, it is also important for the individual to be able to identify the key factors leading to effective work and high performance and acquire a great knowledge of market dynamics, team management, and other needed management skills.

Entrepreneurial intention does in fact represent the behavioral aspect of the entrepreneur, the association between entrepreneurial intention and entrepreneurial competencies can be possibly addressed through the application of the theory of planned behavior (Tsakiridou and Stergiou, 2014; Al Mamun et al., 2016).

Peng et al. (2012) posited that entrepreneurial intentions of adults are likely to be predicted by the entrepreneurial competencies in their early ages. In other terms, entrepreneurial intentions are developed through a longitudinal process, may not turn into an immediate decision of launching a new business venture, but can eventually manifest in an entrepreneurial action after a period of time depending on the individual and the context surrounding the emergence of such intentions.

By combining the different points of view of the previously quoted authors, the emergence of entrepreneurial intentions conducts a search of information and thus leading to the accumulation of knowledge and the development of skills and attitudes towards entrepreneurship. This

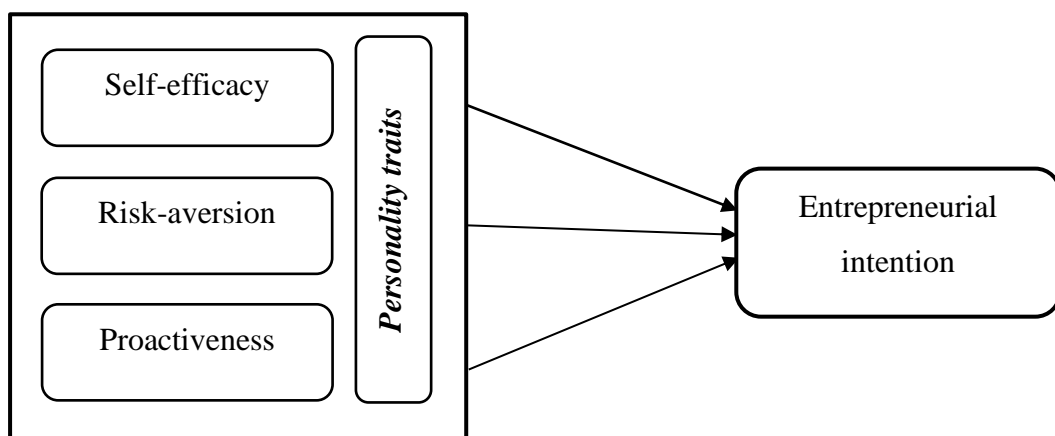
accumulation constitutes a set of specific entrepreneurial competencies. In other terms, an individual who intends to launch a new business venture will be motivated into learning and acquiring competencies related to entrepreneurship.

Still, the link between entrepreneurial intentions and entrepreneurial competencies can only be studied in depth. In other terms, it is important to take into consideration the components of each concept, and determine what influence does each component have on the others.

For this matter, decorticating competencies into their different components and linking them to entrepreneurial intention is necessary. Moreover, it is important to take into consideration that self-employment intention is directly related to personal motives (Boyd et al., 2015) which are referring to career motives and are mainly based on the intent of achieving a certain behavior. Thus, it is an indicator of self-employment. These statements lead to the fact that an individual who chooses entrepreneurship as a career, and acts on launching a new business venture is creating a source of employment for himself.

According to Sanchèz (2011) and as seen in the figure below, entrepreneurial intention is mainly influenced by three variables that are tightly linked to entrepreneurial competencies acquisition and development;

Figure 10: Entrepreneurial intentions and personality traits



(Source: Sanchèz 2011)

**Self-efficacy:* Self-efficacy appears as an important component of personality traits, as it is linked to perceived behavioral control of Ajzen’s (1991) theory of planned behavior, and to perceived feasibility in Shapero’s model (1982) (Sanchèz 2011). In the same context, Krueger et al. (2000, p.386) considered perceived self-efficacy factor as a determinant of intentions. Matter of fact, they defined self-efficacy as being one’s “own perceptions of a situation and

perceived competence to control processes and outcomes in that situation, especially where performance requires persistence”. Krueger et al. (2000) also added that, how individuals think and behave is linked far more closely to their own perceptions of the reality they are living as well as their perception of their own abilities and the control they have over themselves as well as the environment they are acting in.

Bandura (2001) added that when faced with obstacles or setbacks, those with a strong belief in their capabilities would redouble their efforts to master the challenge and this is what explains the importance of self-efficacy. In the same context and according to the social cognitive learning theory, individuals are responsible for the regulation of their own motivation, thoughts and behaviors. The latter theory offers a comprehensive structure that treats competencies' growth, learning and self-efficacy and their direct influence on the regulation of their behaviors (Wahab et al. 2015).

**Proactiveness:* According to Sanchèz (2011), an individual is described as a proactive person if he is able to identify opportunities, seize them and transform them into action. Many other components of Proactiveness occur and are as important, such as initiative, taking direct action and perseverance to achieve a specific objective or a change. Non-proactive individuals, on the other hand, face failure when trying to identify opportunities or act on them. Proactiveness is mainly based on the anticipation and the prevention of problems way before they do occur and the “orientation to action that includes a creative interpretation of norms and a high level of persistence and patience for bringing about change”.

**Risk aversion:* it is a factor related to cultural beliefs. Through literature, it has been proven that individuals living in countries where culture is more open and with encouraging policies and investment incentives are more likely to engage in entrepreneurial careers.

Since risk aversion is directly related to the culture of the country where the individual grows or lives, as it does have an influence on the entrepreneur's intention and can exert an important impact on entrepreneurial intentions through perceived feasibility and perceived desirability (Sajjad et al. 2012).

In the same context, risk taking is considered as one of the key competencies to enable an entrepreneur to achieve higher performance. Matter of fact, risk-taking is included in the conceptual competencies' framework, which encompasses the possession of cognitive ability and decision-making skills, the ability to predict and weight risks, the analytic thinking and the capacity to reduce and avoid risks (Seabela et al., 2014).

According to the research conducted by Al Mamun et al. (2016), identifying factors such as risk-taking propensity, training and skills, opportunity recognition competencies, innovativeness, and information-seeking competencies lead to the evaluation of the impact of these competencies on students' entrepreneurial intention. For the matter, it is relevant to define each competency.

**Opportunity recognition competencies:* Al Mamun et al. (2016) stated that one of the important competencies is opportunity seeking and recognition as it was long considered as a fundamental factor in entrepreneurship. In other terms, an individual who is able to seek and recognize business opportunities in the market is more likely to choose entrepreneurship as a professional career. Matter of fact, to seek, identify and exploit opportunities is one of the first abilities to be identified in the literature when defining the entrepreneur. As Cantillon (1755 as cited in Fillion, 1997), explained that the entrepreneur is “a man seeking business opportunities, with a concern for shrewd, economic management and obtaining optimal yields on invested capital”, Shane and Venkataraman (2000) defined him as an individual capable of discovering and exploiting an existing entrepreneurial opportunity. Similar definitions are existent in the literature, which leads to considering that for an individual to become an entrepreneur, he has to be able to seek, recognize and exploit opportunities that exist on the market.

**Training and skills:* training and skills have a significant positive effect on entrepreneurial intention. In this context, Al Mamun et al. (2016) stated that students with prior exposure to entrepreneurship are more likely to be entrepreneurs. In other terms, students who had training sessions or attended entrepreneurship programs will gain a greater knowledge about entrepreneurship and acquire a greater set of skills while students with no prior exposure to entrepreneurial activities or programs would not, adding that the acquisition of skills and resources lead necessary to choosing entrepreneurship as a future career. Taking into account the main objective behind entrepreneurship education, which is providing students with knowledge and skills for and about entrepreneurship and encouraging them towards considering entrepreneurship as an alternative career, entrepreneurship education provides students with the latter component of competencies. Matter of fact, training and skills, thus, allows them with the acquired exposure to entrepreneurship leading them to have greater likelihood to become entrepreneurs.

In the same context, Ahmed et al. (2010, p.19) argue that prior exposure to an entrepreneurial environment makes the individual more likely to pursue an entrepreneurial career. In their own words, “students with entrepreneurial experience, whether their self-experience or their family

experience, are more inclined towards entrepreneurial career”. This explains that individuals who have been exposed to entrepreneurial activities as a personal experience or as part of their family’s background tend to prefer entrepreneurship as a career. Thus, individuals with prior exposure to entrepreneurial activities are more likely to acquire knowledge about the market functioning and trends as well as being able to identify opportunities and understand how a business venture works. Matter of fact, the literature sustains that the lack of education will lead to a lack of management skills, marketing skills and innovations skills, which will ultimately lead to a difficulty in running a business in a sustainable way. Thus, acquiring knowledge about entrepreneurship or growing in an entrepreneurial environment is a key determinant of the desire and the intention to launch a new business venture. In the same perspective, the link existing between entrepreneurial intention and entrepreneurial competencies can be reinforced through education (Koe 2016).

**Information seeking competencies:* An individual who intent to become an entrepreneur must be able to seek and collect information as he must know himself, his competitors, tendencies on the market and all the information required for the functioning of the company as well as for solving problems. On the other hand, opportunities are created through research and accumulation of information (Fayolle and Verstraete 2005). In other terms, one cannot seize business opportunities without a process of research and collection of information.

Al Mamun et al. (2016) argue that since internet is nowadays available and affordable, acquiring information is accessible to all, thus students are able to seek and collect information online about the business which allows them to acquire wider knowledge and leads them to be involved in business creation.

**Innovativeness:* according to the Schumpeterian perspective, the entrepreneur must be in the service of innovation. Matter of fact, Schumpeter was the first researcher to offer such interest to innovativeness, as he presented the function and role of entrepreneurs as reforming or revolutionizing productive processes. This revolutionizing is either through inventions, using “untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on” (Schumpeter, 2008).

Moreover, innovativeness is considered as a personality trait linked to the acceptance of change and is defined as “the capacity and tendency to purchase new products and services. (Foxall 1984 as cited in Kamaruddeen et al., 2010). Such competency is crucial for entrepreneurs

nowadays, as all the components of the environment experience a mutual and rapid change. While customers develop new needs, technologies are in rapid evolution and governments adapt laws to the changing reality, the entrepreneur must be able to innovate and to hold a great acceptance for change. It is nonetheless important to quote that innovation and innovativeness, as they may lead to confusion, do not express the same thing. In fact, innovation is the act using what is already available, subject it to new combinations and new transformation processes to create new and different products and services and it helps the organization in evolving and adapting to the environment to meet the consciously changing environment. Innovativeness on the other hand, is being able to adapt and the extent to which an individual is likely to accept and adopt the products of innovation.

Risk-taking propensity: Al Mamun et al. (2016) defined risk-taking propensity as the individual's tendency to take risk or to avoid it.

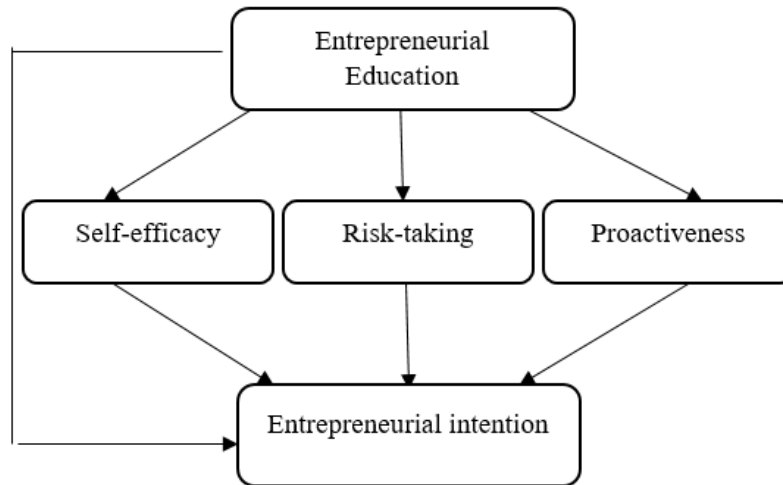
2. Assessing the impact of entrepreneurial competencies on entrepreneurial intentions within an educational context

Koe (2016) stated that various studies did recognize that entrepreneurship education plays an important role in the development of the entrepreneurial intention and that is understandable for the fact that entrepreneurial education is “important in building up university students' personal entrepreneurial skills and equipping them with the required entrepreneurial competencies, such as innovativeness and risk-taking” (Koe, 2016, p.2).

According to the latter quote, the author demonstrated that entrepreneurship education offers to students the necessary means to develop the intention to launch a new business venture, and that is through developing the required competencies to pursue an entrepreneurial career.

Sanchez's (2013) study supported the previous perspective by confirming that the relationship between entrepreneurial intention and entrepreneurial competencies can be moderated by entrepreneurial education. Matter of fact, the research proved that entrepreneurship education has a significantly positive impact on the development of a number of entrepreneurship-related competencies and intention. Thus, the latter author presented a dynamic of influence between entrepreneurship education, entrepreneurial competencies and entrepreneurial intention.

Figure 11: Impact of entrepreneurship education on entrepreneurial intentions and competencies



(Source: Sanchèz 2013)

According to the dynamic presented above, Sanchèz (2013) explained that entrepreneurial education has an influence on self-efficacy, proactiveness and risk-taking, which will respectively have an impact on the development of the entrepreneurial intention.

In the same context the author posited that students that are exposed to an entrepreneurial program or training have higher levels of self-efficacy, proactiveness and risk-taking which lets them develop a greater and higher entrepreneurial intention. By the latter explanation, the author concluded that entrepreneurship education provides a great improvement in both entrepreneurial intentions and competencies and that by developing entrepreneurial competencies necessarily leading to higher intentions to start a new business venture.

The literature supports the idea that entrepreneurial education has a direct effect on the intention of launching a new venture as well as offering more chances for potential entrepreneurs to reinforce their willingness to pursue an entrepreneurial career. Matter of fact, it is well seen that the aim of entrepreneurial education is to encourage the course participants to consider entrepreneurship as an alternative career. Still, it is very relevant to take into account the different point of views developed in the literature. To support this matter, Noel (2001) explained that students graduating in entrepreneurship presented a higher entrepreneurial intention and self-efficacy levels then graduating in a different discipline.

When revisiting the literature about the effective impact of entrepreneurship education, most of the conducted studies, such as Linan (2004), assess the latter impact in terms of entrepreneurial

intention. Matter of fact, the majority of the surveys are based upon a comparison between an initial state, which is before the entrepreneurship program, and the final state which is the after. The assessment is considered based on the variation of entrepreneurial intention and its antecedents (Fayolle et al., 2006). In fact, many researchers such as Linan (2004, 2007), Fayolle et al. (2006), Zhang (2013), Dehghanpour (2013) and Shima et al. (2019), conducted surveys as well as longitudinal studies that sustained the matter. Fayolle et al. (2006) suggested that the most important issue in entrepreneurship education is related to the extent to which entrepreneurship teaching programs do influence attitudes towards the entrepreneurial intention and the entrepreneurial behavior.

In order to respond to this need of measuring entrepreneurial intention as well as evaluating the impact of entrepreneurship education programs, an important focus was directed to the use of intention models. Entrepreneurship education programs have an impact on the antecedents of entrepreneurial intention and can be evaluated and designed according to their impact on the student's attitudes, perceptions and intentions towards the entrepreneurial behavior, in particular its desirability and feasibility (Linan, 2008).

The most used theories in assessing the effectiveness of entrepreneurship education are the theory of planned behavior by Ajzen and Shapero's model of the entrepreneurial event applied to the context of entrepreneurial intention. In the same context, Souitaris et al. (2007) proceeded to the assessment of entrepreneurship education effectiveness through its impact on entrepreneurial self-efficacy, entrepreneurial attitude, entrepreneurial intention and the outcomes of the learning process. In both models, entrepreneurial intention is measured in terms of desirability and feasibility.

The wide use of these latter theories did present various reactions as, some authors presented different impacts and divergent results from their studies. Other authors, such as Kamovich and Foss (2017), discussed the fact that it is not relevant to assess the effectiveness of entrepreneurship education only through its usual outcomes that are always related to entrepreneurial intentions without paying attention to the characteristics of the entrepreneurial program in question. They quoted that "the authors' choice of the impact measures converged toward entrepreneurial intentions, making intentions a prevalent outcome for individuals", as they omit the importance of its formation as a legitimate outcome.

3. Conclusions from previous studies

According to Remeikiene et al. (2013), entrepreneurial intentions are mainly influenced by personality traits as self-efficacy, risk-taking, need for achievement, attitude towards entrepreneurship, behavioral control, internal locus of control and Proactiveness. They explained that the impact of these personality traits on entrepreneurial intention could be reinforced through education. For Krueger and Brazeal (1994 as cited in Souitaris 2007) entrepreneurship education provides students with knowledge about entrepreneurship which improves the perceived feasibility for entrepreneurship, builds confidence and promotes self-efficacy. Its impact on perceived desirability for entrepreneurship is mainly based on presenting entrepreneurship as a highly regarded activity that is accepted and encouraged on the social level, and rewarding on the individual level.

As the majority of studies found that entrepreneurship education programs have a positive impact on the development of entrepreneurial intention, it is relevant to pay attention to what made other studies fail in proving this positive impact and present a neutral or negative effect.

In their study, Lorz et al. (2013) assessed the matter through a rigorous review of impact studies in which their results revealed that almost 70% of the studies showed a positive impact of entrepreneurship education programs on entrepreneurial intention, attitudes and knowledge, while 30% showed either negative, non-significant or contingent and unclear results. The results are presented in the following table:

Table 6: Results of the impact studies

Dependent variables	Intention	Skills and knowledge	Attitudes and perception	Nascence and Performance	Other outcome variable	Sum
Positive	7	12	19	21	6	65
Negative	2	1	0	0	0	3
Not significant	0	2	11	5	2	20
Contingent	1	0	1	0	1	3
Unclear	0	1	0	0	1	2
Sum	10	16	31	26	10	93

(Source: Lorz et al., 2013)

According to the data presented in the table above, from ten studies including intention, seven studies showed a positive impact while three showed a negative and contingent impact. This slight difference in results deserves to be explained as the matter is presented in the same way by all the authors, which is assessing the effectiveness and impact of entrepreneurial education. The two studies that showed a negative impact on entrepreneurial intention are from Oosterbeek et al. (2010) and Von Graevenitz et al. (2010). While Radu and Loué's (2008) study showed a contingent impact, as prior exposure plays a significant role in developing entrepreneurial intention (Lorz et al., 2013).

As a matter of fact, the research proceeded by Zhang et al. (2013) showed that variation in results can be explained by considering three important variables that are: the type of university, the study major and the gender of the participants. The latter authors did in fact find that entrepreneurship education has a positive and direct impact on entrepreneurial intention questioning the assumptions that the relationship between the latter variables is indirect. On the other hand, a surprising result emerged from the latter study, as prior exposure, presented from Radu and Loué (2008) as playing a significant role in developing entrepreneurial intention, turns out to have a significant negative impact.

To explain the negative impact that entrepreneurship education can have on the participants' intentions, Oosterbeek et al. (2010) explained that during an entrepreneurship program, students are more likely to acquire a realistic view on the requirements to be an entrepreneur. They explained the resignation by the fact that "participants might have lost their (over-)optimism and this may have caused a lower interest in entrepreneurship" (Oosterbeek et al. 2010, p.452). Another reason that the latter authors presented, is that the participation in entrepreneurship teaching programs is compulsory, thus students are asked to participate and put efforts that exceed the credits they will eventually earn at the end of the course.

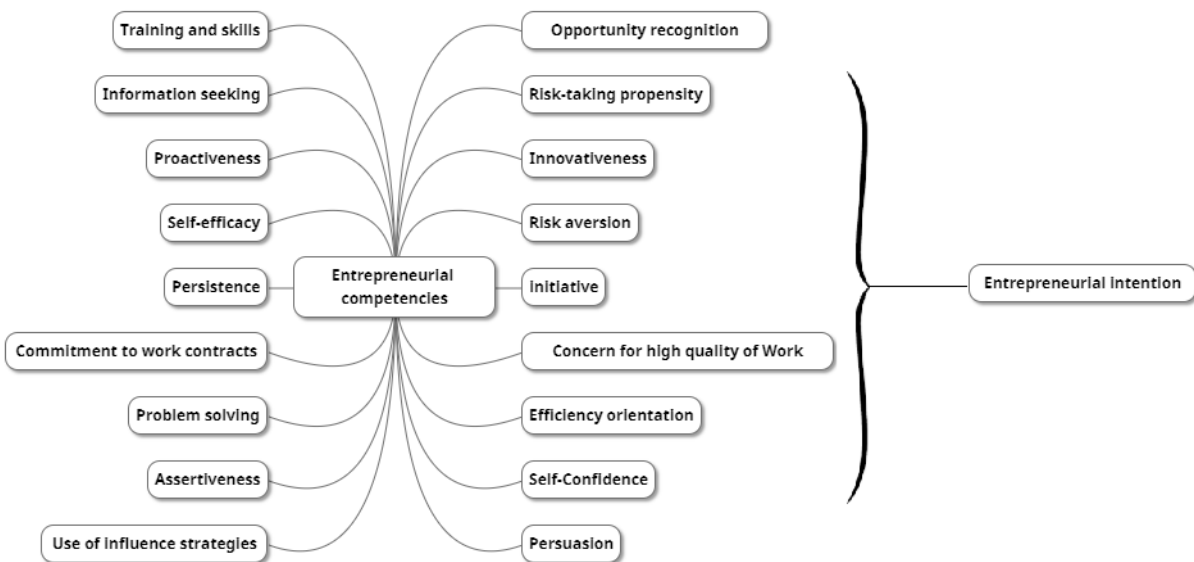
The argument upon the compulsory aspect of university entrepreneurship programs does in fact explain some behaviors post-program, as the intention is not as developed as the educational program aimed. In this context, it is very relevant to pay attention to the concept of deliberate practice. Matter of fact, individuals do not automatically show high levels of performance in a given domain according to their extended experience, but do increase their performance levels as a result of deliberate efforts to improve (Ericsson et al., 1993). Frese (2009) supported this point of view, as he applied the concept of deliberate practice to entrepreneurship. He stated that to pursue an active approach of learning in entrepreneurship is relevant to pay attention to the concept of deliberate practice, as it is an "individualized self-regulated and effortful

activities aimed at improving one’s current performance level”. Frese (2009) added that the latter concept suggests that individuals show higher levels of efforts, deep thinking and practice to acquire higher expertise. Thus, “deliberate practice is, indeed, predictive of entrepreneurial success” (Unger et al. 2009a as cited in Frese 2009), as individuals put more effort in learning and exercising their new skills and have the will and desire to acquire expertise.

It is, however, important to state that even though in some cases education do not have a positive impact on the entrepreneurial intention, it does play an important role in improving students’ entrepreneurial knowledge. Entrepreneurship education has, in fact, a significant positive impact on their entrepreneurial skills (Graevenitz et al., 2010) as it provides them with knowledge and activities meant to convert them into entrepreneurs.

The variation in the results within the literature is thus due to various reasons such as, the methods used, the sampling process, the type of university, the duration of the program and if the participation in the program is deliberate or compulsory.

Figure 12: Map of the different competencies related to entrepreneurship in the literature



Entrepreneurial intentions represent the behavioral aspect of the entrepreneur. It translates the desire to pursue an entrepreneurial action and internal decision to launch a new business venture. Entrepreneurial competencies are, on the other hand, a set of personal attributes tightly linked to the individual’s capacity to attain performance through the skills and knowledge he gained and the personal characteristics he has. Besides, entrepreneurial competencies are

essential to start a business, and provided a comparison between entrepreneurial competencies and managerial skills.

The two concepts are internal and specific to the individual's dimension and the impact that entrepreneurial competencies exert on the development of the entrepreneurial intention is contextualized, in the literature, by entrepreneurship education. Matter of fact, the main objective of entrepreneurship education programs is to provide students with the skills and knowledge required to pursue an entrepreneurial career, thus, entrepreneurship education provides a solid framework for studying the impact of entrepreneurial competencies on entrepreneurial intentions.

The role that entrepreneurship education plays in promoting entrepreneurship through raising awareness for and about entrepreneurship is what allowed it to be the center of interest in the literature as well as policy makers. Matter of fact, governments believe that promoting entrepreneurship through education leads to a higher rate of entrepreneurship and thus a rise in taxable incomes.

The literature, in this context, did support this impact as various authors proved that the development of entrepreneurial competencies, through entrepreneurship education programs, leads students to perceive entrepreneurship as a career and thus to develop the intention to launch a new business venture. As acquiring entrepreneurial competencies such as opportunity identification, information seeking, training skills and proactiveness, allows the individual to have a positive perception of his capability to launch a new business venture. In terms of the theory of planned behavior entrepreneurial, entrepreneurial knowledge increases the levels of perceived feasibility and perceived desirability.

Conclusion

Entrepreneurial competencies are the motor of the entrepreneurial behavior; they are not fixed traits, but they can be developed, changed and updated according to the entrepreneur needs and the company's requirements. In fact, they "enable behaviors of different qualities, but they are not behavior themselves", in a way that entrepreneurs have to "shift from deploying existing competencies to developing new ones in response to market conditions" (Volery et al., 2015, p.125).

Entrepreneurial intentions, on the other hand, are defined as a set of inner and personal factors that drives an individual to engage in an entrepreneurial action. The intention to create a business has always been considered as an important antecedent of actual efforts to start a business. Thus, it is possible to say that, the intention is the desire to act and the competencies are the tools allowing the effective initiation and continuity of the action. The latter tools are related to who the individual is, what he is capable to do through the acquired knowledge and skills, and how he perceives himself and his capacities.

It is relevant to quote that despite the richness of the literature regarding both concepts, the impact that competencies have on entrepreneurial intentions is still open to exploration. Matter of fact, and according to Bird (1992), numerous factors determine the choice to engage in an action and adopt a certain behavior, these factors such as beliefs, needs, habits and values appears at the individual level.

One of these factors is the development of cognitive skills in the entrepreneurship field as it is more likely to implement and higher intentions towards launching a new business venture. As the cognitive entrepreneurial skills are essential for any individual to become an entrepreneur, they consist of understanding what it is to be an entrepreneur, as it is the first step to start with. Through this reflexive operation, the individual prepares himself and gains awareness of the environment in which he will act, the opportunities that are available in the market and the possible threats he should avoid (Tsakiridou and Stergiou, 2014).

Thus, cognitive skills can play a crucial role in translating the intentions into effective actions as well as they can determine the proper individual's perception of himself, the environment and the objectives he is willing to fulfill. For this matter, it is relevant to take into consideration the cognitive dimension as it is, in an educational context, a key factor to explain why some students become entrepreneurs while others do not.

Chapter III:
**The role of cognitive adaptability
in the relationship between
entrepreneurial competencies and
entrepreneurial intention**

Introduction

Entrepreneurship is considered as one of the key development initiatives that lead to employment and therefore, reduce poverty and inequality (Al Mamun et al., 2016). Thus, the impact of entrepreneurship is measured through various dimensions, as “the actions associated with entrepreneurship can have a substantial impact on the individual taking the actions, the economy, communities, the environment and society as a whole” (Shepherd and Patzelt, 2018, p.1).

To date, psychologists have attempted to understand and define the factors that predispose individuals to embark on entrepreneurial careers, focusing primarily on the personality traits of entrepreneurs. However, entrepreneurial research from a cognitive psychological framework has been limited (Amanjee et al., 2006).

Integrating the metacognitive approach in the explanation of the relationship between entrepreneurial competencies and entrepreneurial intention can be extremely relevant. As Haynie and Shepherd (2009, p.695) quoted, scholars in the field of entrepreneurship widely suggested that cognition research “can serve as a process lens through which to reexamine the people side of entrepreneurship by investigating the memory, learning, problem identification, and decision-making abilities of entrepreneurs”. In fact, Individual differences in cognitive style and emotional range, important to the bucketing or pacing decisions, relate to the entrepreneur’s learning style or problem-solving style (Kolb, 1984 as cited in Brid, 1992).

In this chapter, we will try to define, in a first section, the various concepts related to entrepreneurial cognitions, metacognition and cognitive adaptability going through a review of the literature available on the matter. In a second section, we will be interested in exploring the role of cognitive adaptability in the impact that entrepreneurial competencies can have on entrepreneurial intentions.

Section I: Cognitive adaptability

In the terms of Sánchez et al. (2011), entrepreneurial cognition is a productive field of research that shows an important potential even though it received little attention in the literature. Matter of fact, the authors explained that the cognitive approach is interested in studying and explaining the behavior of entrepreneurs using the cognitive aspects that control opportunity identification for both the creation and growth of business.

In the same context, Mitchell et al. (2002) explained that the cognitive approach describes entrepreneurship as a way of thinking, for the fact that entrepreneurial cognitions “have been shown to be useful in explaining differentiation between entrepreneurs and non-entrepreneurs” (Mitchell et al. 2002, p.94).

Taking into account the crucial aspect of adaptive behaviors in entrepreneurship, cognitive adaptability appears to be as a key resource in the entrepreneurial task. In fact, such resource seems to be important when it comes to the continuously changing reality of entrepreneurship. In this section, we will be interested in defining entrepreneurial cognitions and metacognitions as a theoretical base leading to correctly defining cognitive adaptability. Thus, responding to the following questions: *What are entrepreneurial cognitions? How is metacognition defined in the literature? What is cognitive adaptability?*

1. Cognition and metacognition

The relevance of entrepreneurial cognitions appears in the fact that, aside from explaining in depth the differences between entrepreneurs and non-entrepreneurs, it is also interested in clarifying the thinking pattern of entrepreneurs, their knowledge structures but also determine the decision-making process of launching a new business venture.

For the matter, entrepreneurial cognitions is presented as a crucial lens to look from when it comes to explaining how individuals become entrepreneurs through decorticating their thinking patterns.

1.1. Entrepreneurial cognitions

Cognitive psychology is a branch of psychology related to studying the mental processes of individuals, taking into account their interactions with others and the environment as a context to the execution of these mental processes and interactions. In the terms of Sanchez et al. (2011), cognitive psychology “is not only an aid to understanding individuals and their behaviors, considering their mental processes when they interact with other people, but also addresses the environment in which these mental processes and interactions take place”. Matter of fact, “The

central premise of the cognitive perspective is that entrepreneurial behavior emerges as a result of the entrepreneur's underlying cognitions" (Urban 2012). It was, thus, presented as a solution to fill the gap that was created by the failure of personality trait based approaches in studying entrepreneurship. Matter of fact, metacognition "represents a dynamic process, rather than a static trait [...] and it can be developed through training" (Haynie et al. 2010).

As the personality trait based approach did not hold the explanatory power, neither did it offer a possibility of generalization, (Mitchell et al. 2002), entrepreneurial cognition, on the other hand, came to represent an alternative approach allowing a deeper understanding and explanation of why some individuals become entrepreneurs while others do not or will not.

Bandura, a famous American psychologist, was widely known for the foundation of the socio-cognitivist theoretical current. The theory he constructed puts the individual in the center of the interaction between key factors that are behavioral, contextual and cognitive.

In his terms, Bandura (1989) explained that since the influence between behavior and environmental circumstances is bi-directional, people are considered being both products and producers of their own environments. He added that individuals "affect the nature of their experienced environment through selection and creation of situations" (Bandura 1989) and that people's preferences and competencies condition the selection of their activities and associates. In the same context, authors such as Lauriol (1996) supported the latter idea explaining that individuals are social subjects that are products and producers of their environment. He added that the socio-cognitive approach known as cognitive social psychology is centered on the fact that cognition is purely social and that the process of production of knowledge as a whole is "intrinsically, inevitably and deeply social" (Lauriol 1996).

Sánchez et al. (2011) used the term *cognitive style* in their research as it characterizes a specific way of processing information directly related to the entrepreneurial behavior. Matter of fact, this perspective is based on the idea that the individual thoughts, words and actions are influenced and monitored by a set of cognitive processes allowing him or her the acquisition, use and processing of information.

From the latter, it is possible to posit that the cognitive style characterizing the entrepreneurial behavior is a possible response to the dilemma concerning why individuals are entrepreneurs while others are not. The main response remains in the fact that entrepreneurs process information and think differently compared to non-entrepreneurs. Following the contextualization above, it is relevant to go through different definitions of cognition in the literature.

In the terms of Pawlik and Ydewalle (2006), there are two different uses of the term cognition

as it can mean both the act of knowing and that which is known. The first is related to the process of knowing as practiced by human beings and animals (with reference to Aristotle) including reasoning, awareness and perception. The second use is more related to the product, explained by the latter authors as “mental representations that surface to consciousness when we perceive, reason, or form mental images”. In other terms, it is the product obtained from the mental process of reasoning, intuition or perception.

Through the definition above, it is relevant to say that cognition represents all the mental processes and activities related to acquiring, storing and reflecting upon knowledge.

Neisser (1967), considered as the father of cognitive psychology, refers to cognition as the set of “all the processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used”. He added that even though the latter process do operate without any specific stimulation as in cases of images or hallucinations, “terms as sensation, perception, imagery, retention, recall, problem- solving, and thinking, among many others, refer to hypothetical stages or aspects of cognition” (Neisser, 1967, p.4).

In the terms of the latter author, cognition can be defined as a mental process of knowledge acquisition. Matter of fact, cognition intervenes and is involved in everything a human being can do as it guides processes as knowledge, evaluation, problem solving and production of language.

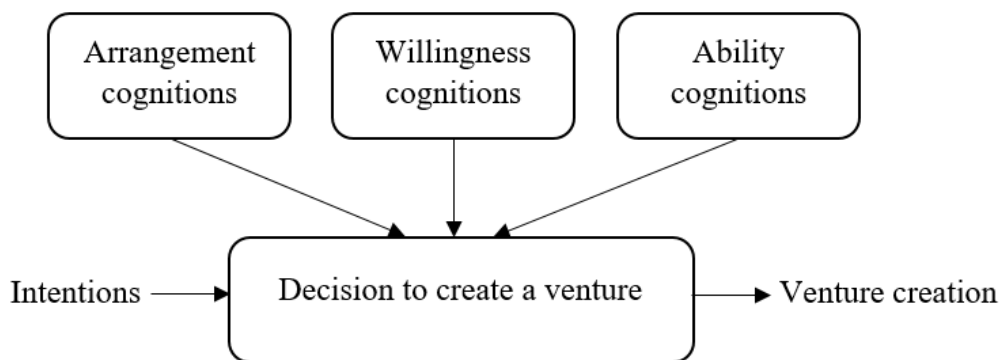
Mitchell et al. (2002, p.97) defined entrepreneurial cognitions as “the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation and growth”. In other words, entrepreneurial cognitions are involved in every step of the entrepreneurial process and allow understanding the mental models that entrepreneurs use to identify opportunities, invent and create new products, identify and collect the resources they need to start a new business venture, as well as, guaranteeing its viability. Moreover, and in the terms of Urban (2012, p.204), the entrepreneurial cognitions’ perspective “allows researchers to help understand how entrepreneurs think and why they do some of the things they do”, thus entrepreneurial cognitions are a means to understand in depth how entrepreneurs function and why they function in a certain way.

From the above, entrepreneurial cognitions seem to be a relevant approach to understand how individuals process their ideas and launch the entrepreneurial process from the individual’s dimension. Matter of fact, Bajwa et al. (2017, p.3) supported this argument by quoting that “understanding entrepreneurial cognition becomes essential to explore the essence of entrepreneurship”, thus, using the cognitive approach helps understand better the entrepreneurial process as well as what really happens at the level of the individual who is

pursuing it.

Krueger et al. (2000, p.415) added in this matter that, “career choices and related phenomena have been demonstrated, both theoretically and empirically, to be cognitive in nature”. In their terms, decisions related to career choices involve a process combining a set of attitudes, beliefs and intentions that undergo an evolution through the effective processing of one’s experiences, knowledge and beliefs.

Figure 13: The role of cognitions in the venture creation decision according to Mitchell et al. (2000)



With the aim of setting a link between entrepreneurial cognitions and venture-creation decisions, Mitchell et al. (2000), and as seen in the figure above, explained that cognitions intervene in the process of transforming the entrepreneurial intention into an action, thus into a new venture creation. In fact, they posited that three sets of cognitions determine the decision to launch a new business venture, which are arrangement cognitions, willingness cognitions and ability cognitions respectively defined below;

**Arrangement cognitions:* defined as a set of mental maps or scripts encompassing the necessary assets to fulfill an entrepreneurial activity as well as the resources and relational network that one may need to pursue for the latter activity. Thus, it is a set of social network and acquaintances added to effective resources necessary to partake in an entrepreneurial action (Mitchell et al., 2000).

Urban (2008, p.24) defined the latter scripts as “the knowledge structures that individuals have about the use of specific arrangements that support their performance and expert-level mastery in a given domain”. He added that the individual who is in the process of making a venture creation decision would be using arrangement scripts related to the resources allowing such process such as venturing network and resources assessment.

**Willingness cognitions:* defined as the set of mental maps supporting venturing commitment and the receptivity to engage in a venture creation process as well as opportunity seeking and venture opportunity pursuit (Mitchell et al., 2000; Urban, 2008). Moreover, willingness scripts allow entrepreneurs to “experience less risk than non-entrepreneurs because these scripts reduce uncertainty” (Urban, 2008, p.24). Referring to Mitchell et al. (2000), the latter author pointed that entrepreneurs are expected to develop these scripts more highly than non-entrepreneur, which allows them to be more likely to be open, constantly searching for opportunity and the creation of new and challenging situations and their absence will eventually inhibit the motivation and commitment towards new venture creation decision.

**Ability cognitions:* defined as the knowledge structures and scripts that will support the individual’s skills, attitudes, knowledge and capabilities that are necessary for the new venture creation (Mitchell et al., 2000). Urban (2008) presented three types of ability cognitions, which are venture diagnostic scripts, situational knowledge scripts and ability-opportunity-fit scripts. In his terms, they are respectively defined as, firstly, “the ability to assess the condition and potential of ventures and to understand the systematic elements involved in their creation” (Urban, 2008, p.24), thus the individual’s ability to properly evaluate the opportunity and prepare the resources that are required for the venture creation. Secondly, Situational knowledge scripts describe the individual’s ability to “draw on lessons learned in a variety of ventures and apply those lessons to a specific situation” (Urban, 2008, p.24), thus recalling various past experiences as well as heard situational scenarios and apply them according to the situation. Finally, ability-opportunity-fit scripts are related to the individual’s ability to “see ways in which customer and venture value can be created in new combinations of people, materials or products”, thus creating value through matching one’s capabilities with the opportunity. (Urban 2008, p.24)

All the above being said, it is relevant to quote that cognitions were presented as important and that it is necessary to “open the cognitive ‘black box’ and try to understand the cognitive processes inside” (Krueger et al., 2000, p.426). In the same context, it is equally important to define metacognition as it provides the individual with the ability to manipulate cognition elements in order to achieve control over it (Lima Filho and Bruni, 2017).

1.2. Defining metacognition

The relevance in defining metacognition before looking into cognitive adaptability remains in the fact that “metacognitive awareness represents a bridge to cognitive adaptability” (Shepherd and Patzelt 2018), as well as the importance of metacognition as a thought processing action allowing the manipulation and control of cognition elements (Lima Filho and Bruni, 2017).

Botha and Bignotti (2017, p.5) explained the latter perspective, by quoting that “a clear understanding of metacognition should be displayed prior to the derivation of cognitive adaptability”.

Matter of fact, Botha and Bignotti (2017), with reference to Flavell (1979), describe metacognition as the process through which regulation influences the development and generation of new sense making structures as a function of the changing environment.

More specifically, metacognition describes high-level cognitive processes that individuals have as a basis, allowing them to recognize themselves, organize what they know, various situations and tasks as well as their environment promoting by such an effective cognitive function and adaptability when facing the environment often complex and dynamic (Marhaini et al., 2015). In the same context, Haynie and Shepherd (2009), who consider metacognition as a higher-order as well, explained that it “serves to organize what individuals know and recognize about themselves, tasks, situations and their environments in order to promote effective and adaptable cognitive functioning in the face of feedback from complex and dynamic environments” (Haynie and Shepherd, 2009, p.696). Referring to Flavell (1987), the latter authors posited that metacognition is defined as a process that involves self-regulation, “but yet advances regulation to also describe the process through which regulation informs the development and generation of new sense-making structures as a function of a changing environment” (Haynie and Shepherd, 2009, p.696). Thus, metacognition can be synthesized as “knowing about knowing” (Haynie and Shepherd, 2009).

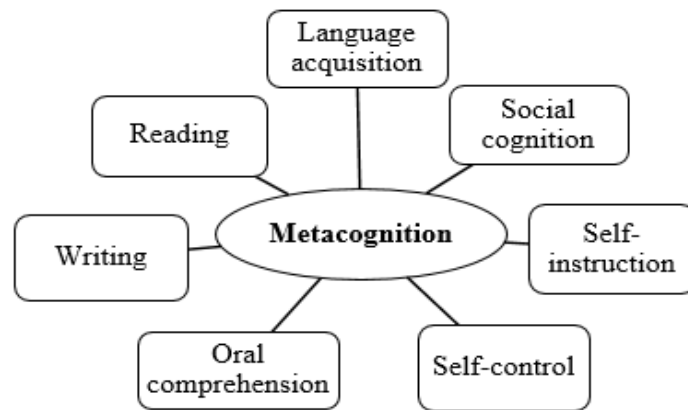
Extrapolating the literature, two pioneering models have been presented as a reference in studying metacognition; Flavell’s (1997) cognitive monitoring model and Brown’s (1987) metacognition model.

Focusing on Flavell’s (1979) perspective, he was interested in cognitive monitoring as his research was based on understanding why young children were limited in their cognition about cognitive phenomena and do little monitoring of their memory.

This interest emerged from the fact that metacognition was directly related to language acquisition, social cognition, self-instruction and self-control as well as oral comprehension, reading and writing. In other terms, metacognition is tightly related to the capacity of understanding, acquiring knowledge and every mental action responsible for the development of individuals.

This being said, it explains the interest given to metacognition by diverse disciplines as personality development, education, social learning theory and many others.

Figure 14: important functions of metacognition



Flavell (1979, p.906) quoted that “monitoring cognitive enterprises occurs through four classes of phenomena” linked to the metacognitive dimension which are metacognitive knowledge, metacognitive experience, goals and actions. The author stressed the fact that these four classes of phenomena are in constant action and interaction and defined each as following:

**Metacognitive knowledge:* it refers to a segment of world knowledge and beliefs that have “to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions, and experiences” (Flavell, 1979, p.906). In fact, and in the terms of the latter author, metacognitive knowledge is related to one’s knowledge about the variables that are in direct action and interaction and affecting by such the course and outcome of one’s cognitive enterprises.

In his model of cognitive monitoring, Flavell (1979) divided the latter variables into three major categories that are person knowledge, task knowledge and strategy knowledge.

Person knowledge, according to Flavell (1979), refers to the set of beliefs that one has about the nature of himself as well as others around him as cognitive processors. Vandergrift et al. (2006) defined person knowledge as referring to the individual’s judgment of his learning abilities and the various internal and external factors that could affect its success or failure. They added that it also encompasses the individual’s general knowledge about human organisms. Flavell (1979) further subcategorized person knowledge into three categories that are beliefs about intra-individual differences, inter-individual differences and universals of cognition.

Task knowledge on the other hand refers to the set of information that are available to the individual during a cognitive enterprise. It focuses on the individual’s understanding of the information variation and its impact on the management of the cognitive enterprise and the achievement of its goal (Flavell 1979). For the author, the variation when it comes to the availability of information remains in the fact that it “could be abundant or meager, familiar or

unfamiliar, redundant or densely packed, well or poorly organized, delivered in this manner or at that pace, interesting or dull, trustworthy or untrustworthy, and so on.” (Flavell 1979) explained that each variation could lead to a different management method of the cognitive enterprise as well as a different strategy to fulfill its goal.

Moreover, it refers to the knowledge that learners have about the purpose, nature, and demands of learning tasks (Vandergrift et al., 2006). Matter of fact, Vandergrift et al. (2006) added that it encompasses one’s knowledge of how difficult the task is, as well as the differences of the level of difficulty between two tasks, which allows the individual to consider the various factors that make a task considered as difficult.

Finally, strategy knowledge is concerned the knowledge one has on which strategy is more likely to be effective in goals’ achievement (Flavell, 1979). For Vandergrift et al. (2006), strategy knowledge is crucial for achieving learning goals and has a great impact, as it is the knowledge that a learner has about the use of strategies and the achievement of cognitive goals. Thus, it appears to be extremely useful when it comes to allowing the learner to make choices about the use and preference of strategies.

**Metacognitive experience:* defined as any shape of cognitive or affective experiences that are both conscious and accompanying any intellectual enterprise. Matter of fact, the individual may go through such experiences before, within or after an intellectual enterprise, it is related to one’s beliefs and feelings about his or her cognitive actions such as understanding a communicated information, speculating over how likely he or she is to progress in a given enterprise (Flavell 1979).

Goals: also referred to as tasks, they represent the objectives to be achieved behind a cognitive enterprise.

Actions: also referred to as strategies, are defined as the cognitions or other behaviors employed to achieve the goals and objectives of a given cognitive enterprise.

On the other hand, Brown (1987) as well as various authors such as Lai (2011), Hacker et al. (2009), Schraw and Moshman (1995) and Schraw and Dennison (1994) who followed his categorization, presented metacognition as expressed two aspects (processes) that are considered as complementary; which are cognitive knowledge (knowledge of cognition) and cognitive regulation (regulation of cognition).

As seen in table 2, Lai (2011) presented both constituents according to the authors’ categorization in the literature. It is nonetheless relevant to define both constituents. Metacognitive knowledge; also entitled knowledge about cognition is defined, with reference to Flavell (1979) as “knowledge about one’s own cognitive strengths and limitations” (Lai

2011). Cognitive regulation on the other hand “includes activities of planning, monitoring or regulating, and evaluating” (Lai 2011).

Schraw and Moshman (1995), in their article “*Metacognitive theories*” that has been cited in over a thousand scholarly publications (Moshman 2017); define metacognitive theories as “systematic frameworks used to explain and direct cognition, metacognitive knowledge, and regulatory skills [that] integrate one’s knowledge about cognition and regulation of cognition”. They suggested, as cited above, a basic distinction between knowledge of cognition and regulation of cognition as shown in the table below.

Table 7: Distinction between knowledge and regulation of cognition

Metacognitive process	Characteristics	Sub-processes
Knowledge of cognition	Statable Stable Fallible Age dependent	Declarative knowledge Procedural knowledge Conditional knowledge
Regulation of cognition (metacognitive control processes)	Unstable Not always stable Relatively age independent	Planning Monitoring Evaluation

(Adapted from Schraw and Moshman, 1995 and Marulis, 2014)

The latter authors defined the different components as following;

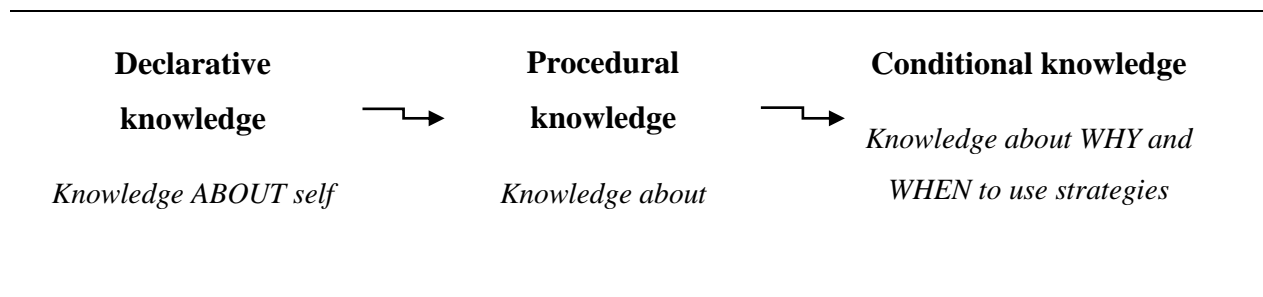
**Knowledge of cognition:* It is concerned with what individuals know about their own cognition (Brown 1987 as cited in Schraw and Moshman 1995). Knowledge of cognition encompasses three sub-processes that are, declarative knowledge, procedural knowledge and conditional knowledge.

**Declarative knowledge:* it represents “knowing about things” (Schraw and Moshman 1995), in other terms, it is the individual’s knowledge about cognitive strategies as well as knowledge about one’s self such as limitations and capacities (Schraw and Dennison 1994). With the aim of simplifying the construct, Schraw and Moshman (1995) suggested that the relevance of declarative knowledge could be observed through the example of investigating metamemory. They quoted that “good learners appear to have more knowledge about their own memory and are more likely than poor learners to use what they do know”. Thus, and still according to the latter authors, a good learner is an individual having knowledge about himself in a learning

context and is aware of the different factors that have a direct influence on his performance allowing him to effectively use of the knowledge he acquired.

**Procedural knowledge:* As declarative knowledge is knowing about one’s self and about cognitive strategies, procedural knowledge is oriented towards one’s knowledge about how to use and effectively employ these strategies (Schraw and Dennison 1994). The core of this sub-process is related to the use of the different skills in an automatic manner and employ diverse strategies with the aim of problem solving (Schraw and Moshman 1995).

**Conditional knowledge:* it refers to the individual’s knowledge about when and why to apply the cognitive strategies and actions (Schraw and Dennison 1994) and is presented as the “declarative knowledge about the relative utility of cognitive procedures” (Schraw and Moshman 1995).



**Planning:* it “involves the selection of appropriate strategies and the allocation of resources that affect performance” (Schraw and Moshman, 1995, p.354). In other terms, planning is related to the assessment of a convenient cognitive strategy and allocate the set of resources available and necessary to achieve performance in a given task.

**Monitoring:* refers to the individual’s “awareness of comprehension and task performance” (Schraw and Moshman, 1995, p.355), and is defined, in the terms of Flavell (1979) as a result of the interaction between cognitive knowledge, cognitive experience, tasks and strategies.

**Evaluation:* refers to “appraising the products and regulatory processes of one’s learning” (Schraw and Moshman, 1995, p.355). It regards the evaluation and re-evaluation the individual’s goals, in other terms, it consists of supervising the progress in achieving the action as well as analyzing the gap that exist between the prescribed objectives and the effective outcomes.

In an attempt to simplify how metacognition works, we suggest the famous example of painting a self-portrait suggested by Doctor Josh Walker; from the Center for Teaching and Learning at The University of Texas, Austin. In his example, he expressed that cognition is the realm of thinking while metacognition is the realm of thinking about thinking. The individual will go

through two levels of thinking. As a first step, the individual will be thinking at a cognitive level, oriented to the given action that is painting the portrait. In other terms, the painter will be focusing on the resources allowing the action such as the knowledge related to the action of painting. As a second step, the individual goes through a second level of thinking, which is metacognition. This second level of thinking is related to the management of the realization of the action; in other terms, planning, monitoring and evaluating. Planning concerns choices and decisions regarding the action, thus the painter is concerned with the management of the space he will be painting on. Monitoring is supervising and keeping track of the progress of the action's realization.

Finally, Evaluating is making sure that the fulfilled action is in line with prescribed objectives, thus and according to the example, that the painting is exactly the image the painter has in mind, and is what he actually saw in the mirror.

From the latter example, the metacognitive level of thinking appears to be crucial for the achievement of the action as it involves on one hand the preparation for the action, and on the other hand the supervision of the effective achievement and well as the evaluation and judgement of the final result. Metacognition appears, in fact, very important in the learning context since, as explained previously, it encompasses all various skills such as problem solving, critical thinking or creativity.

Moreover, metacognitive skills are considered as important in educational context, since it allows learners to understand and improve their learning and well as developing the capacity to choose the right learning strategies, use, and re-apply these strategies in real similar situations in different contexts.

Table 8: Typology of Metacognitive Components,

Metacognitive Component	Type	Terminology	Authors
Cognitive knowledge	Knowledge about oneself as a learner and factors affecting cognition	Person and task knowledge	Flavell, 1979
		Self-appraisal	Paris and Winograd, 1990
		Epistemological understanding	Kuhn and Dean, 2004
		Declarative knowledge	Cross and Paris, 1988 Schraw et al., 2006 Schraw and Moshman, 1995
	Awareness and management of cognition, including knowledge about strategies	Procedural knowledge	Cross and Paris, 1988 Kuhn and Dean, 2004 Schraw et al., 2006
		Strategy knowledge	Flavell, 1979
Knowledge about why and when to use given strategy	Conditional knowledge	Schraw et al., 2006	
Cognitive regulation	Identification and selection of appropriate strategies and allocation of resources	Planning	Cross and Paris, 1988 Paris and Winograd, 1990 Schraw et al., 2006 Schraw and Moshman, 1995 Whitebread et al., 2009
		Monitoring or regulating	Cross and Paris, 1988 Paris and Winograd, 1990 Schraw et al., 2006 Schraw and Moshman, 1995 Whitebread et al., 2009
	Attending to and being aware of comprehension and task performance	Cognitive experiences	Flavell, 1979

	Assessing the processes and products of one's learning, and revisiting and revising learning goals	Evaluating	Cross and Paris, 1988 Paris and Winograd, 1990 Schraw et al., 2006 Schraw and Moshman, 1995 Whitebread et al., 2009
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(Source: Lai, 2011)

The relevance of studying metacognition remains in the fact that it helps researchers, as well as teachers concerned with entrepreneurship, explain the cognitive processes that enable the creation of new business ventures (Urban, 2012). In fact, metacognition is what allows individuals, especially students, who acquired specific strategies as a solution to specific problems to apply that strategy in a new but similar context (Lai, 2011). Matter of fact, metacognition is a process encompassing self-regulation, allowing individuals to monitor the changing environment resulting in him developing and generating new structures of sense making (Haynie and Shepherd, 2009).

All the above being said, and recalling the fact that “metacognitive awareness represents a bridge to cognitive adaptability” (Haynie and Shepherd, 2009, p.697), we will be interested in defining and explaining what cognitive adaptability is and what role does it play in the process of new venture creation.

2. Defining cognitive adaptability

Cognitive adaptability is defined as the aggregate of the five metacognitive dimensions, (Haynie and Shepherd, 2009). The aforementioned definitions help clarify to what extent cognitive adaptability may be playing a crucial role in the entrepreneurial context. An important phase in defining it would be to focus on the terminology and the specific use of such term.

2.1. Cognitive adaptability, adaptive cognition and cognitive flexibility; terminology choices

Before diving into the definition of cognitive adaptability it seems extremely relevant to demonstrate, first, if a difference exists between cognitive adaptability, adaptive cognition and cognitive flexibility as these terms are widely present in the literature and could lead to somewhat confusion and ambiguity about the choice of the right term to use.

2.1.1. Cognitive Flexibility

Cognitive flexibility is defined, in the terms of Cañas et al. (2003, p.2), as “the human ability to adapt the cognitive processing strategies to face new and unexpected conditions in the

environment”. The latter authors added that, cognitive flexibility is the act of adapting to environmental changes that are either new or unexpected, and those changes contradict the routine of tasks an individual was performing for a period and is, thus, the adaptive capacity of the individual performing the task (Cañas et al., 2006).

Matter of fact, and with reference to Clément (2009), Borjon (2016) defines it as the ability to adapt to new situations and the capacity to adopt various points of view on a specific situation and have the ability to change it. Thus, cognitive flexibility is related to routine tasks and a change in the environment where the task is performed. Moreover, cognitive flexibility can be defined as the ability to be mentally flexible and adapting to changing situations.

Borjon (2016) then added that cognitive flexibility is one of the processes that allow individuals to intentionally regulate and monitor their thinking and actions according to the goals they aim to achieve.

In the same context, Chevalier (2010) quoted that cognitive flexibility, also entitled mental flexibility, attentional flexibility and capacity of shifting and switching, is an executive function, which presents somewhat confusion related to its definition, as many definitions and conceptions do already exist in the literature. Matter of fact, he stated that there is a great amount of ambiguity in the very term “*flexibility*” as it can be perceived both as describing the adaptive behaviors properties and the executive function allowing the capacity of shifting effectively between various tasks.

Flexibility, as an executive function, plays an important role in regulating the behavior allowing the individual to have the capacity to plan, take decisions and pursue the adequate strategies. In fact, Chevalier (2010), presented cognitive flexibility as an executive function allowing the individual to switch effectively between different tasks. He suggested defining it as the capacity to select in an adaptive manner, between various representations of an object, various strategies or task set, the best-fit one according to the situation characteristics, as well as the capacity to change one’s choice according to the relevant modifications in the environment.

Miyake et al. (2000, p.55) suggested that, “perhaps the most common explanation of this function is that the Shifting process involves the disengagement of an irrelevant task set and the subsequent active engagement of a relevant task set”. In other terms, shifting requires disengaging the attention of certain information and engaging in other ones according to the requirements of a given new situation (Chevalier, 2010).

The following table is a simplification attempt of the different perspectives to define cognitive flexibility:

Table 9: Defining cognitive flexibility

Cognitive flexibility			
Defined as: (Chevalier 2010)		Characteristics: (Borjon 2016)	
Executive function	The capacity of switching effectively between tasks “Switching and shifting”	Reactive	Manifests in: Changing context. Situation requires an adequate shift
Complex process	The capacity of adopting adaptive behaviors. General efficiency of the executive functions.	Spontaneous	Expressed through: Various responses in a stable environment Does not constraint a shift

Following what was explained previously, it is important to briefly define what executive functions are and how do they function.

Miyake et al. (2000) quoted that there are three separable and distinct executive functions, being the mental set shifting, which in this context is presented as cognitive flexibility, the information updating and monitoring and the inhibition of pre-potent responses.

The relevance of citing these executive functions remains in the fact that authors in the literature argued that cognitive flexibility, called “shifting” is a product of the interaction of the other executive functions. Matter of fact, Chevalier (2010) explained that some theories aiming to offer an explanation to cognitive flexibility and its development gave an important role to the other functions as for updating and inhibition. The latter author criticized considering cognitive flexibility as a product of the other two functions, as situations that involve cognitive flexibility require blocking a response and keeping in memory the task, as well as switching to a new response (Chevalier 2010).

All the above being said, cognitive flexibility is either an executive function allowing mental switching or a description of adaptive behaviors theories.

2.1.2. Differences between cognitive adaptability and cognitive flexibility

In the previous subsection, we tried to define cognitive flexibility as it will serve with providing the main differences with cognitive adaptability and supporting the choice of cognitive adaptability as a term and a variable to study. Matter of fact, this current subsection will extrapolate the different definitions of cognitive adaptability and help prepare for the following

section, which will go more in depth in its definition.

This being said, cognitive adaptability is defined as “the ability to effectively and appropriately change decision policies given feedback from the environmental context in which cognitive processing is embedded” (Haynie and Shepherd, 2009, p.695).

Considering the entrepreneurial context, cognitive adaptability is considered as a crucial cognitive process (Haynie and Shepherd, 2009; Flavell, 1979) as it is the ability to understand, to reflect, and control others’ way and learn and is reflected in metacognitive awareness of entrepreneurs (Marhaini et al., 2015).

A brief look on the definition of cognitive flexibility can give us an overview of the distinction between flexibility and adaptability. Matter of fact, considering cognitive flexibility as describing the adaptive behaviors properties (Chevalier, 2010) and defined as “the human ability to adapt the cognitive processing strategies to face new and unexpected conditions in the environment” (Cañas et al. 2006, p.2), it is obvious that flexibility and adaptability do not describe the same process. Matter of fact, for an individual to adapt to a certain situation or change in the environment, mental flexibility is a prerequisite, as for it is defined as the “*ability to adapt*”. This suggests that flexibility is what allows the individual to be able to adapt and without a prior mental flexibility, his or her capacity to adapt will be compromised or literally impossible.

Moreover, Miyake et al. (2000) defined cognitive flexibility as an executive function, while authors such as Haynie and Shepherd (2009) and Flavell (1979) defined cognitive adaptability as a cognitive process.

Following the latter comparison, differences emerge from the very definition of both an executive function and a cognitive process. In the same context, the term executive functions in itself is “an umbrella term comprising a wide range of cognitive processes and behavioral competencies which include verbal reasoning, problem-solving, planning, sequencing, the ability to sustain attention, resistance to interference, utilization of feedback, multitasking, cognitive flexibility, and the ability to deal with novelty” (Chan et al., 2008, p.201). On the other hand, cognitive processes are “processes of information transfer that typically take place to connect multiple (or complex) informational inputs to form a minimally flexible cognitive system with a spectrum of minimally flexible behavioral outputs” (Newen, 2015, p.7). Such processes do typically involve one or more of processes such as perception, memory, learning, emotion, intentionality, self-representation, rationality, and decision-making (Newen, 2015).

In other terms, cognitive processes are a set of conscious and unconscious processes that allow the individual to successfully function and survive as well as making sense of the continuously

changing environment through perceiving stimuli, attending to them, categorizing them, connecting them to his or her experience, evaluating and interpreting them, and remembering them as well. (Becker and Vrijnsen, 2017)

For the term adaptive cognition, there are no notable differences in its definition compared to cognitive adaptability, as the latter is defined as “the ability to be dynamic, flexible, and self-regulating in one’s cognitions given dynamic and uncertain task environments” (Haynie and Shepherd, 2009, p.695). Thus, having an adaptive cognition refers to being cognitively adaptive.

In fact, cognitive adaptability offers a more specific context to study the entrepreneurial mindset and is “important in an entrepreneurial context because contemporary business environments are characterized by rapid, substantial, and discontinuous change” (Haynie et al., 2012, p.238). Thus, the term that will be used starting from the following subsection will be ultimately cognitive adaptability and not cognitive flexibility according to the definition of the concept in the literature as well as its relevance to this dissertation.

2.2. Cognitive adaptability; definition and components

Cognitive adaptability can be considered as a key resource in the entrepreneurial task. In fact, when considering the entrepreneurial context, the main components that surface in the literature are the continuously changing and uncertain environment, the extreme need to take decisions in a situation of crisis and also, being able to draw the right path for the enterprise through putting into place various strategies that allow the realization of the predefined objectives. In fact, in an environment such as the entrepreneurial one, reflection and adaptation are crucial to “effective decision-making because of the highly dynamic decision environment” (Haynie et al., 2010, p.226).

In the terms of Haynie and Shepherd (2009, p.708), “to sense and adapt to uncertainty may characterize a critical entrepreneurial resource”. The authors focused on the importance of, firstly, detecting and identifying changes in the environment, thus, either detecting threats or identifying opportunities as they represent new events in the environment. Secondly, they suggested that adapting to uncertainty is a key resource. In other terms, exploiting opportunities and avoiding threats in an environment characterized by a continuous movement and development is a key factor to the entrepreneurial success. Nonetheless, it is relevant to explain that opportunities and threats are here presented as changes that occur during the entrepreneurial task.

Cognitive adaptability, being grounded in the metacognitive theory, offers an extensive framework to explain the various dynamics that an individual goes through when being in an

entrepreneurial context. Matter of fact, it is defined as “the ability to be dynamic, flexible and self-regulating in one’s cognition given dynamic and uncertain task environments” (Haynie and Shepherd, 2009, p.695).

In the same context, and taking into account that the entrepreneurial environment is mostly characterized by a high complexity as well as a mutual dynamism which makes it extremely uncertain, entrepreneurs should be able to be cognitively adaptive to be able to “engage metacognitive processes and thus perform effectively given a changing and often novel context” (Haynie et al., 2010, p.218).

Moreover, research on cognitive adaptability suggested that it as an approach that focuses on the cognitive processes and employs the metacognitive theory, while most researches focused on self-regulation. These latter researches omitted the fact that metacognition refers to a process integrating self-regulation, yet, it describes the “process through which regulation informs the development of new sense-making structures as a function of a changing environment” (Haynie and Shepherd, 2009, p.696).

In the terms of Yeung and Summerfield (2012, p.1310), people dispose of a set of metacognitive abilities that allow them to “avoid making the same mistakes twice, and to avoid overcommitting time and resources to decisions that are based on unreliable evidence”. In fact, the authors describe the latter metacognitive abilities as having the capability of evaluating decisions, being aware of mistakes and reporting the level of confidence relative to a specific decision to the objective performance.

This being said, adaptive behaviors are considered as key success factors for entrepreneurs. Noting the fact that, the literature has proven that what differentiates entrepreneurs from non-entrepreneurs is their way of thinking, which was entitled as the entrepreneur’s mindset. Many examples support this point of view, one of them being the effectuation theory by Sarasvathy (2001). Matter of fact, the entrepreneur’s ability to cognitively adapt and achieve performance in a continuously changing environment is related to his or her ability to engage in metacognitive processes (Haynie et al., 2010).

Thus, cognitive adaptability enables researches to focus on differences across individuals in an entrepreneurial performance context, in terms of the capacity of adapting decision policies effectively in response to feedback (Haynie et al., 2012).

From the above, cognitive adaptability can be summarized as the ability to make decisions while facing an uncertain environment characterized by limited resources (i.e. information, time, etc...) and a future that is unknown. Thus, an assumption can be drawn from the latter; being that, individuals with adaptive cognition are more likely to highly perform in decision

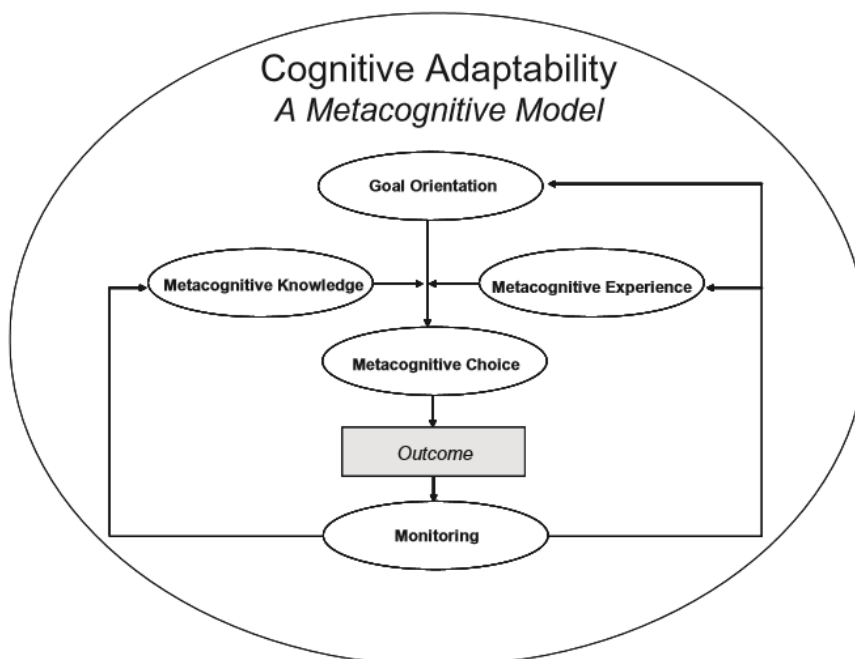
making processes given the uncertain present and future context.

Still, the definition of cognitive adaptability gains greater relevance and practicality when presented as a dynamic process, taking into account the aforementioned characteristics of the environment where the various decisions are made.

Matter of fact, cognitive adaptability was conceptualized as an aggregate of the five metacognitive dimensions that are, metacognitive knowledge, metacognitive experience, goal orientation, metacognitive choice and monitoring (Haynie and Shepherd 2009). In their terms, the aggregation aspect is equal to dynamics that exist between the various dimensions thus allowing the ability to be cognitively adaptive.

As shown below, the authors suggested a model for cognitive adaptability which they entitled “Cognitive adaptability; a metacognitive model”.

Figure 15: Cognitive adaptability, a metacognitive model



(Source: Haynie and Shepherd, 2009)

The latter authors suggested a specific dynamic they entitled as a conceptual process model “describing cognitive adaptability as composed of the set of interrelated processes that *together* describe metacognitive functioning” (Haynie and Shepherd, 2009, p.670).

The interrelation they proposed is presented as a process, as in their terms, the individual starts by perceiving and assigning meaning to the environment characteristics taking into account his or her goal orientation as a context. In a second phase, the individual makes use of his or her metacognitive knowledge and metacognitive experiences to generate various decision

frameworks centered on the interpretation, planning and implementation of goals to adapt with the continuously changing environment. In a third phase of the process, he or she selects and employs a specific framework based on the latter set of decision frameworks, which leads to a fourth phase in which the individual starts eliciting various cognitive outcomes such as actions, understanding or adopting specific behaviors. Finally, the outcomes are assessed and evaluated according to the goal orientation, as a monitoring action. Thus, serving as a base to the subsequent generation and selection of decision frameworks (Haynie and Shepherd, 2009).

Taking the processual approach as a starting point is relevant to understand the various metacognitive steps that an individual goes through and helps preparing, by such, a practical overview of the various components that compose cognitive adaptability. Thus, as a second step, each metacognitive dimension is respectively defined according to the previously presented metacognitive model.

**Metacognitive knowledge:* it can be directed both internally and externally as it can be focused on the self as well as on the environment (Haynie and Shepherd, 2009). In the authors' terms, it reflects how people perceive their thinking patterns, as well as, how others think, adding also the conscious understanding of the tasks and strategies related cognitive matters such as when and how to perform a specific task. In fact, the importance of metacognitive knowledge remains in the set of knowledge and beliefs surrounding one's self and others. For Haynie et al. (2012), it reflects firstly, the belief about how other persons think as well as the knowledge that individuals are likely to make mistakes in their thinking. Secondly, the knowledge of one's self, meaning that the individual is conscious of his own strengths and weaknesses. As the latter authors gave the example of "a belief that one is good at dealing with the hard numbers of a business and less competent in the softer tasks of human resource management." (Haynie et al., 2012, p.241). Finally, yet most importantly, it also reflects one's knowledge about the task and the strategies to adopt facing a changing environment (Haynie and Shepherd, 2009).

Thus, metacognitive knowledge can be considered as a crucial resource in a learning context, most importantly, in a context where individuals are characterized by a lack of entrepreneurial experience. Haynie et al. (2012, p.241) stated that, "those with greater metacognitive knowledge are more effective at adapting their decision policies in response to feedback on a dynamic task, than those with less metacognitive knowledge".

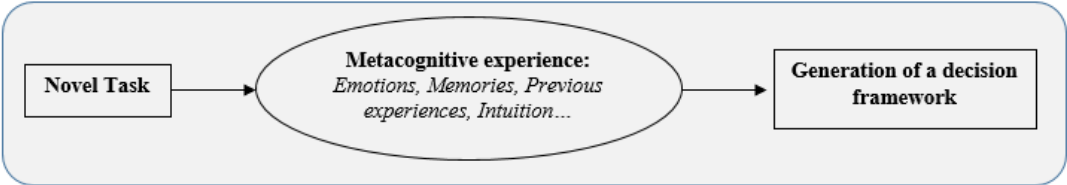
Table 10: Metacognitive knowledge

Metacognitive Knowledge		
	Internal (Knowledge of self)	External (Knowledge of the environment)
People	One’s own preferences and values	Knowledge about how others think
Task	Strengths and weaknesses at certain tasks	How and when to perform a task
Strategies	Knowledge of personal strategies to cope with a changing environment	Knowledge of different strategic approaches to adapt to a changing environment

**Metacognitive experience:* it is tightly related to metacognitive knowledge as “a person’s metacognitive knowledge and metacognitive experience direct the use of specific cognitive strategies such as deduction, induction, case-based reasoning, analogical reasoning, or mental simulation” (Haynie et al., 2010, p.224). Matter of fact, these two dimensions allow the individual to control his or her cognitive response to a cognitive problem and are even more crucial when the cognitive task is either novel or uncertain provided that metacognitive awareness is heightened (Haynie et al., 2012).

Metacognitive experience enables the individual to provide a better interpretation of his or her social world and is defined as a set of affective past events that are drawn from cognitive activities, it channels resources such as emotions, intuition, and memories can be employed throughout the process of a specific task sense making (Haynie et al., 2012). According to the latter authors, these resources guide and determine the perception of “*appropriateness*” that an individual has of a given cognitive problem or situation.

Figure 16: Metacognitive experience



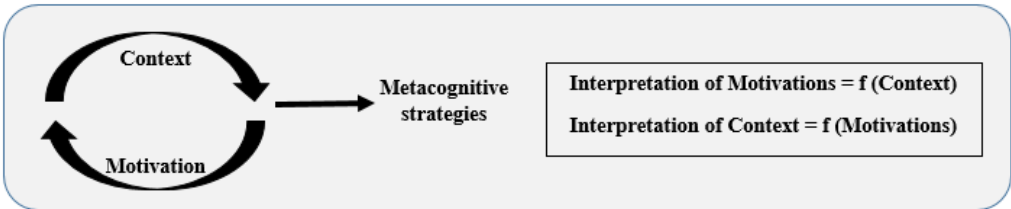
**Goal orientation:* it is defined as “the extent to which the individual interprets environmental variations in light of a wide variety of personal, social and organizational goals” (Haynie and Shepherd, 2009, p.699). Goal orientation, with reference to Griffin and Ross (1991), is a component that emphasizes the importance of the context, as it can be the product as well as the producer of the individual’s motives (Haynie and Shepherd, 2009).

In other terms, two cases of interaction can be presented; either the individual holds specific motives that exert an influence on the way he or she perceives and interprets the context, or the

context in which the individual is acting defines his or her motives.

Applying the latter explanation to an entrepreneurial context or task, the entrepreneur can be motivated to take a specific entrepreneurial decision such as increasing revenue and thus perceives the context as an environment offering opportunities allowing higher gains. On the other hand, if the context provides a set of threats to the revenue of the company, the entrepreneur’s motives will be directed towards maintaining his actual revenue and avoiding the upcoming threat. The importance of goal orientation remains in the fact that it defines a set of alternative cognitive strategies that the individual will develop and pursue taking into account his or her motivations.

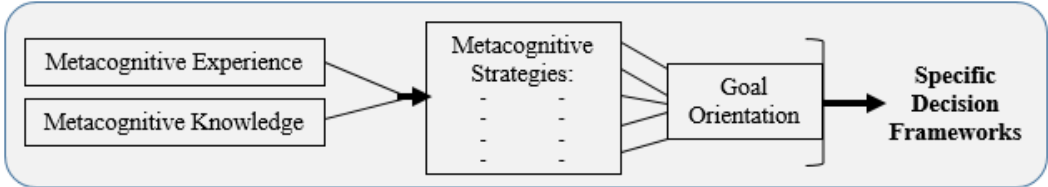
Figure 17: Goal Orientation



Metacognitive choice: It is defined as the extent to which the individual engages in the active process of selecting multiple decision frameworks the one that best interprets plans, and implements a response for the purpose of managing a changing environment (Haynie and Shepherd, 2009; Botha and Bignotti, 2017).

While metacognitive knowledge and experience provide strategies to “*think about thinking*”, which is in a way the expression of the effectual reasoning, metacognitive choice is the active selection process of a specific decision framework that responds the best and is more appropriate the entrepreneur’s goals.

Figure 18: Metacognitive choice

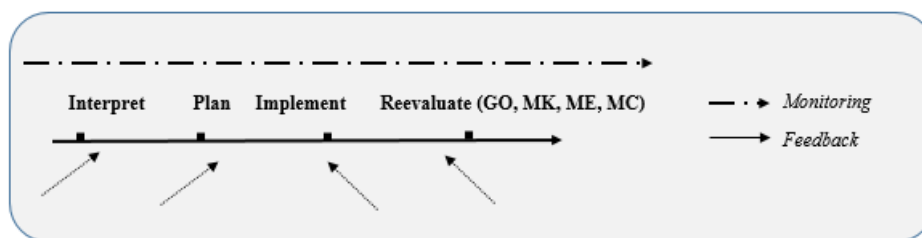


Monitoring: it is specifically focused on performance, and pushes the entrepreneur in evaluating and reassessing his or her metacognitive knowledge and experience. Thus, it “serves to adapt and define subsequent metacognition, and leads to subsequent adaptation congruent with a changing entrepreneurial environment and motivation” (Haynie et al., 2010, p.223).

Botha and Bignotti (2017) explained, with reference to (Baron, 2007), that an entrepreneur with high levels of monitoring is more likely to be highly successful; on the other hand, lower levels of monitoring are exhibited in less successful entrepreneurs, as monitoring serves as a mechanism of self-regulation.

The latter success is clearly explained by the fact that monitoring informs on the entrepreneur's perception of the interaction happening between the environments he or she acts in and his or her motivations within and across cognitive efforts (Haynie and Shepherd, 2009). Moreover, it contributes to increasing awareness of the individual's own cognitive strengths and limitations (Botha and Bignotti, 2017).

Figure 19: Monitoring



As cited above, the interaction between the latter dimensions is at the origin of cognitive adaptability. It relevant to point out the importance of metacognitive awareness as it “represents a bridge to cognitive adaptability” (Sánchez et al., 2014, p.313).

In this specific context, metacognitive awareness, defined generally as the individual's awareness of his or her own thinking, learning and use of cognitive strategies, is what allows the individual to be more conscious and aware of the process of “thinking about thinking”. Thus, to be cognitively adaptive, the individual should primarily be aware of the previously stated dimensions, and likely to have an extent of control over his or her thinking.

Matter of fact, the model conceptualized by Haynie and Shepherd (2009) put the light on the dynamism that lays under adaptive cognitions, as it is not a static state of mind, but more of a processual phenomenon, which holds various interactions and interrelations between the various metacognitive dimensions.

The latter authors described the cognitively adaptive individual as a person likely to draw on metacognitive knowledge and metacognitive experience in the aim of generating various decision frameworks enabling him or her to make sense of a changed reality. Then, he or she selects the framework offering a higher appropriateness and adequacy to the goals he or she wants to realize (Haynie and Shepherd, 2009).

It is worth noting that, according to the literature, entrepreneurial cognitions are involved in

every step of the entrepreneurial process and allow understanding the mental models that entrepreneurs use to identify opportunities, invent and create new products, identify and collect the resources they need to start a new business venture, as well as, guaranteeing its viability. In fact, the relevance of the entrepreneurial cognitions' perspective remains in the fact that it "allows researchers to help understand how entrepreneurs think and why they do some of the things they do" (Urban, 2012, p.204), thus entrepreneurial cognitions are a means to understand in depth how entrepreneurs function and why they function in a certain way. Such questions are to this day a subject of debate, one that knew a great enrichment with the effectuation theory. Understanding how entrepreneurs think and function would offer a multitude of perspectives to higher the rate of entrepreneurship, as well as guiding educational and academic programs towards focusing on the effective characteristics of entrepreneurs and thus offering a more adequate education allowing students to consider entrepreneurship as a valuable career choice. As authors such as Haynie and Shepherd (2009), Botha, and Bignotti (2017), argued that metacognitive awareness and thus cognitive adaptability can be taught and developed through educational programs; the relevance of these dimensions gained even more importance. Still, and taking into account the teachability of cognitive adaptability, it is crucial to explore and explain the impact of cognitive adaptability on the development of entrepreneurial intentions, a field that has been considered as under-researched (Botha and Bignotti, 2017). As well as its impact on entrepreneurial competencies.

For the matter, the following section will be dedicated to retract the few researches regarding the role that cognitive adaptability is likely to play in a learning context and its interaction both with entrepreneurial competencies and entrepreneurial intentions.

Section II : Cognitive adaptability, entrepreneurial intentions and entrepreneurial competencies

Cognitive adaptability appears to be playing an important role in the entrepreneurial process. Matter of fact, it was defined as an essential resource and key success factor for entrepreneurs. Taking into account the characteristics of actual business environments, the capacity of adapting one's decision making process, as well as one's perception, identification and exploitation of opportunities seems to be crucial to the survival of a business venture.

Since the relationship between cognitive adaptability and entrepreneurial intention is considered as "under-researched" (Botha and Bignotti, 2017), it is extremely relevant to deepen the research upon this specific link. The matter seems to be crucial as it "may assist policy makers and educators to focus more on cognitive adaptability and its complex relationship with entrepreneurial intention in efforts to spur entrepreneurship and improve pedagogical interventions" (Botha and Bignotti, 2017, p.4).

The relevance of integrating cognitive adaptability when studying the link existing between entrepreneurial intention and entrepreneurial competencies is shown through the fact that; firstly, the latter set of variables is strictly related to the individual, his mental processes and how he acquires knowledge and transforms it into an intention to launch a new business venture. Secondly, the cognitive approach can be a powerful means when it comes to explaining how individuals think which allows a better understanding and deeper explanation of their actions and why they acted in that sense and non-differently (Shepherd and Patzelt 2018). Taking into account that metacognition is considered as responsible for almost every activity a human is capable of, such as language and knowledge acquisition, comprehension, problem solving and identification, it is, thus, equally important to consider and explore the link that exists between cognitive adaptability and entrepreneurial competencies.

The present section will be a theoretical exploration of the role that cognitive adaptability can play when considering the impact of entrepreneurial competencies on entrepreneurial intention. A first subsection will be focused on the impact of cognitive adaptability on entrepreneurial intentions, while a second section will be an initiative of exploring what relationship do cognitive adaptability have with entrepreneurial competencies, considering the almost inexistent literature on the matter.

This section will aim to respond to the following questions:

What type of relationship does cognitive adaptability have with entrepreneurial intentions?

What type of relationship does cognitive adaptability have with entrepreneurial competencies?

What kind of role does cognitive adaptability play in the impact of entrepreneurial competencies on entrepreneurial intention? Can cognitive adaptability be considered as a moderator in the relationship between entrepreneurial competencies and entrepreneurial intention?

1. Impact of cognitive adaptability on the development of entrepreneurial intention

1.1. Cognitive adaptability and entrepreneurial intention; a possible link

The first chapter of this dissertation focused on defining entrepreneurial intention and exploring the various theoretical approaches to explain and measure it. Still, it seems relevant to recall its definition to provide a clearer explanation of its relationship with cognitive adaptability.

For the matter, entrepreneurial intention is defined as “a self-acknowledged conviction by a person that they will set up a new business venture and consciously plan to do so at some point in the future” (Thompson, 2009). In fact, Entrepreneurial intention is considered by various authors, in the literature related to entrepreneurship, as an important and reliable indicator to predict the entrepreneurial behavior and the performance of this behavior (Ajzen, 2002). It is, thus, extremely relevant to value it as a strong antecedent of the entrepreneurial action. Moreover, entrepreneurial intention is a psychological state and inner need to launch, create or put in place an entrepreneurial action accompanied with a decision to start it in a defined time frame. Thus, entrepreneurial action never happens by accident but only by choice and entrepreneurship is intentional by nature (Krueger and Norris, 2007).

The previously described non-accidental and intentional entrepreneurial action, thus the act of launching a new business venture, consists of two processes, one is intentional and the other is the effective launch (Marchais-Roubelat, 2000). In the context of this subsection, the focus is oriented towards the intentional process of creating a new venture.

In the same context, Brandstatter et al. (2003) offered a coherent modelling of the entrepreneurial decision-making process. They described the decision-making process to launch a new business venture as being complex, in which the final mental decision is conditioned by a set of various factors that are interactive and can act individually or together. In others terms, an individual is more likely to make the decision of creating a new enterprise if he has positive or significant past experiences and perceives himself as an individual who is likely to become an entrepreneur and manage a company on his own.

A first phase Brandstatter et al. (2003) posited, is entitled the pre-decisional phase. This phase is all about the mental processes happening into the individuals mind. The result being fixing a goal intention through the mediation of perceived feasibility and perceived desirability, and thus creating a commitment towards setting a specific behavior or action in a way to pursue and

fulfill a determined objective. Brandstatter et al. (2003) posited that individuals are more likely to have desires and wishes that are more than they can effectively realize, as the first task is to choose between the competing wishes to transform a number of them into goals; these goals are the goal intentions. The formation of the goal intention is, in fact, a crucial “transition point” since it leads to a deep change in the mindset of the individual.

The literature presented a great interest into understanding entrepreneurial intentions as it was at the center of attention of various researches. However, authors such as Fayolle and Linan (2014) argued that more attention should be oriented towards the formation of such intentions taking into account the complexity of the entrepreneurial process. In other terms, it seemed more relevant for the latter authors to explain more in depth how the intention is constructed and developed within individuals instead of measuring it or considering its existence or inexistence.

Krueger et al. (2000) have explained such point of view, as they quoted that, “career choices and related phenomena have been demonstrated, both theoretically and empirically, to be cognitive in nature”. In their terms, decisions related to career choices involve a process combining a set of attitudes, beliefs and intentions that undergo an evolution through the effective processing of one’s experiences, knowledge and beliefs.

A further explanation was provided by Urban (2012). He explained that an individual with an entrepreneurial intention applies a certain degree of conscious consideration to possibly starting a new venture, and these intentions are a result of metacognitions. He quoted that, “it seems logical to link higher-order cognitive processes that serve to organize what individuals know and recognize about themselves and their environments, to individual entrepreneurial intent” (Urban 2012). In his terms, the link between metacognition and entrepreneurial intentions is logical, as metacognition is related to the individuals’ knowledge of self, others and the context where they act. Still, such link did not receive a great attention from researches as they focused mostly on the use of a specific type of cognition and its consequences while metacognition offers a great theoretical foundation for entrepreneurship research (Pihie et al., 2013).

In fact, metacognition, apart from being a strong basis for guiding entrepreneurship education in improving learners’ entrepreneurial skills and knowledge, it highlights the “active and constructive roles that students can play in understanding their learning and regulating their motivations, thoughts and behavior to learn the knowledge and skills required for establishing their own business” (Pihie et al., 2013). Haynie et al. (2010) added, in the same context, that enhancing metacognitive abilities leads to higher performance regarding decision making in a

novel context or a novel task in an uncertain environment. The latter authors argued that such correlation has been empirically demonstrated and evidenced.

The relevance of the metacognitive process emerges from its influence on entrepreneurial intentions. As the entrepreneurial intention is an individual conscious consideration of the possibility of launching a new business venture, in a certain point in the future (Krueger et al., 2000), the metacognitive process is devoted to maintaining achievable intentions for the individual to act upon, as he or she only shows commitment to act if the intentions are perceived as achievable (Josyula et al., 2005).

Moreover, Botha and Bignotti (2017) argued that understanding the mechanisms that foster entrepreneurial intention is extremely valuable, as one potential route for increasing levels of entrepreneurial intention may be focusing on cognitive adaptability. Cognitive adaptability has been, in fact, tightly linked to entrepreneurial decision making. Considering that entrepreneurial intention is an individual and conscious decision of launching a new business venture, cognitive adaptability can hold a relevant explanatory potency.

In fact, the research conducted by Haynie et al. (2012), considered as a strong pillar in explaining the entrepreneurial process within students, explored the ability of students without prior knowledge about entrepreneurship to adapt decision policies, in this case entrepreneurial intention, effectively in response to feedback as they perform an entrepreneurial task. In other terms, cognitive adaptability described in the latter example as the ability of students to develop an entrepreneurial intention, as an adaptive decision to the feedback they receive from the environment.

Haynie and Shepherd (2009) argued that metacognitive awareness is a bridge to cognitive adaptability. In fact, a metacognitively aware entrepreneur would recognize that he or she has to apply various strategies to frame how to think about the entrepreneurial task and thus engage in the process of identifying alternative strategies that maximize the likelihood of achieving his or her goal (Haynie and Shepherd, 2009; Urban, 2012). Moreover, the difference in performance regarding entrepreneurial tasks may be partly explained by the role that metacognition plays in promoting cognitive adaptability (Haynie et al., 2010).

Such perspective is relevant when considering the educational context, as it takes into account the lack of prior entrepreneurial experience (Haynie et al., 2012), the teachability of metacognition and its development through training (Haynie et al., 2010) as well as entrepreneurial intention as a decision and the alternative strategies of achieving goals (Urban, 2012).

In fact, cognitive adaptability appears to be of a great value when it comes to learning and adapting students' learning processes according to the context. Such value can be appreciated taking into account the continuous development of technology, communication as well as markets, thus, knowledge related to entrepreneurship, and management becomes obsolete at an ever-increasing rate (Haynie et al., 2010). As a result, including metacognitive training "offers the potential to enhance the student's ability to function effectively in dynamic environments". (Haynie et al., 2010)

Metacognition was suggested as a cognitive basis for the entrepreneurial mindset, as an individual who has access to metacognitive processes is more adaptable in a dynamic and uncertain context, such adaptability necessarily leads to higher performance (Haynie et al., 2012).

Moreover, the individual's ability to engage in such metacognitive processes is related to his or her ability to cognitively adapt, thus perform effectively in a novel or changing context, such context is perfectly presented through the dynamism and complexity entrepreneurial environments (Haynie et al., 2010). In fact, to be successful, the entrepreneur must be able to cognitively adapt, reflect, understand and control others while continuously learning (Marhaini et al., 2015).

Haynie et al. (2012) suggested that decision makers who engage in metacognitive processes are more likely to recognize and be conscious that analyzing a situation can be done in multiple and different ways, to know that alternatives do and always exist and consciously consider them. Finally, they are more likely to learn from feedback and thus inform and shape future decisions. Such approach can be applied to any decision; thus, it can be applied to those who develop the inner decision to launch a new business venture.

Cultivating an appropriate mindset is crucial for entrepreneurs, as it enables them to adapt their decision making processes, such mindset should be both self-reflective and self-regulatory allowing by such to "think beyond biases embedded in existing sense-making mechanisms so as to appropriately interpret the cause-effect relationship represented by environmental feedback" (Haynie et al., 2010). Matter of fact, individual differences in cognitive style and emotional range, important to the bucketing or pacing decisions, relate to the entrepreneur's learning style or problem-solving style (Brid, 1992).

Thus, as the entrepreneurial mindset encompasses the beliefs, values, expectations, decisions as well as opinions about one's self, others and the environment, it is a filter allowing the interpretation of what is seen and experienced. Thus, cognitive adaptability has a positive effect on entrepreneurship mindset especially for students (Marhaini et al., 2015). For the matter,

cognitive adaptability has a positive effect on entrepreneurial intentions and their development. Since few researches, such as Urban (2012), Botha, and Bignotti (2017), have demonstrated such positive impact, it is relevant to explore in depth the effect of the various metacognitive dimensions on entrepreneurial intentions and present the results that the latter researches provided.

1.2. Impact of the metacognitive dimensions on the entrepreneurial intention

With reference to Haynie and Shepherd (2009), cognitive adaptability is an aggregate of the five metacognitive dimensions, these latter are processes that interact and are interrelated, describing altogether metacognitive functioning, providing by such insights on entrepreneurial intentions and behaviors.

Actually, the five metacognitive dimensions are considered as “the causal chain of the entrepreneurial mindset, and are representative of an iterative process” (Urban, 2012). In his terms, Urban (2012) claimed that, a metacognitive study in the entrepreneurial context holds a great explanatory and practical power, while studies that do not consider adaptability as central and task novelty as less uncertain do not provide enough explanatory power.

In fact, the latter author presented considerable insights in the literature available on the relationship between cognitive adaptability and entrepreneurial intention. In fact, there is limited evidence that confirms such relationship “except the contribution of Urban (2012) who found only one cognitive adaptability dimension that supported” it (Botha and Bignotti ,2017) which is metacognitive knowledge. In their turn, Botha and Bignotti (2017) argued that there is evidence that cognitive adaptability has an impact on the development of intentions, they found that goal orientation; metacognitive choice and metacognitive experience are confirmed to have a positive relationship with entrepreneurial intentions.

A research that seems to be relevant for this matter is the one conducted by Liang et al. (2015). They argued that psychological factors such as motivations, cognitions, emotions, and self-efficacy serve to predict entrepreneurial intentions and lead to their development. They added that, “both extrinsic and intrinsic motivations affect a person’s future actions and provide energy, direction, and persistence for entrepreneurial intention” (Liang et al., 2015).

The following table presents the two groups of motivations as explained by the latter authors. In fact, they will serve as a basis for the upcoming relationships between entrepreneurial intentions and the five dimensions of metacognition.

Table 11: Extrinsic and intrinsic motivation according to Liang et al. (2015)

Extrinsic motivation:	Intrinsic motivation:
A person's internal desire driven by:	
Interest or enjoyment in performing a task including: Security, wealth, status, power Group setting, organizational characteristics Social norms and cultural context	External pressures or rewards such as: Attitude, behavioral control Personal attractiveness Experience, involvement, and engagement

Goal orientation and entrepreneurial intentions: since it is defined as “the extent to which the individual interprets environmental variations in light of a wide variety of personal, social and organizational goals” (Haynie and Shepherd, 2009), goal orientation is a component that emphasizes the interrelation between the context and the individual’s motives. On the other hand, entrepreneurial intentions reflect the willingness that an individual has to adopt an entrepreneurial behavior taking into account his or her abilities, resources and the environment where he or she will act.

Moreover, metacognitive awareness can be considered as a “bridge to formulating intentions” (Urban, 2012), for the fact that the individual takes his or her goal orientation as a guide for his or her perception and for assigning meaning to the environment (Haynie and Shepherd, 2009). It is possible to consider goal orientation as having an impact on how the individual perceives the environment and thus how the context, he or she is acting upon influences his or her motives and by such also intentions (Urban, 2012).

In other terms, if goal orientation is taking into account the interdependence that exists between the environment and one’s own motives, goal orientation determines the entrepreneur’s perception of his or her own environment, thus, has an impact on his or her entrepreneurial intentions. Such proposition is confirmed by Liang et al. (2015), as both types of motivations, predict, shape and determine entrepreneurial intentions.

Metacognitive knowledge and entrepreneurial intentions: Metacognitive knowledge reflect how people perceive their thinking patterns, as well as, how others think, adding also the conscious understanding of the tasks and strategies related to cognitive matters such as when and how to perform a specific task (Haynie and Shepherd, 2009). In fact, it refers to the “reflective dimension of one’s metacognition and awareness of the factors that affect the knowledge structure and learning” (Pihie et al., 2013).

Urban (2012) argued that, since metacognitive knowledge is centered on interpreting, planning

and implementing goals in response to a changing environment with the aim of managing it, and entrepreneurial intentions are centered about the desire to realize an entrepreneurial action taking into account the environment through engaging in a cognitive appraisal, knowledge and intellectual components interfere when formulating such intentions. For the matter, metacognitive knowledge is tightly related to the development and formulation of entrepreneurial intentions.

Metacognitive experience and entrepreneurial intentions: Metacognitive experience enables the individual to provide a better interpretation of his social world. It is defined as a set of affective past events that are drawn from cognitive activities and acts as a channel through which resources such as emotions, intuition and memories can be employed throughout the process of a specific task sense making (Haynie et al., 2012). In fact, metacognitive experiences encompass the affective experiences that are based on cognitive activities and serve as resources for the process of giving sense in a given context of a decision (Haynie and Shepherd, 2009). Besides, the literature regarding entrepreneurial intentions informs that individuals with prior experiences or having already acquired enough knowledge about entrepreneurship are more likely to develop entrepreneurial intentions (Paul and Shrivatava, 2016).

In fact, various factors affect the pathway towards deciding to constitute a company. The pathway to the decision making goes then into a series of catalyzers defining its intensity from which there are the past events and experiences, self-perception, social support and increasing the desired control. Moreover, and according to Liang et al. (2015), experience is considered as a component of the intrinsic motivation group that shapes the intention to launch a new business venture.

Urban (2012) argued that, when linking literature findings regarding both metacognitive experience and entrepreneurial intention, it is found that entrepreneurial intentions are influenced by personal circumstances and individual cognitions of new business opportunities which in turn are influenced by metacognitive experiences. Thus, metacognitive experience has an impact on the formulation and development of entrepreneurial intentions.

Metacognitive choice and entrepreneurial intentions: Metacognitive choice is the active selection process of a specific decision framework that responds the best and is more appropriate to the entrepreneur's goals. Urban (2012) explained that the link between metacognitive choice and entrepreneurial intentions emerges from the consistent support that offered the literature about intentions and cognitions. In fact, the latter author added that the relationship is considered as a causal chain where beliefs, considered as cognitions, inform the attitudes, which in turn inform intentions. In this context, we can recall the attitudes towards

the behavior considered as a predictor and antecedent of intentions according to the theory of planned behavior by Ajzen (1991). Such causal chain between attitudes and behaviors through the mediation of intentions was first introduced by the theory of reasoned action by Martin Fishbein and Icek Ajzen in (1975), as they explained that entrepreneurial intentions are a product of the individual's attitude towards the behavior and the perceived pressures of subjective norms. The same affirmation was echoed by authors such Bird (1992), Shapero and Sokol (1982), Linan and Chen (2009), and also by Valliere (2015) who quoted that beliefs "shape the formation of attitudes towards any prospective behavior, these attitudes drive the formation of the intent to perform the behavior and that intent causes the individual to act". Finally, Liang et al. (2015) explained that attitudes are internal desires that are driven by external pressures or rewards shape entrepreneurial intentions.

With reference to Thompson (2009), entrepreneurial intentions involve a degree of conscious consideration towards the future launch of a new business venture, such appraisal elicits a certain cognitive outcome where understanding, comprehension and behavioral action are needed for making a decision in the selection from multiple decision frameworks (Krueger et al., 2000). Thus, metacognitive choice has an impact on the formation and development of entrepreneurial intentions through the mediation of attitudes.

Metacognitive monitoring and entrepreneurial intentions: Monitoring informs on the entrepreneur's perception of the interaction happening between the environment he or she acts in and his or her motivations within and across cognitive efforts (Haynie and Shepherd, 2009). Moreover, it contributes to increasing awareness of the individual's own cognitive strengths and limitations (Botha and Bignotti, 2017). On the other hand, the literature informs that intentions are not stable and may be modified to embrace more ambitious growth targets or goals and may be reduced relative to initial expectations (Urban, 2008).

In fact, when considering intentions, "future directed plans can rarely be specified in full details at the outset; it would require omniscience to anticipate every situation (Bandura, 1997 as cited in Urban, 2012). Indeed, initial intentions are refined, adjusted and revised, not only, but intentions can also be dropped or reconsidered. Moreover, Holland (2006) explained that when entrepreneurs face challenging situations, they have three possible reactions, either the escalation of commitment, threat rigidity or resilience. Matter of fact, he defined resilience as "the capacity for adaptability, positive functioning, or competence following chronic stress or prolonged trauma" (Sutcliffe and Vogus, 2003 as cited in Holland, 2006) and it is considered as a trait of successful entrepreneurs. Krueger (2007), on the other hand, explained that intentions are constantly monitored facing novel contexts, tasks or information. For the matter,

metacognitive monitoring has an impact on the formulation and development as well as the adjustment of entrepreneurial intentions.

All the above being said, and despite the fact that the relationship between cognitive adaptability and entrepreneurial intentions is relatively under-researched, the evidence provided informs that such link does indeed exist. In fact, Haynie et al. (2010) argued that when considering the metacognitive selection of a given cognitive strategy over another it is necessary to involve two principal metacognitive dimensions that are metacognitive experience and metacognitive knowledge. The authors added that such consideration has been relatively ignored in the entrepreneurship literature, as for understanding the latter metacognitive dimensions “helps to open up the “black box” of the entrepreneurial cognition literature” (Haynie et al., 2010). The authors claimed that by doing such, there is a possibility of explaining the differences that individuals have in selecting cognitive strategies as well as understanding the reason behind using different strategies facing different contexts and motivational states and after experiencing different types of feedback.

2. Impact of cognitive adaptability on the development of entrepreneurial competencies

2.1. Entrepreneurial competencies and metacognition

Entrepreneurial competencies are defined as “means of sensing, selecting, shaping, and synchronizing internal and external conditions for the exploration and exploitation of opportunities” (Zahra, 2011). Man et al. (2002) added that these competencies are higher-level characteristics that involve skills, personality traits, and knowledge and are related to the entrepreneur’s ability to successfully perform in a given role.

In fact, competencies involve a set of skills, attitudes and knowledge that an entrepreneur has to acquire through education and training (Inyang, 2009) allowing him or her to attain outstanding performance and profit maximization while managing a business venture. Authors such as Sanchez et al. (2012) argued that successful entrepreneurs are known to have common features such as a dynamic personality, openness to innovation, ambition and passion for growth and accomplishment, ability to take responsibilities or risks, openness to change and transformation.

For the matter, such competencies are necessary for launching a new business venture as well as for maintaining the venture’s continuity and guaranteeing future performance.

Sanchez et al. (2012) explained that entrepreneurial competencies that are related to starting and running a new business, such as perseverance, persuasiveness, networking, initiative, decision-making under conditions of uncertainty and risk-taking are necessary for increasing

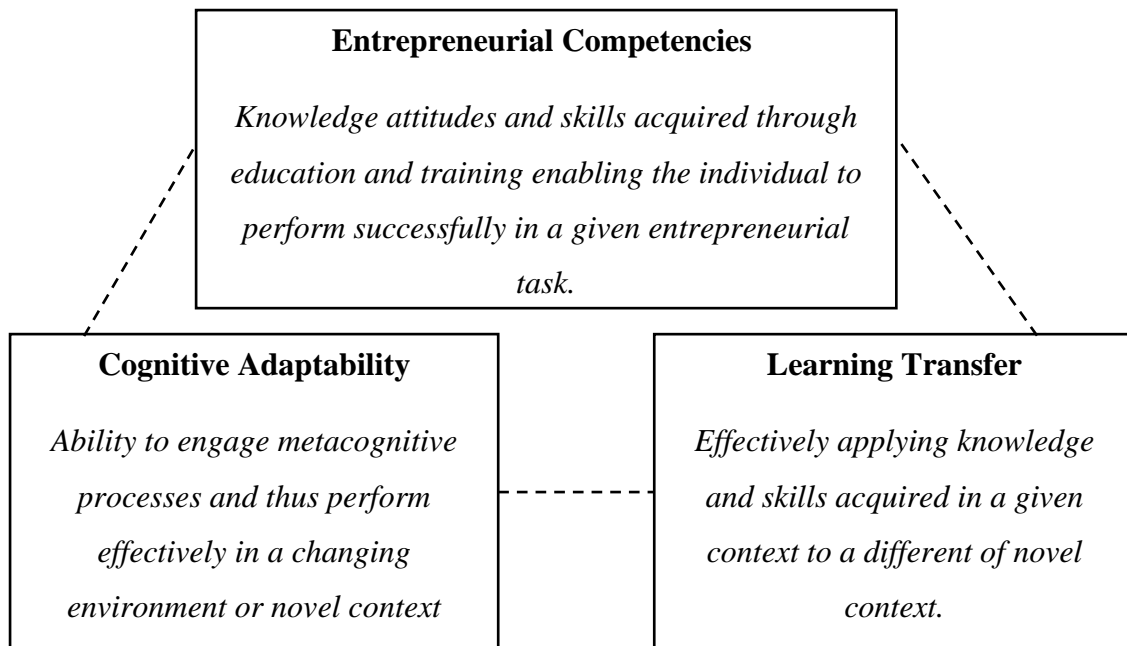
success in uncertain environment through facilitating knowledge of self and engagement in the entrepreneurial context in which the individual is operating.

When exploring the literature linking entrepreneurial competencies to cognitive adaptability, two main subjects seem to be relevant. In fact, in the researches involving the role of metacognition in the development of competencies as well as the role that competencies have in increasing metacognitive awareness, entrepreneurship education and learning transfer are encountered.

In the context of this dissertation, entrepreneurship education is extremely relevant as it is considered, by the literature, as an important source of entrepreneurial knowledge and skills through the various programs offered by universities worldwide. Moreover, considering the importance of learning transfer, it appears as being the main objective of education. In the terms of Schraff et al. (2017), metacognition is an effective and crucial tool supporting learning transfer and facilitating students' learning in emotionally charged environments, their ability to manage complex tasks and improving their learning efficiency. Fadel et al. (2015) explained that metacognition is important in every aspect of life and studying contexts, as it involves self-reflection on the individual's current position, potential actions and strategies, future goals and results. The latter authors described it as "a basic survival strategy". Matter of fact, when considering knowledge and skills acquisition, metacognition is omnipresent in every activity that human being is pursuing. Indeed, Flavell (1979) argued that metacognition is directly related to language acquisition, social cognition, self-instruction and self-control as well as oral comprehension, reading and writing. In other terms, metacognition is tightly related to the capacity of understanding, acquiring knowledge and every mental actions responsible for the development of individuals.

Since metacognition was summarized as thinking about thinking and one's awareness about his or her learning process, it is important to consider it as an important pillar in regards to entrepreneurial competencies. Learning transfer, on the other hand, was defined as referring to the individual's ability to apply effectively what he or she had learned in one context in another (Schraff et al., 2017). Fadel et al. (2015) added that, "transfer is the ultimate goal of all education, as students are expected to internalize what they learn in school and apply it to life". Such definition complies with the dynamic process of cognitive adaptability as well the objective of acquiring entrepreneurial competencies.

Figure 20: Linking entrepreneurial competencies, cognitive adaptability and learning transfer



A cognitively adaptive individual is able to “engage metacognitive processes and perform effectively” (Haynie et al., 2010), through the selection and application of strategies withdrawn from metacognitive knowledge and experience in alignment with a goal orientation in order to face a novel or changing environment.

The common point in the three definitions aforementioned is the efficient application of knowledge and skills in a novel context knowing that the entrepreneurial context is continuously changing and described as uncertain. To be able to apply entrepreneurial competencies in a given task, there is definitely a need for metacognitive reasoning.

As for it is necessary to retrieve from past events and experiences as well as what is known about self, others, task and the environment, select from the various decision frameworks in order to attain a given goal, which is usually a given defined task.

Sanchez et al. (2012) argued that an individual who understands how to control his learning is more likely to understand how to apply what he learned. The latter authors added that applying the acquired knowledge can be “achieved by fostering learning led by creativity, informality, curiosity and emotion, which is applicable both to personal and business-world problems” (Sanchez et al., 2012).

In this context, various authors argued that it is necessary to develop metacognition in a learning context, as it is crucial for improving the application of skills and knowledge in novel contexts.

Such applicability relates also to the interrelation between the different disciplines as in a real-life situation there is no clear specification of the discipline and for the matter, the individual should retrieve the right set of competencies and rely on past-lived experiences to be able to solve problems or make decisions in a given novel context.

Ramocki (2007) explained that everything a person knows, have experienced and plan to incorporate in future thinking involves metacognition. The author continued to quote that, “the critical point to realize is that our metacognition is totally responsible for the entirety of our thought processes” either consciously or unconsciously and “the better this metacognitive process is understood, the more powerful our thinking becomes” (Ramocki, 2007). In the same context, Sanchez et al. (2012) claimed that metacognition serves as an indicator of meta-competencies, which they defined as a prerequisite for developing specific capacities such as intuition, judgment and acumen that competencies require, but also that metacompetencies are characterized by self-management and self-awareness and involve behavioral, cognitive and affective aspects allowing effective behaviors in different situations. Haynie et al. (2010) pointed out that entrepreneurship courses are an essential activities for training students’ metacognitive abilities.

After presenting a general framework for the relationship between metacognition and entrepreneurial competencies, it is relevant to look more in depth for what the literature offered in terms of linking the various competencies with metacognition as well as what is available regarding the link between the various metacognitive dimensions and entrepreneurial competencies. The following subsection aims to define what type of impact exists between the two variables.

2.2. Entrepreneurial competencies and cognitive adaptability; literature review

The literature on the link between cognitive adaptability and entrepreneurial competencies is almost absent, as no clear researches focused on such link since cognitive adaptability as a concept was first clearly introduced through the works of Haynie and collaborators since 2005. For the fact that cognitive adaptability is defined as the aggregate of the five dimensions of metacognition (Haynie and Shepherd, 2009), explaining its relationship with entrepreneurial competencies amounts to exploring the link between the various entrepreneurial competencies and the metacognitive dimensions. The set of competencies that will be considered in the following exploration will be the one presented in the research of Al Mamun et al. (2016) as it seems relevant to the context of education and university students. This set of competencies involves opportunity recognition, training and skills, risk-taking propensity, innovativeness and information-seeking competencies.

Opportunity recognition competencies and metacognitive dimensions: opportunity identification and exploitation represent the core and a fundamental factor in entrepreneurship (Al Mamun et al., 2016). In fact, an individual who is able to seek and recognize business opportunities in the market is more likely to choose entrepreneurship as a professional career. The literature has long been interested in explaining why some individuals are capable of identifying opportunities while others do not.

Shepherd and Patzelt (2018), with reference to Gaglio and Katz (2001), argue that understanding the process of identifying opportunities remains a crucial and core intellectual question in the entrepreneurial field. Such importance is given for the fact that skills related to opportunity identification processes are considered as an important resource for the continuity and performance of the company. In the same context, Shepherd and Patzelt (2018) explained that the ability to identify opportunities is among the most important skills successful entrepreneurs have. Haynie et al. (2010) added that, “metacognitive mechanisms serve to facilitate the transfer of knowledge from one domain to another which suggests that metacognitive awareness may facilitate opportunity recognition within an uncertain and dynamic context” (Haynie et al., 2010). In this context, metacognitive awareness is tightly related to the ability to recognize opportunity. Cox and Castrogiovanni (2016) claimed that since metacognitive processes have an impact on cognitive processes, metacognition is in turn expected to indirectly affect the process of opportunity identification. On the other hand, it is important to point out that while metacognitive processes are facilitators for opportunity identification, they may possibly serve as processors of such process. Since opportunity identification is a crucial skill and has been defined as an answer to individual differences, in terms of why some individuals are able to become entrepreneurs while others do not, it seems relevant to recall that individuals may not have the same perception for the same opportunity offered by the context. Individuals’ perception of opportunities may possibly shape their reasoning process about such opportunity. In other terms, once an opportunity is identified, the individual will possibly be considering either exploiting it or not. In such a consideration process, metacognition may possibly play a crucial role. Moreover, opportunity recognition will possibly shape future reasoning, in terms of goals, knowledge and experience to apply as well as future choices to make. This being said, it is relevant to recall that metacognition does not interfere in a precise moment or event, but is actually responsible for every activity an individual is able to pursue. Matter of fact, it provides the individual with the ability to manipulate cognition elements in order to achieve control over it (Lima Filho and Bruni, 2017) as it also refers to a process integrating self-regulation, yet, it describes the “process through

which regulation informs the development of new sense-making structures as a function of a changing environment.” (Haynie and Shepherd 2009)

Training, skills, and metacognitive dimensions: The literature informs that the main objective behind entrepreneurship education is providing students with knowledge and skills for and about entrepreneurship and encouraging them towards considering entrepreneurship as an alternative career. Matter of fact, training and skills provide students with the acquired exposure to entrepreneurship leading them to have greater likelihood to become entrepreneurs. With reference to Haynie et al. (2010), metacognition “represents a dynamic process, rather than a static trait and it can be developed through training”. Thus, training may have a positive impact on developing metacognitive awareness. On the other hand, metacognition has a direct impact on learning processes. In fact, Schraw and Moshman (1995) argued that a good learner is an individual having knowledge about himself in a learning context and is aware of the different factors that have a direct influence on his performance allowing him to use the knowledge he acquired effectively. From the above, it is possible to suggest that metacognition interacts with the training and skills dimension of entrepreneurial competencies.

Information seeking competencies and metacognitive dimensions: With reference to Al Mamun et al. (2016), information seeking competency refers to the individual’s ability to “identify when information is needed as well as to detect, assess, and use the needed information excellently”. Thus, these competencies revolve around the capacity to scan and search for information and connect it with other disparate information (Cox and Castrogiovanni, 2016).

Choi and Jeong (2013) argue that since metacognition refers to the cognitive characteristics that act following the cognitive process, it has a direct impact on thinking activities conducted by the brain, thus, metacognition affects the information seeking process, its results as well as the overall information seeking behavior.

Al Mamun et al. (2016) added, with reference to Wing Yan Man (2006), that entrepreneurs who are competent learners are able to seek learning opportunities actively, even if such opportunities may not be freely open to them. Recalling that good learners are presented as having “more knowledge about their own memory and are more likely than poor learners to use what they do know” (Schraw and Moshman, 1995), metacognition is actively taking part of the information seeking process. Matter of fact, if the individual is aware of what information is needed and how to obtain that information as well as for what service that information would be, he or she is in an active reflection upon his or her learning process. Such activity refers directly to metacognitive knowledge since it was defined by Vandergrift et al. (2006) as the “learners’ knowledge about the purpose, nature, and demands of learning tasks”. Thus,

metacognition defines the quality of the learning process and is, as well as, a subject of such process as it can be taught and learned.

Innovativeness and metacognitive dimensions: innovativeness is considered as a personality trait linked to the acceptance of change and is defined as “the capacity and tendency to purchase new products and services” (Foxall, 1984, as cited in Kamaruddeen et al., 2010). Al Mamun et al. (2016) suggested that innovativeness refers to the individual’s ability of producing and exploiting ideas with the aim of generating and executing new ideas or enhancing old ideas into new dynamic ways. Such competency is crucial for entrepreneurs nowadays, as all the components of the environment experience a mutual and rapid change. Thus, the individual’s ability to adapt and the extent to which an individual is likely to accept and adopt the products of innovation seems to be crucial in such an uncertain environment. On the other hand, Kim and Lee (2018) argued that metacognition seems to be an important factor in developing innovation behaviors since it involves planning, monitoring, and regulation of the introduction and creation of new ideas. The latter authors found out that, “the function of metacognition leads to more innovative behavior in a systematic and stable direction” (Kim and Lee, 2018). In their terms, when individuals face unexpected situations, they have the ability to adapt through the generation of new strategies, they also added that by discovering and using new knowledge, the individual starts a process of discovering and creating and combining knowledge. Such activity is enrolled in metacognitive processes.

Risk-taking propensity and metacognitive dimensions: Al Mamun et al. (2016) defined risk-taking propensity as the individual’s tendency to take risk or to avoid it.

In their terms, the propensity to take risks refers to the individual’s orientation towards taking chances and taking advantage of any decision-making situation. With reference to Ling et al. (2011), Duman (2018) argued that high levels of self-confidence, the desire for independence and the tendency to take risks are present in students with developed metacognitive awareness. Thus, an individual with high metacognitive awareness shows higher propensity to risk, which leads to say that metacognitive awareness, is positively linked to risk-taking propensity.

All the above being said, and recalling that cognitive adaptability is the aggregate of the five dimensions of metacognition (Haynie and Shepherd, 2009) and that metacognitive awareness is a bridge to cognitive adaptability (Shepherd and Patzelt, 2018), cognitive adaptability and entrepreneurial competencies have a relationship based on interaction. Such relationship is understandable for the fact that entrepreneurial competencies represent a set of knowledge, skills and attitudes acquired through education and training allowing future performance and successful exercise of a given entrepreneurial task (Man et al., 2002). On the other hand,

cognitive adaptability refers to the ability to draw on metacognitive knowledge and metacognitive experience in the aim of selecting, a framework offering a higher appropriateness and adequacy to the goals from the various decision frameworks enabling the sense making of a changed reality (Haynie and Shepherd, 2009). Moreover, it revolves around engaging metacognitive processes and performing effectively in a changing environment or novel context (Haynie et al., 2010). For the matter, skills, knowledge and attitudes serve as a base for the individual to reflect upon, think about, change and use according to his and her goals.

3. Assessing the role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intentions: conceptual model construction

Ramocki (2007) explained that everything a person knows, have experienced and plan to incorporate in future thinking, involves metacognition. In fact, metacognition is important in every aspect of life and studying contexts, as it involves self-reflection on the individual's current position, potential actions and strategies, future goals and results (Fadel et al., 2015). In the same context, metacognition is a result of high-level awareness in the learning process by planning learning, using appropriate skills, and choosing strategies for problem solving (Kim and Lee, 2018). Thus, metacognition is related to both present and future thinking and potential actions, but it is also regulating the individual's learning process as well as being responsible for the selection of the appropriate skills to respond a specific situation or to solve a given problem.

On the hand, Bandura (1989) argued that people's preferences and competencies condition the selection of their activities and associates. In other terms, the individual's beliefs and vision of what he or she aspires to be and do, added to the set of competencies acquired through the various sources including education do determine and condition the future actions he or she will pursue in regards to career choices. In such preferences and career aspirations, this dissertation is focused on the impact of entrepreneurial competencies on entrepreneurial intentions taking into account the role that cognitive adaptability plays in such relationship. For the fact that such dynamics did not receive much attention, as the literature turned out to be very limited, this subsection will be focused on building the conceptual model that will be subject to testing and verification in the upcoming chapters.

Starting by recalling that, entrepreneurial intentions represent the behavioral aspect of the entrepreneur. It translates the desire to pursue an entrepreneurial action and internal decision to launch a new business venture. Entrepreneurial competencies are, on the other hand, a set of personal attributes tightly linked to the individual's capacity to attain performance through the

skills and knowledge he gained and the personal characteristics he or she has. Besides, entrepreneurial competencies are essential to start a business.

The two concepts are internal and specific to the individual's dimension and the impact that entrepreneurial competencies exert on the development of the entrepreneurial intention is contextualized, in the literature, in an entrepreneurship education context. Matter of fact, the main objective of entrepreneurship education programs is to provide students with the skills and knowledge required to pursue an entrepreneurial career, thus, entrepreneurship education provides a solid framework for studying the impact of entrepreneurial competencies on entrepreneurial intentions.

Scouting the literature for answers regarding the impact of entrepreneurial competencies on entrepreneurial intentions, authors such as Sanchez (2013) argued that students that are exposed to an entrepreneurial program or training have higher levels of self-efficacy, proactiveness and risk-taking which lets them develop a greater and higher entrepreneurial intention. The literature does sustain that the lack of education will lead to a lack of management skills, marketing skills and innovations skills, which will ultimately lead to a difficulty in running a business in a sustainable way. Thus, acquiring knowledge about entrepreneurship or growing in an entrepreneurial environment is a key determinant of the desire and the intention to launch a new business venture. In the same perspective, the link existing between entrepreneurial intention and entrepreneurial competencies can be reinforced through education (Koe, 2016). Thus, individuals who acquired entrepreneurial competencies are more likely to develop the intention to launch a new business venture, for the matter, the following assumption can be posited:

H1: Entrepreneurial competencies have a positive impact on entrepreneurial intentions.

Shane and Venkataraman (2000) explained that an entrepreneur is an individual capable of discovering and exploiting an existing entrepreneurial opportunity. In fact, opportunity recognition has long been defined as the core of entrepreneurship, and the first definitions of the entrepreneur that surfaced in the literature all related to the capacity of identifying and exploiting opportunities. Becoming entrepreneur is dependent on opportunity recognition, for the matter, an individual who is able to recognize opportunities is more likely to become entrepreneur. Thus:

H1a: Opportunity identification competencies have a positive impact on the entrepreneurial intention.

Risk taking is considered as one of the key competencies to enable an entrepreneur to achieve higher performance. Matter of fact, risk-taking is included in the conceptual framework of

entrepreneurial competencies, which encompasses the possession of cognitive ability and decision-making skills, the ability to predict and weight risks, the analytic thinking and the capacity to reduce and avoid risks (Seabela et al., 2014). For Sanchez (2013), students exposed to entrepreneurship education are more likely to acquire competencies such as risk-taking which lets them develop a greater and higher entrepreneurial intention. Macko and Tyszka (2009) added that entrepreneurs were always perceived as more prone to risk than non-entrepreneurs and that there is a kind of general agreement in the literature postulating that risk bearing is an essential prerequisite to become an entrepreneur. For the matter:

H1b: Risk-taking propensity has a positive impact on the entrepreneurial intention.

Entrepreneurship education seems to offer a great framework for providing students with the required competencies allowing them to acquire specific knowledge, skills and attitudes leading to the consideration and facilitation of a future entrepreneurial career. Matter of fact, Al Mamun et al. (2016) argued that training and skills competencies help students develop capabilities related to problem solving and decision-making and enhance interpersonal relationships, cooperation, and management of money. The latter authors added that, training in entrepreneurship allows students to become familiar and more aware of the local business community challenges as well as providing them with knowledge related to starting a new business and about modernizing and developing existing companies. From the above:

H1c: Training and skills have a positive impact on the entrepreneurial intention.

Al Mamun et al. (2016) explained that entrepreneurs contribute to economic development through innovation “involving the growth of new products, new processes, new supply sources, new market exploitation, and the development of new ways to organize business”. In fact, in the actual entrepreneurial environment, creative and innovative ideas represent a crucial resource for entrepreneurship. Hamidi et al. (2008) argued that, innovative behaviors and entrepreneurship were widely associated with creativity as the literature suggested that a creative individual is more likely to engage in entrepreneurial behaviors. Thus, it is possible to posit that:

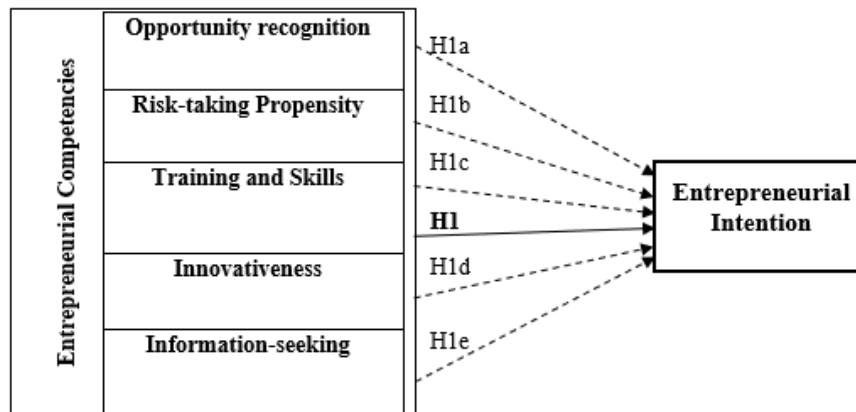
H1d: Innovativeness has a positive impact on the entrepreneurial intention.

The literature suggested a tight link between information seeking and opportunity recognition. In fact, Al Mamun et al. (2016) argued that if an individual spends time into seeking and assimilating information, there is a great possibility of him eventually discovering a new business opportunity. Moreover, opportunities are created through research and accumulation of information (Fayolle and Verstraete, 2005) and require the execution of a rigorous process starting from the identification, the evaluation and the seizing of the discovered, well studied

opportunity. Such commitment towards seeking and accumulating information is surely related to entrepreneurial intention. For the matter:

H1e: Information seeking competencies have a positive impact on the entrepreneurial intention.

Figure 21: Impact of entrepreneurial competencies on entrepreneurial intention



Through the researches made by Urban (2012), Botha, and Bignotti (2017), cognitive adaptability seems to have a positive impact on entrepreneurial intentions. Although there is limited evidence that confirms such relationship (Botha and Bignotti, 2017), according to both their research context and measurement scales, each of them concluded that some metacognitive dimensions do influence the development of entrepreneurial intention while others do not. Matter of fact, Urban (2012) found out that the knowledge metacognitive dimension has a positive impact on entrepreneurial intentions, while Botha and Bignotti (2017) found that three dimensions only do have the latter impact, namely, goal orientation, metacognitive choice and metacognitive experience. Nonetheless, Urban (2012, p.208) argued that an individual would have higher entrepreneurial intentions if he or she were more likely to recognize the “fact that there are multiple decision frameworks available to formulate a response, and are more likely to engage in the conscious process of considering those multiple alternatives”. Thus, an individual with higher cognitive adaptability is more likely to develop entrepreneurial intentions. This being said, it is possible to posit that:

H2: Cognitive adaptability has a positive impact on the entrepreneurial intention.

Urban (2012) claimed that goal orientation may possibly have an impact on the individual’s perception of his or her own environment, thus how the context he or she is acting upon influences his or her motives and by such also intentions. In this context, goal orientation focuses on the interdependence between the environment and the individual’s motives. In fact,

goal orientation determines the entrepreneur's perception of his or her own environment, thus, has an impact on his or her entrepreneurial intentions. For the matter, it is possible to posit that:

H2a: Goal orientation has a positive impact on the entrepreneurial intention.

As claimed by Urban (2012), Botha and Bignotti (2017), metacognitive knowledge may be tightly related to the development and formulation of entrepreneurial intentions, as it focuses on interpreting, planning and implementing goals in response to a changing environment with the aim of managing it. Such activities are closely related to the development of entrepreneurial intentions. For the matter, it is possible to posit that:

H2b: Metacognitive knowledge has a positive impact on the entrepreneurial intention.

Entrepreneurial intentions are found to be influenced by personal circumstances and individual cognitions of new business opportunities, which in turn are influenced by metacognitive experiences. Thus, metacognitive experience has an impact on the formulation and development of entrepreneurial intentions.

H2c: Metacognitive experience has a positive impact on the entrepreneurial intention.

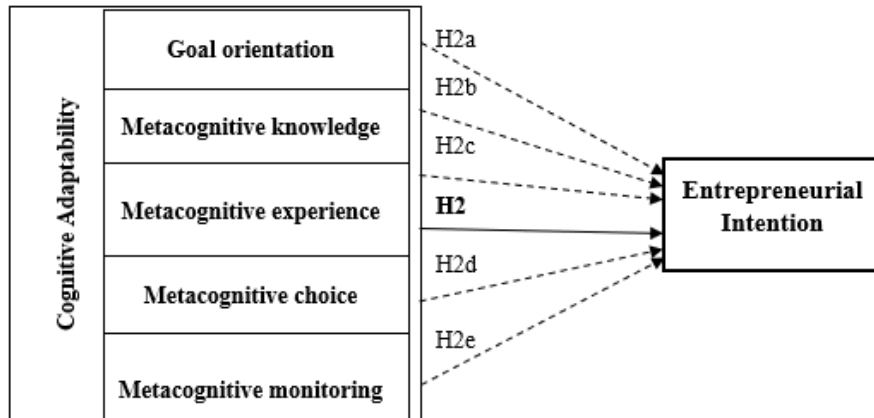
Thompson (2009) explained that entrepreneurial intentions involve a degree of conscious consideration towards the future launch of a new business venture, such appraisal elicits a certain cognitive outcome where understanding, comprehension and behavioral action are needed for making a decision in the selection from multiple decision frameworks (Urban, 2012). Thus, metacognitive choice has an impact on the formation and development of entrepreneurial intentions.

H2d: Metacognitive choice has a positive impact on the entrepreneurial intention.

Krueger (2007) argued that entrepreneurial intentions are not stable in time. In other terms, intentions can vary within a period of time, they can also be reinforced or dropped. Such modifications of intentions are due to a process of monitoring and evaluation of the latter according to the changes of the environment and the context in which such intentions should be developed or applied. The author added, in fact, that intentions are constantly monitored facing novel contexts, tasks or information. For the matter, metacognitive monitoring has an impact on the formulation and development as well as the adjustment of entrepreneurial intentions.

H2e: Metacognitive monitoring has a positive impact on the entrepreneurial intention.

Figure 22: Impact of cognitive adaptability on entrepreneurial intention



The literature on the link between cognitive adaptability and entrepreneurial competencies is almost absent, as no clear researches focused on such link since cognitive adaptability as a concept was first clearly introduced through the works of Haynie and collaborators since 2005. Matter of fact, this dissertation aims to explore such link through testing the following assumption:

H3: Cognitive adaptability has a positive impact on entrepreneurial competencies.

Schraw and Moshman (1995, p.352) explained that, “good learners appear to have more knowledge about their own memory and are more likely than poor learners to use what they do know”. In other terms, learners who are metacognitively aware can use and apply the knowledge they acquired. In the same context, Haynie et al. (2010) argued that cognitive adaptability is the ability to engage metacognitive processes and thus perform effectively in a changing environment or novel context. Thus, cognitively adaptive individuals are more likely to apply what they know and have control over their own learning process and the skills to use according to the context. For the matter, cognitively adaptive individuals are more likely to develop and use entrepreneurial competencies in response to a given context or a decision-making situation. Moreover, individuals who are aware of their own knowledge and skills are more likely to know what information to seek (Mamun et al., 2016) and what competencies to acquire according to the demanding context. Thus:

H3a: Cognitive adaptability has a positive impact on information seeking.

Such control over knowledge of self, task, strategies and others related to metacognitive knowledge. In fact, Haynie et al. (2010, p.222) quoted that metacognitive knowledge refers to “perceptions about oneself, and about others, in terms of competencies”. In other terms, it is the individual’s perception of, and reflection upon his or her competencies. Such perception allows

individuals to evaluate their strengths and determine their weaknesses, thus determines if they have to develop certain competencies or less. For the matter, acquiring, applying and developing entrepreneurial competencies may possibly depend on the individual's cognitive adaptability. Thus:

H3b: Cognitive adaptability has a positive impact on training and skills.

On the other hand, Kim and Lee (2018) argued that metacognition seems to be an important factor in developing innovation behaviors since it involves planning, monitoring, and regulation of the introduction and creation of new ideas. Thus, a cognitively adaptive individual is more likely to adopt innovative behaviors. For the matter, the more cognitively adaptive the individual is, the more likely he is to develop the innovativeness dimension of entrepreneurial competencies. Such innovative behaviors rely greatly on risk. Thus, by analogy, a cognitively adaptive individual is more likely to develop the risk-taking propensity dimension of entrepreneurial competencies.

H3c: Cognitive adaptability has a positive impact on innovativeness.

The entrepreneurial environment is characterized by a high complexity as well as a mutual dynamism which makes it extremely uncertain. entrepreneurs should, thus, be able to calculate risk and be able to be cognitively adaptive to be able to “engage metacognitive processes and thus perform effectively given a changing and often novel context” (Haynie et al. 2010), more precisely when facing risky situations. Duman (2018) argued that high levels of self-confidence, the desire for independence and the tendency to take risks are present in students with developed metacognitive awareness. Thus, an individual with high metacognitive awareness shows higher propensity to risk, which leads to say that metacognitive awareness, is positively linked to risk-taking propensity.

H3d: Cognitive adaptability has a positive impact on risk taking propensity.

Besides, Shepherd and Patzelt (2018) explained that the ability to identify opportunities is among the most important skills successful entrepreneurs have. Haynie et al. (2010) added that, “metacognitive mechanisms serve to facilitate the transfer of knowledge from one domain to another which suggests that metacognitive awareness may facilitate opportunity recognition within an uncertain and dynamic context” (Haynie et al., 2010, p.226). In this context, metacognitive awareness is tightly related to the ability to recognize opportunity. Cox and Castrogiovanni (2016) claimed that since metacognitive processes have an impact on cognitive processes, metacognition is in turn expected to indirectly affect the process of opportunity recognition.

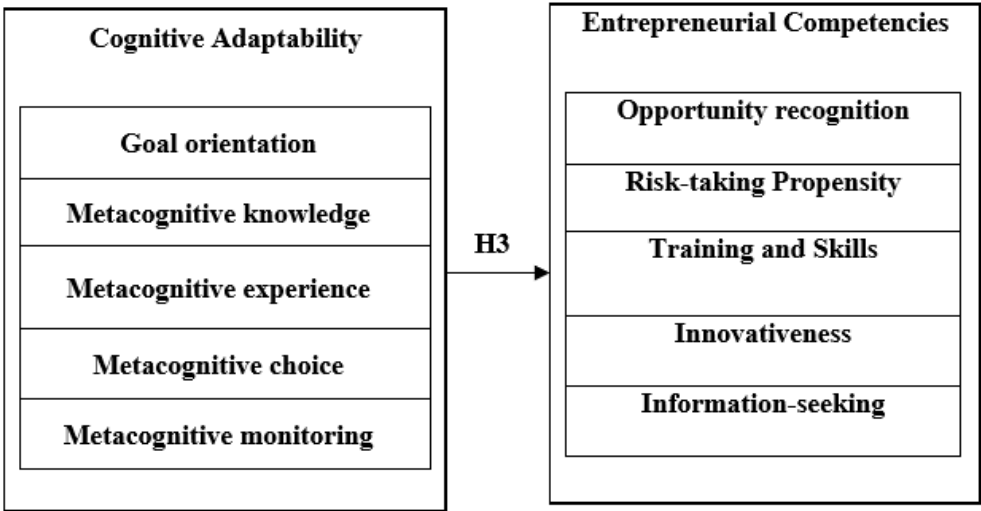
H3e: Cognitive adaptability has a positive impact on opportunity recognition.

The literature did offer a clear consensus on how important metacognitive awareness is in learning environments, as well as how necessary it is to integrate it in classrooms and more importantly in entrepreneurship education and training programs.

Besides, since goal orientation is translated as the interrelation between the environment and the individual’s motives (Haynie and Shepherd, 2009), such motives define what activities the individual will pursue according to the resources of which he or she disposes. In fact, the literature demonstrated that the entrepreneur’s ability to be alert to the environment’s risks and his interpretation of the environmental opportunities, his ability to gather various external as well as internal resources for the advantage of the firm and his ability to plan for the long-term success of the firm he constituted are determined as key factors and determinants of performance. Such factors involve planning, monitoring and evaluation, which are at the core metacognitive functioning. From the above, the more cognitively adaptive the individual is, the more he is likely to develop, and successfully apply the acquired entrepreneurial competencies according to the requirements of the context. Thus, it is possible to posit that:

H3: Cognitive adaptability has a positive impact on entrepreneurial competencies.

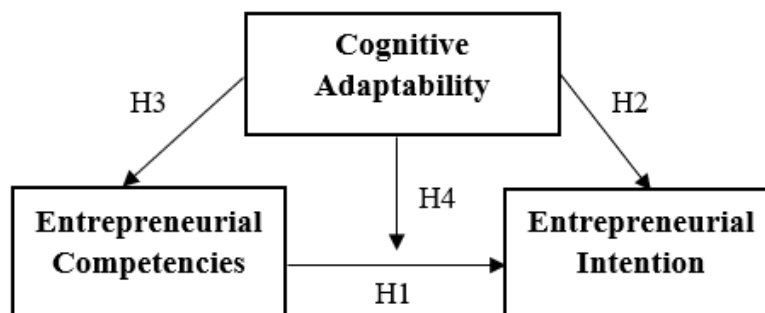
Figure 23: Impact of cognitive adaptability on entrepreneurial competencies



Metacognition is important in every aspect of life and studying contexts, as it involves self-reflection on the individual’s current position, potential actions and strategies, future goals and results (Fadel et al., 2015). In the same context, metacognition is a result of high-level awareness in the learning process by planning learning, using appropriate skills, and choosing strategies for problem solving (Kim and Lee, 2018). Thus, metacognition is related to both

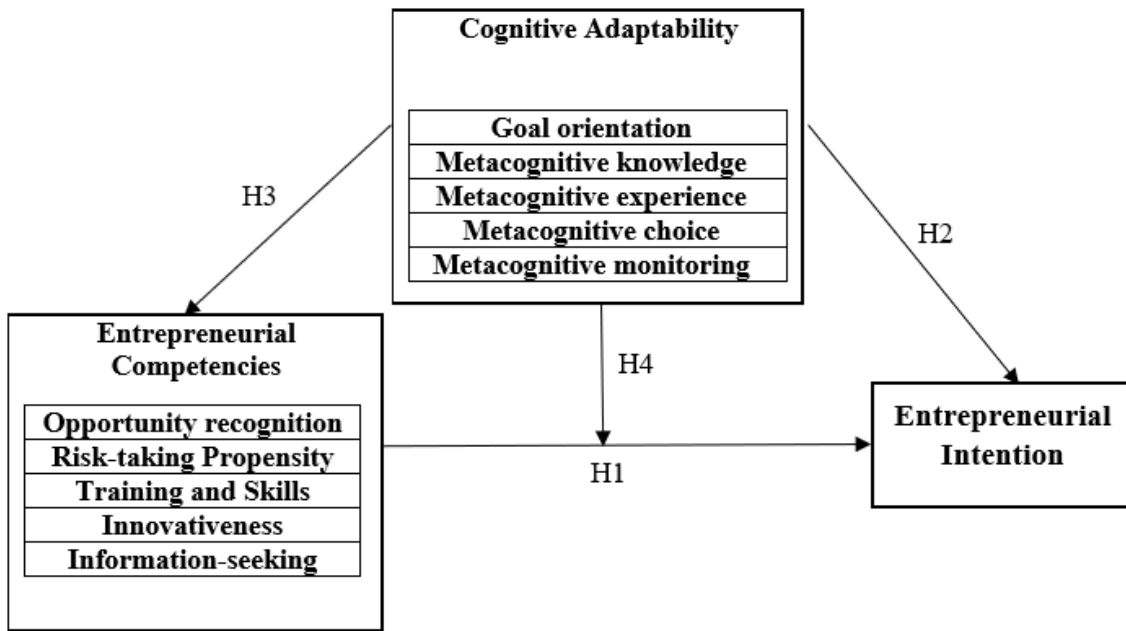
present and future thinking and potential actions, but it is also concerned with regulating learning processes as well as being responsible for the selection of the appropriate skills to respond to a specific situation or to solve a given problem. From the above, it is possible to say that cognitive adaptability, as an aggregate of the metacognitive dimensions (Haynie and Shepherd, 2009), can play a moderating role when considering the impact that entrepreneurial competencies have on entrepreneurial intentions. Matter of fact, and according to all the above, cognitive adaptability plays a role in developing entrepreneurial intentions as well as entrepreneurial competencies. The dynamic model elaborated by Haynie and Shepherd (2009) to describe the functioning of cognitive adaptability seems to be of a great explanatory power. The interrelation they proposed is presented as a process, as in their terms, the individual starts by perceiving and assigning meaning to the environment characteristics taking into account his goal orientation as a context. In a second phase, the individual makes use of his metacognitive knowledge and metacognitive experiences to generate various decision frameworks centered on the interpretation, planning and implementation of goals to adapt with the continuously changing environment. In a third phase of the process, he or she selects and employs a specific framework based on the latter set of decision frameworks, which leads to a fourth phase in which the individual starts eliciting various cognitive outcomes such as actions, understanding or adopting specific behaviors. Finally, the outcomes are assessed and evaluated according to the goal orientation, as a monitoring action. Thus, serving as a base to the subsequent generation and selection of decision frameworks (Haynie and Shepherd, 2009).

Figure 24: Moderating effect of cognitive adaptability



H4: A higher level of cognitive adaptability leads to a greater impact of entrepreneurial competencies on entrepreneurial intentions.

Figure 25: Conceptual model



According to the previous explanations, it is possible to present a conceptual model, presented above, incorporating all the components of each variable, and putting upfront the links that would be subject to verification and discussion in the upcoming chapters. The conceptual model supposes the following assumptions:

H1: Entrepreneurial competencies have a positive impact on the development of entrepreneurial intentions.

H1a: Opportunity identification competencies have a positive impact on the entrepreneurial intention.

H1b: Risk-taking propensity has a positive impact on the entrepreneurial intention.

H1c: Training and skills have a positive impact on the entrepreneurial intention.

H1d: Innovativeness has a positive impact on the entrepreneurial intention.

H1e: Information seeking competencies have a positive impact on the entrepreneurial intention.

H2: Cognitive adaptability has a positive impact on the entrepreneurial intention.

H2a: Goal orientation has a positive impact on the entrepreneurial intention.

H2b: Metacognitive knowledge has a positive impact on the entrepreneurial intention.

H2c: Metacognitive experience has a positive impact on the entrepreneurial intention.

H2d: Metacognitive choice has a positive impact on the entrepreneurial intention.

H2e: Metacognitive monitoring has a positive impact on the entrepreneurial intention.

H3: Cognitive adaptability has a positive impact on entrepreneurial competencies.

H3a: Cognitive adaptability has a positive impact on information seeking.

H3b: Cognitive adaptability has a positive impact on training and skills.

H3c: Cognitive adaptability has a positive impact on innovativeness.

H3d: Cognitive adaptability has a positive impact on risk-taking propensity.

H3e: Cognitive adaptability has a positive impact on opportunity recognition.

H4: A higher level of cognitive adaptability leads to a greater impact of entrepreneurial competencies on entrepreneurial intentions.

Cognitive adaptability, while considered as a relatively new concept, offers wide perspectives towards studying the entrepreneurial behavior and providing insights to the ever-unanswered question of why some individuals become entrepreneurs while others do not. In a matter of explaining the relationship that cognitive adaptability could have with entrepreneurial intentions and entrepreneurial competencies, the literature did not offer more than a vague contextualization. In fact, authors such as Botha and Bignotti (2017) argued that the link between cognitive adaptability and entrepreneurial intentions is considered as under-researched, as the latter authors and Urban (2012) were of the few contributors that offered insights on the matter. While for entrepreneurial competencies, the literature did not offer any researches on the direct link, but either a contextualization involving the effect of metacognition on learning and knowledge acquisition and the role that metacognition could play in a context of “good learners”.

Conclusion

Entrepreneurial intentions gained a great interest from the literature since the emergence of the various models describing and measuring it. Such interest was the result of the fact that entrepreneurial intention was presented as a strong predictor of the entrepreneurial behavior (Ajzen 1991). Starting from the theory of reasoned action by Martin Fishbein and Icek Ajzen in 1975 until recent researches offering a more precise representation of measurement scales as well as an explanation of the extent to which such intentions lead to an effective adoption of the behavior, thus, to an entrepreneurial action. Other efforts regarding the link between entrepreneurial competencies and entrepreneurial intentions, such as the contribution of Al Mamun et al. (2016), offered a wider understanding on the development of entrepreneurial intentions and the determinants that academics should consider when taking the latter as a subject.

Through the development of these assumptions and taking into account that it is difficult to predict for sure if the entrepreneurial behavior is going to occur in the future, authors suggested cognitive adaptability as a key factor for entrepreneurial success. In fact, while Flavell (1979) was the first to clearly introduce the notion of metacognition and the important role that it plays in every single activity a human being can pursue, Haynie and collaborators took into account the role cognitive adaptability in the entrepreneurial context. They defined cognitive adaptability as, “the ability to be dynamic, flexible, and self-regulating in one’s cognitions given dynamic and uncertain task environments” (Haynie and Shepherd 2009). In fact, cognitive adaptability offers a more specific context to study the entrepreneurial mindset and is “important in an entrepreneurial context because contemporary business environments are characterized by rapid, substantial, and discontinuous change” (Hitt 2000, as cited in Haynie et al. 2012). For the matter, this dissertation proposed to explore the role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intentions in an effort to provide further theoretical and empirical insights on such matter. The following chapter will be concerned with the methodology and the testing context of the conceptual model.

Chapter IV:
Research methodology and design

Introduction

The present dissertation took as an objective the assessment of the impact of entrepreneurial competencies on the entrepreneurial intentions of undergraduate students, and exploring the moderating role of cognitive adaptability. The preceding chapters served as a theoretical basis for the set of variables taken into consideration as well as a state of the art on the possible links between the latter.

A specific epistemological position was adapted in the aim of contextualizing, guiding and acquiring responses and interpretations to the central research problem. Such position is defined and explained in the present chapter.

For the matter, the first section of the present chapter will be interested in the methodology used to test the conceptual model, the epistemological position and the reason why such choices were made for the present dissertation.

The relevance of defining and explaining the aforementioned choices is that, “all research work is based on a certain vision of the world, employs a methodology, and proposes results aimed at predicting, prescribing, understanding or explaining” (Thiétart et al., 2001, p.23). For the latter authors, the epistemological position provides the researcher with control over his or her research approach, as well as it helps in ensuring the cumulativeness of knowledge and the increasing the validity of the results (Thiétart et al., 2001).

The second section will be, on the other hand, interested in providing insights on the characteristics on both on the investigation field and the target population. Moreover, a presentation of the data collection measurement and its development as well as the statistical tools used to analyze the collected data will be provided.

Section I: Research design

Research design was described, in the literature, as encompassing and linking the various elements that form a scientific research. In fact, Akhtar (2016, p.68) quoted that “research design can be considered as the structure of research it is the “Glue” that holds all of the elements in a research project together”, describing it as a process of planning of the research.

In fact, the research design of a given scientific research provides it with directions and structures, thus, a well-founded choice of such design is dependent on the research objectives as well as the phenomenon the researcher is trying to understand.

To argument the research design choice, the current research relied on the three philosophical position proposed by the literature as to: the ontology, the epistemology and the methodology.

1. Ontological considerations

Ontology, according to Bryman and Bell (2011), serves as an answer to the nature of social entities. In their terms, ontology is interested in determining if the social entities are objective or are social constructions. In fact, the authors argued that through ontological considerations are concerned with the dilemma existing between considering social entities as having a reality external and distinct from the social actors, and the importance of the social actors’ perceptions and actions in building the social constructions.

Two ontological positions were provided, which are objectivism and constructionism. The table below provides insights on the differences between the positions.

Table 12: Ontological positions

Objectivism	Constructionism (Constructivism)
Social phenomena and their meanings have an existence that is independent of social actors.	Social phenomena and their meanings are continually being accomplished by social actors.
Social phenomena and the categories used in everyday discourse have an existence that is independent or separate from actors.	Social phenomena and categories are not only produced through social interaction but that they are in a constant state of revision.

(Adapted from Bryman and Bell, 2011)

In accordance to the definitions presented in the table below, and taking into account that the present dissertation relies on an objective view of the reality, by relying on face to paper and online questionnaire in order to assess the impact of entrepreneurial competencies on

entrepreneurial intentions of Tunisian undergraduate students in their third year. Following a cross-sectional study, providing the students' assessment of their intention, competencies and levels of cognitive adaptability. In fact, the cross-sectional studies, unlike longitudinal studies, allows to obtain a clear image of a given population in a given period of time, thus focusing more on the differences between members of the studied population instead of the evolution or the development of their characteristics through time. As the dissertation considers the entrepreneurial competencies, entrepreneurial intentions and cognitive adaptability levels are a product of entrepreneurship education within university, objectivism is the more appropriate ontological position for the present research.

2. Epistemological position and foundations

Specifying the epistemological position and the methodological choices of the research helps guiding and orientating the researcher towards a clearer and rigorous research path as well as more valid and reliable results.

In fact, Epistemology was presented in the literature as vital for every research, while methodology was considered as the core of the research (Thiétart et al., 2001). For the matter, the first part of this first section will be devoted to defining epistemology, the epistemological position of the research as well as presenting the various epistemological paradigms and present the supporting statements of the position chosen in this context. The second part, on the other hand, will be interested in the methodological choices and presenting the arguments justifying and supporting such choices.

The relevance in the definition and presentation the aforementioned remains in the fact that, understanding the various alternatives when it comes to epistemological and methodological choices, helps clear out any confusion regarding the choices that were made, as well as justifying why such choices were made in a specific context. Matter of fact, epistemological and methodological choices lend legitimacy to the research and offer a clear presentation of the strategy pursued to achieve the predefined research objectives.

Epistemology, referred to as the theory of knowledge is a Greek term, "episteme", which means knowledge (O'Brien, 2016). Epistemology drew a line between knowledge and opinions. It was presented as a response to what human beings experience, what they know and how they should organize their knowledge in terms of validity and the way they perceive and describe reality. The literature suggested that epistemology is a result of fear and doubt that perceptions and senses as well as memory may distort reality, thus epistemology, which was defined as the

theory of knowledge, provided researches with the possibility of controlling the sources of error and by such obtaining the possibility to attain knowledge.

Thiétart et al. (2001) defined epistemology as the study of knowledge. They added that it is the study of science, its nature, its validity and value, its methods and its scope. They argued that the relevance of epistemology is centered on the fact that it allows the researcher to establish the legitimacy and validity of his or her work. Such legitimacy is a result of epistemological questioning which is presented as vital for the seriousness and rigor of every research work.

Iacob et al. (2015, p.248), with reference to Virieux (1966), affirmed that epistemology “aims to study critically the principles, hypotheses and results of diverse sciences, in order to determine their origin, their value and their objective domain of interest”. In their terms, epistemology is concerned with four types of problem, namely, the logic, semantics and methodology of science and the theory of scientific knowledge.

Finally, every research is based on a specific vision of the world, using a specific method and “proposes results aimed at predicting, prescribing, and understanding, constructing or explaining” (Thiétart et al., 2001, p.23).

Epistemology is useful for two reasons according to O’Brien (2016). As it is concerned with the possibility and nature of knowledge, it, firstly, offers an instrumental usefulness when it comes to scientific knowledge. Secondly, it helps valorizing knowledge and legitimating it. Matter of fact, the latter author explained that epistemology offers a criterion of desirability to knowledge even though it has no practical use.

In the same context, and as an explanation of the nature of reality, epistemological paradigms were presented as an answer to the following questions: “does reality exist independently of the observer, or is our perception of reality subjective. What part of ‘reality’ can we know?” (Thiétart et al., 2001, p.24).

To provide answers to the previous question, researches generally rely on three major paradigms: positivism, Interpretivism and constructivism. Overviewing the various paradigms serves as base for providing statements supporting the epistemological position and choices of this dissertation.

1.1. Positivist paradigm; understanding an objective reality

When considering positivism, the researcher is following a verification process resulting in statements that are tested both through the literature and through subsequent surveys.

For Johnston (2014), when pursuing a positivist approach, the theory is presented as a crucial starting point, as testing its assumptions represents the core of such approach. Moreover, he added that positivism is based on objective methods since reality is considered as external and cannot be open to interpretation. Thiétart et al. (2001) on the other hand argued that the positivist paradigm is dominant in social and organizational sciences. The latter authors insisted on the fact that the principle of objectivity is the first concern of positivists, and such objectivity is provided through the independence between object and subject, thus “a subject’s observation of an external object does not alter the nature of that object” (Thiétart et al., 2001, p.25). In the same context, positivism considers human beings as a subject to an immutable reality and quasi-invariable laws, they are, thus, a product to the conditions and necessities of their own environment (Thiétart et al., 2001).

Matter of fact, the positivist paradigm aims to explain reality with the aim of creating a generalizable law concretizing a completely objective truth. In fact, “the positive ideal would be to find a universal law that explains reality and reveals objective truth” (Thiétart et al., 2001, p.29).

Saunders et al. (2019) on the other hand explained the Positivism relates to the philosophical stance of the natural scientist and entails working with an observable social reality to produce law-like generalizations. It promises unambiguous and accurate knowledge as the label positivism refers to the importance of what is posited and given. This emphasizes the positivist focus on strictly scientific empiricist method designed to yield pure data and facts uninfluenced by human interpretation or bias (Saunders et al., 2019).

Table 13: The positivist philosophical position in business and management research

Positivism			
Ontology (nature of reality or being)	Epistemology (what constitutes acceptable knowledge)	Axiology (role of values)	Typical methods
-Real, external, independent -One true reality (universalism) -Granular (things) -Ordered	-Scientific method -Observable and measurable facts -Law-like generalizations -Numbers -Causal explanation and prediction as contribution	-Value-free research -Researcher is detached, neutral and independent of what is researched -Researcher maintains objective stance	-Deductive, highly structured, large samples, measurement, -Quantitative methods of analysis, but a range of data can be analyzed

(Source: Saunders et al., 2019)

As shown in the table above, the objective of a research based on the positivist paradigm is to obtain a generalizable rule, that would apply to every context as it emerged from reality, supposed as real and ordered. Moreover, it suggests that to succeed in obtaining such a rule, rigor and objectivity are the principal pillars. In fact, the positivist researcher should be completely detached from the object of the research.

1.2. Interpretivism, constructivism and positivism; answer to a subjective reality or a knowable reality

Considering Interpretivism and constructivism, these paradigms came as a response to a widely subjective reality. In other terms, following such paradigms suggest that reality has more facets and is continuously changing depending on its actors. For Thiétart et al., (2001), the latter paradigms express the need to understand a reality that remains unknowable as it unreachable.

The authors added that taking reality as the object of the research, the researcher, being the subject, conditions it through his actions and experiences within. Thus, they argued, that interpretivism supposes the simultaneous and mutual shaping of the entities the researcher is studying and linking, which leads him to rely on the meaning he or she has of reality to create knowledge instead of explaining it reality without any involvement of his assessment. Constructivism on the other hand, is based on the act of knowing to construct reality instead of relying on an objective perception of the work. (Thiétart et al., 2001)

Nonetheless, positivism, as different as it is from interpretivism and constructivism, knew a great evolution in business and management research as positivists detached themselves from pure causal research and orienting their researches towards a view wider than simple linear and causal relationships to more multiple and circular causal relationships, expressing by such that reality can still be explained through the generation of new knowledge not by considering reality as unknowable as the conservative vision, but holding its own meaning without the integration of the personal beliefs of the researcher (Thiétart et al., 2001).

Thiétart et al. (2001, p.24) concluded by quoting that “the aim of positivism is to explain reality, whereas Interpretivism seeks, above all, to understand it and constructivism essentially constructs it”. As explained above, the table down below provides an answer to the epistemological questions according to each proposed paradigm.

Table 14: Epistemological positions of the positivist, Interpretativist and constructivist paradigms.

Epistemological Questions	Paradigms		
	Positivism	Interpretivism	Constructivism
Status of knowledge	Ontological hypothesis: The knowledge object has its own essence Independence of subject and object	Phenomenological hypothesis: The essence of the object is multiple (Interpretivism), cannot be attained (moderate constructivism) or does not exist (radical constructivism) Dependence of subject and object	
Nature of ‘reality’	Determinist hypothesis: The world is made up of necessities	Intentionalist hypothesis: The world is made up of possibilities	
How knowledge is generated?	Discovery The research question is formulated in terms of “ <i>for what reasons...</i> ”	Interpretation The research question is formulated in terms of “ <i>what motivates actors to...</i> ”	Construction The research question is formulated in terms of “ <i>to what ends does...</i> ”
	Privileged status of explanation	Privileged status of understanding	Privileged status of construction
What is the value of	Degree of confirmation Refutability	Credibility Transferability	Adequacy “Teachability”

knowledge? (Validity criteria)	Logical consistency	Dependability Confirmability	
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(Source: Thiéart et al., 2001)

Through the above and adding the importance of the interrelation between ontological positions and epistemological positions, it is possible to explain the reason behind adopting a positivist position. In fact, this dissertation aims to explain which entrepreneurial competencies do have an impact on the entrepreneurial intention of Tunisian undergraduate students in their third year, taking into account the moderating role of cognitive adaptability and the university context. Moreover, the research aims to be objective, suggesting there is no interference between the researcher beliefs when studying the phenomenon. The creation of knowledge, and thus the outcomes of the research are centered in identifying the main entrepreneurial competencies that impact the entrepreneurial intention of students through confirming and refuting the research hypotheses, and following a logical analysis in the explanation based on various statistical analyses and statistical tools, guaranteeing rigor in the results and avoiding subjectivity.

3. Methodological choices

Explaining the ontological and epistemological positions enables the researcher to direct his or her methodology in order to realize the expected research objectives. For the matter, this subsection will be interested in describing and defining the methodological choice, the methods used, and the various measurement tools that allowed the advancement of the research.

Creswell and Creswell (2018) argued that the choice of the research approach and the research methods is tightly dependent and emerges directly from the research problem. In fact, the latter authors defined the research approach as a plan and a procedure than “span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation” and research methods as methods of “data collection, analysis, and interpretation” (Creswell and Creswell, 2018, p.38).

In fact, methodology focuses on planning and pursuing strategies related to the methods used to achieve the research goals. Bryman and Bell (2011) argued that, taking account of the research strategies, quantitative and qualitative researches are different and distinct, not only on the level of methodology, but also at an epistemological and ontological levels. In the same context, and recalling that this dissertation fits in an objectivist, positivist view of reality, the more appropriate strategy to pursue would be quantitative. Nonetheless, the authors presented a clear distinction between both strategies as seen in the table below.

Table 15: Fundamental differences between quantitative and qualitative research strategies

	Quantitative	Qualitative
Principal orientation to the role of the theory in relation to research	Deductive; testing the theory	Inductive; generation of the theory
Epistemological orientation	Positivism	Interpretivism/ constructivism
Ontological orientation	Objectivism	Constructionism

(Source: Bryman and Bell, 2011)

Thiétart et al. (2001) argued that quantitative approaches are mainly focused on measuring sets of variables with the aim of answering hypotheses and research questions that theory guided. Taking into account the entrepreneurial field, which represents the general theoretical framework of the present research, McDonald et al. (2015) argued that quantitative methods are of a great dominance, suggesting that researchers in entrepreneurship based their studies on questions that could be answered through quantitative data. Such preference of quantitative data was explained by the latter authors as a response to the preferences of policy makers as they are “more comfortable with the process of, and evidence from, quantitative research” (McDonald et al., 2015, p.21). In the same context, Duane et al. (2015) argued that cross-sectional studies are more adapted to entrepreneurship as it is a highly dynamic process, encompassing high failure rates of companies and startups, making it complex to be a subject of longitudinal studies. Considering the theoretical framework, the empirical reality and the ontological and epistemological positions, the more appropriate method to perform would be the quantitative method.

To investigate the impact of entrepreneurial competencies on entrepreneurial intentions of Tunisian students and the role that cognitive adaptability plays in such relationship, assumptions were constructed from the theory and the insights provided by the literature. The quantitative method, pursued in the present dissertation, allows the verification of such assumptions following a logic of refutation. The impact of entrepreneurial competencies on entrepreneurial intention taking students as a population and the university and entrepreneurship education as a context received a great attention from the literature, but little findings were provided on the Tunisian context. Moreover, the impact of cognitive adaptability

on entrepreneurial intention, still considered as under-researched (Botha and Bignotti, 2017), was almost exclusively verified in Southern African contexts.

For cognitive adaptability in an entrepreneurial and learning context, which is still a relatively new concept, no clear insights related to the Tunisian context were provided by the literature. Finally, the moderating role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intentions will be subject to investigation in the present dissertation to provide findings that would, first, orient more researchers towards considering the importance of cognitive adaptability in a learning context, and secondly, to provide recommendations for education policy makers related to the need of further interest and investigation of such key competency of entrepreneurial success.

The present section allowed the presentation and definition of the research design, providing by such arguments supporting the ontological, epistemological and methodological choices. This dissertation follows an objectivist ontological position, a positivist epistemological position and a quantitative research methodology. The following section will provide a thorough description of the target population, and the reason why such population was chosen taking into account the field of investigation. Moreover, it will present the data collection as well as the data analysis methods used.

Section II: Characteristics of the population and data collection

The first factor to consider when going through a process of choosing with data collection is more appropriate for a given target population is the central research question of the scientific research work.

In these terms, the research questions that represent the core of the present dissertation are as presented in the table below.

Table 16: Research problem and inherent research questions

Research problem: To what extent do entrepreneurial competencies influence the entrepreneurial intentions of Tunisian students, taking into account their levels of cognitive adaptability?
Research question 1: What influence do entrepreneurial competencies have on the entrepreneurial intentions of Tunisian students?
Research question 2: Does a high cognitive adaptability lead to a greater influence of entrepreneurial competencies on the entrepreneurial intentions of Tunisian students?

The objective of the research being providing an answer to the aforementioned research questions, it materialized in measuring the three variables in question, as to, entrepreneurial competencies, entrepreneurial intention and cognitive adaptability, analyzing the outcomes and the possible relationship between the latter variables and provide interpretation in accordance to the expected outcome of the present dissertation.

To provide an answer for the central research questions, a quantitative method was performed through the data collection instrument of choice, which was a questionnaire developed on the basis of theoretical assumptions. Moreover, the data collected was codified, analyzed and interpreted through two different statistical software tools, as to SPSS.22 and SMARTPLS 2.3.8. The present section will describe such a process of development, collection and analysis of data, providing arguments and bases in regards of each methodological choice.

1. The sample characteristics and the sampling procedure

This sub-section is a presentation of the general framework of the empirical survey. In fact, it is interested in providing arguments the choice of the field of investigation, the target population and the sampling procedure.

1.1. Investigation field characteristics: entrepreneurship education in Tunisia

The tangible outcomes of entrepreneurship education in Tunisia was the starting point of the present research. Matter of fact, while the Tunisian government provided various types of entrepreneurship promotion resources, the rate of effective entrepreneurial actions within young Tunisians is still low. The inadequacy between the government and policies expectations and the effective outcomes could only be explained through entrepreneurship education within and outside universities

According to the agency for the promotion of industry and innovation, the Tunisian government worked on collaboration between the Tunisian ministry of Industry and SMEs and ministry of higher education and scientific research since 1999, where a contract was signed in order to place entrepreneurial support structures within higher education institutions. The contract came into effect starting from 2001 with the establishment of a network of 26 business incubators. In fact, the knowledge of such structures is associated significantly with the students' attitude towards being an entrepreneur as they represent a valuable tool in stimulating the entrepreneurial intention (Malebana 2014). However, and according to the SALEEM project (2018), with more than 62 structures for promoting and financing entrepreneurial activities in the capital, the response rate of students that are conscious of their presence and the services they offer did not exceed the 6%.

Moreover, and facing a high rate of unemployment (15.3% in 2019), the Tunisian ministry of higher education and scientific research integrated courses regarding entrepreneurship within universities. In fact, and according the OECD report of 2012, entrepreneurship education started in Tunisia in the late 2000s, providing courses regarding entrepreneurial culture and insisting on recruiting professors with prior professional experience in the entrepreneurial field in order to provide students with modules about entrepreneurship knowledge and skills as well as to guide them towards considering entrepreneurship as an alternative professional career.

Still, results show that all the governmental efforts did not lead to the expected outcomes and such fact could be caused by inefficiencies related to either the communication strategies adopted by governmental support structures, or lack of research efforts from the students' part. It is necessary to recall the general post-revolutionary socioeconomical context, as according to Romdhane and Amar (2019), the socio-economic situation of the country explains both the deterioration of the Tunisian Dinar and the increase and persistence of inflation during the post-revolutionary period. Such instability in the economic, social and political environment has a

negative impact on savings and investment as it adds to the entrepreneurial environment's uncertainty.

1.2. Target population and sampling procedure

The target population of the present study is mainly based on Tunisian business students, studying in their third year of university, assuming they are in their final year and expecting to graduate. The choice of such a precise population is based on the fact that, in their third year, students would have already attended the entrepreneurship courses provided by universities, as well as acquired the required set of skills related to business administration.

Reviewing the literature, studies taking entrepreneurial intentions and entrepreneurial competencies are almost exclusively oriented towards either university students or startups' founders. In fact, Linan and collaborators (2007, 2009, 2014) based both his studies on business and economic students in their last year at university. Moreover, authors such as Thompson (2009), Malbena (2014), Lebusa (2014), Malbena (2015), Nieuwenhuizen and Swanepoel (2015), Zhang et al. (2015) and Al Mamun et al. (2016) based their researches on a population of university students, insisting on the under-graduation criteria.

Linan (2008) argued that, in entrepreneurship research, a sample of university students is the more convenient and is widely used through the literature. The author added that researchers found that university students show the highest rates of propensity to launch a business venture.

For the matter, the target population of this study, aiming to measure entrepreneurial competencies, entrepreneurial intentions and cognitive adaptabilities of students, is undergraduate, business and economic students in their third year of university, having followed courses to obtain their first university diploma.

To provide a general overview of the population of Tunisian students, the Tunisian ministry of higher education and scientific research provided statistics between the years 2016 and 2017, arguing that the educative Tunisian system contains 203 public institutions within 14 universities and 68 private institutions where there are more than 250900 Tunisian students and 2238 foreign students from 49 nationalities with success rate of 70.2%.

The sample taken into consideration in the present dissertation considered mainly Tunisian students registered in public institutions and in their second semester of the third year of study, supposing they will obtain their diploma in few months. The age of the participants ranged between 21 and 25, supposing that according to the educative system, a third-year student

should have at least 21 years old. The data of the research was obtained of a total of 314 students in their third year, in the academic year of 2018-2019 during the month of April 2019. The study is cross-sectional and thus, took into considerations the characteristics of the sample in the sampling period through the distributions of the questionnaire both directly and online.

A review of the rule of thumb for the sample size performed by Person et al. (2010) offered a minimum of 100 subjects as suggested by Gorsuch (1983) and Kline (1994) and a minimum of 300 subjects for a fair sample size according to Comrey and Lee (1992). In the case of this dissertation, 350 questionnaires were distributed in a face-to-paper method, from which 280 were returned, where students were offered to deliberately and voluntarily fill the questionnaire in their classrooms with the presence of their professors. Access to the classrooms were permitted under the authorization of the university administration, after providing a written request for the permission the enter classroom within study hours.

In response to geographic limitations, the questionnaire was also distributed online in a Google Forms format through social media such as Facebook and LinkedIn, targeting specifically third year students' communities. The access to the online groups was permitted by the students themselves and the link to the questionnaire form was provided through a publication explaining the content and the objective of the research and guaranteeing the absolute confidentiality of the responders. As mentioned above, the online distribution of the questionnaire offered the possibility to attain students who are geographically distant.

In order to maximize responses, a contact e-mail address was inserted in every publication to allow students to interact and ask questions. Moreover, social media addresses were also provided to give a sense of confidence to students through seeing the person behind the study.

Respondents were mainly from the capital and Northern Tunisia, the majority between 22 and 25 years old, with a higher response rate from women.

2. Data collection and analysis

As mentioned above, the data collection instruments were mainly distributed questionnaires through face-to-paper and online methods, and the data analysis were performed through the use of two different statistical software, which are IBM SPSS and SMARTPLS. The first paragraph of this subsection will be interested in describing the construction of the data collection tool, and the second paragraph will be concerned with the statistical tools and procedures allowing the analysis and interpretation of the collected data.

2.1. Data collection instruments: construction of the questionnaire

The questionnaire used a data collection tool in the present dissertation was constructed upon arguments from the theory and the literature related to entrepreneurial intentions, entrepreneurial competencies and cognitive adaptability. The items presented as affirmations will be subject to reliability and validity tests, and will also be purified through a procedure of factor analyses allowing to obtain a relative adequacy between the theoretical assumptions and the empirical realities.

Moreover, the items were adopted from an English written literature, which required a thorough process of translation, from English to French and a reverse translation with the help of professors specialized in the field of entrepreneurship, to insure a proper comprehension of the content and avoid the obtention of responses that do not reflect the real assessment that students have of their levels of entrepreneurial intentions, competencies and cognitive adaptability.

The translated questionnaire was then presented to a sample of ten students to verify proper understanding and measure the period of time that is necessary to fill the questionnaire form. Results were positive and the filling process of the questionnaire scored a period of ten to fifteen minutes. Following the order and recommendations of the authors as Haynie and Shepherd (2009) and Thompson (2009), who created and tested the items, all the latter were presented in simple wording, starting with an “I” pronoun leading the students to a clear understanding of the affirmations and a proper implication in the response. In fact, the “I” pronoun provides a response according to the respondent’s own assessment of his or her abilities, skills and desires.

The questionnaire was presented in French, starting with a brief presentation of the study, the general framework and the objectives it aims to attain focusing on the importance of the students’ responses both to the research and its future implications with direct recommendations to policy makers and universities. Moreover, it was divided into 3 principal sections, namely, demographic data, assessment of the levels of entrepreneurial intentions and cognitive adaptability and the assessment of the entrepreneurial competencies of the students. Ten items were concerned with demographic information, while 77 items were assessing entrepreneurial competencies, entrepreneurial intentions and cognitive adaptability.

The demographic information section involved questions regarding the gender, age, university and the year of study as a control tool for the online questionnaire. Moreover, the respondents were asked to inform through a binary (yes or no) response form about their professional experience, their participation in entrepreneurial events and courses, their enrollments in non-

governmental organizations activities and their entrepreneurial knowledge, more specifically their entrepreneurial network (see appendix A).

In fact, questions related to prior out-of-university and professional experience seem to give further information when it comes to the assessment of entrepreneurial intentions and competencies. The literature has argued that prior exposure to entrepreneurial activities have a major impact on the development of entrepreneurial intentions (Ahmad et al. 2010; Al Mamun et al., 2016). Moreover, information related to the entrepreneurial knowledge and network provide insights on the importance of the influence of role models in the development of the entrepreneurial intentions. Starting from Linan (2004) to Malbena (2014) and Amouri et al. (2016), role models, such as parents, family and community as active entrepreneurs, have a major impact in directing and orienting individuals towards choosing entrepreneurship as a career, a common example is related to successions within family enterprises. Moreover, the authors argued that growing within an entrepreneurial environment provides the required exposure, the right set of skills and well as a realistic view of the entrepreneurial career. Finally, students were asked to inform about their knowledge of entrepreneurship support structures and non-governmental organizations that are specialized in promoting entrepreneurial careers. Through the latter, an evaluation of the performance of such structures can be performed and recommendations can be proposed to improve communication strategies in accordance to the prior survey performed through the SALEEM projects in 2018.

A single and common 1 to 5 Likert scale was applied to measure all the items where 1 expresses the total disagreement and 5 expresses the total agreement to the statement as following: 1: “strongly disagree”, 2: “disagree”, 3: “neutral”, 4: “agree” and 5: “totally agree”. Few items were reverse coded mainly in the entrepreneurial intention measurement scale (See Appendix B). Such clarifications will be made in the following paragraph.

2.2. Measurement scales assessment

The measurement scales adopted in the present dissertation are issued from the literature with minor modifications related to the translation from mother language which is English to the survey language which is French. Each measurement scale, either for the entrepreneurial intention or the dimensions of both cognitive adaptability and entrepreneurial competencies was subject to a literature review founding the choice of integrating a measurement scale on the reliability it provided through past studies and different contexts. The comparison effort of each measurement scale is presented in the present paragraph.

2.2.1. Assessment of the measurement scale of entrepreneurial intention

As presented in the following table, the literature provided various measurement scales allowing to measure the entrepreneurial intentions of students, given that the majority of the study were made in a university and educational context. From the various measurement scales presented, Thompson’s (2009) measure appeared to respond best to the requirements of the study. While most of the measures were based on the theory of planned behavior by Ajzen (1991), thus taking into account a study of the determinants of entrepreneurial intentions and aiming to predict the entrepreneurial action.

Thompson (2009) provided a unidimensional measure, entitled the individual entrepreneurial intent scale (IEIS) that he developed in 2009. The author based his measurement scale on the necessity of considering the individual entrepreneurial intent which he defined as “a self-acknowledged conviction by a person that they will set up a new business venture and consciously plan to do so at some point in the future” (Thompson, 2009, p.387). Such measurement scale, in his terms, to the unanswered questions related to individual differences when it comes to entrepreneurship. In fact, argued that the measurement scale was proven to be practical, valid and reliable, and should be considered to assist the theoretical and empirical advance regarding the study of entrepreneurship. Authors such as Quan (2012), Urban (2012), Valliere (2015) and Botha and Bignotti (2017) used the IEIS to measure entrepreneurial intentions within students with a reliability index higher than 0.8 in their studies.

From the above, IEIS by Thompson (2009) will serve as a measurement scale to assess the entrepreneurial intention of students. As recommended by the author, the ten items should be presented as a single block in the order provided. Four items were considered as distracter items are marked with asterisks in the table below and should not be included in the analysis, while three items are reverse coded and marked with a (R) in the table below. Thus, the items that would be considered in the analysis are of the number of six out of a total of ten items.

Table 17: Individual entrepreneurial intention scale of Thompson (2009)

1: Intend to set up a company in the future.	6: Are saving money to start a business.
2: Plan your future carefully*	7: Do not read books on how to set up a firm (R)
3: Read business newspapers*	8: Plan your finances carefully*
4: Never search for business start-up opportunities (R)	9: Have no plans to launch your own business (R)
5: Read financial planning books*	10: Spend time learning about starting a firm.

Table 18: Comparative table of the reliability of the different measures for entrepreneurial intention

Authors	Journal	Context	Variables	Cronbach's α
Thompson (2009)	Entrepreneurship: Theory and Practice	English-based university in East Asia	Individual Entrepreneurial Intent Scale (IEIS)	0.89
Linan and Chen (2009)	Entrepreneurship Theory and Practice.	Spain and Taiwan	Entrepreneurial intention Perceived behavioral control Subjective norms Attitudes towards the behavior	0.776 to 0.953
Malbena (2014)	Journal of Economics and Behavioral Studies.	South African Rural University Students	entrepreneurial intention attitude towards becoming an entrepreneur perceived behavioral control subjective norms social valuation of entrepreneurship knowledge of entrepreneurial role models entrepreneurial support perceived barriers to starting a business entrepreneurial motives	0.750 0.766 0.762 0.784 0.694 0.699 0.702 0.918 0.0889
Lebusa (2014)	Journal of Social Sciences.	Advanced Undergraduate Students	Attitude toward start-up (personal attitude, PA) Subjective norm (SN) Perceived behavioral control (PBC)	0.964515 0.934625 0.913556
Malbena (2015)	Southern African Business Review.	South Africa, university in the Eastern Cape and a university of technology in Limpopo	Attitudes towards the behavior Subjective norms Entrepreneurial intention	0.818 to 0.903

			Perceived behavioral control	
Nieuwenhuizen and Swanepoel (2015)	Acta Commercii.	South Africa and Poland	Entrepreneurial intent	0.942
			Personal attitude	0.926
			Perceived behavioral control	0.868
			Entrepreneurial support	0.748
			Knowing entrepreneurs	0.798
			Valuing entrepreneurial activity	0.810
			Assistance from family, friends, others	0.779
			Country culture support	0.6833
			Managing employees	0.914
			New product development	0.837
			Marketing and networking	0.796
			Financial acumen	0.907
Entrepreneurial competencies	0.813			
Zhang et al. (2015)	Entrepreneurship Research Journal.	southern university in the U.S	entrepreneurial intention	0.899
			Attitude	0.871
			Social norms	0.876
			Controlled behavior	0.892
			Risk taking	0.837
			self-determination	0.773
Mahmoudi and Tounes (2015)	Conference Paper. (Tunisian context)	Management student in North Africa, Maghreb Business Schools.	Individual entrepreneurial intent (IEIS)	0.73- 0.96

Ben Ali (2016)	International Review of Management and Marketing.	Saudi Arabian University Students	Entrepreneurial intention Attitudes towards becoming an entrepreneur Perceived behavioral control Subjective norms	0.868 0.816 0.863 0.684
Mares and al (2016)	Jornadas Luso Espanholas de Gestão Científica.	College of Business and Administration (ESCE), Polytechnic, Institute of Setubal (IPS) and students from Economics and Management College (FEA), University of São Paulo (USP)	Attitudes towards the behavior Subjective Norms Perceived Behavioral Control Entrepreneurial Intention	0.871 - 0,937 0.727 - 0,768 0.875 0,912 0.934 0,960

2.2.2. Assessment of the measurement scales of entrepreneurial competencies

The measurement and identification of which entrepreneurial competencies effectively impact the development of entrepreneurial intentions within undergraduate students offers a clear overview on the competencies that condition intentions within the learning context.

Moreover, it provides an action plan to orient and guide entrepreneurship courses towards considering those competencies that do actually increase the desire of Tunisian students to become entrepreneurs and higher the rate of entrepreneurial actions in Tunisia, for what it offers to the current socio-economical post-revolutionary context.

The theoretical review allowed a clear identification of the set of competencies to take into account regarding university students. In fact, since competencies are a set of attitudes, beliefs and skills related to entrepreneurship (Krueger et al., 2000), there was no proper consensus on which fixed set of competencies to consider.

The measurement scales provided in the table below were taken into consideration when studying individual differences within students. Thus, all the samples were made of university students with a majority specialized in a management or business-related studies.

In fact, each author focused on the set that is more appropriate to each research, from technical to managerial competencies. For the present dissertation, the definition of Krueger et al. (2000) was a starting point. Taking into account that the objective of the research fits within the framework of individual differences and the individual dimension.

The set of competencies taken into account, as explained the theoretical part of this dissertation are, information seeking competencies, opportunity recognition competencies, risk-taking propensity, innovativeness and training and skills with accordance to the work of various authors in the literature such as of Al Mamun et al. (2016).

Table 19: Comparative table of the validity of the different variables used to measure entrepreneurial competencies

Competencies	Authors	Items	Scale	Cronbach's α
Opportunity recognition competencies	Wang et al. (2013) Ozgen and Baron (2007)	-Seeing potential opportunities does not come very naturally to me (reverse scoring) -I have a special alertness or sensitivity toward new opportunities. -While going about routine day-to-day activities, I see potential new venture ideas all around me.	3-item scale, 5 Point Likert scale	0.8
Risk-taking propensity	Nabi and Liñán (2013)	-Starting a new business is very risky -I see the possibility of starting a business as a potential opportunity to pursue -The probability of a new venture doing poorly is very high -If I don't start my own business, I may be missing a great opportunity -There is great uncertainty when predicting how well a new venture will do -Overall I would label the option of starting a business as something positive -The overall riskiness of a new venture is high	7-items, 7-point Likert scale	0.73 - 0.86
	Kumar et al. (2018)	-I have to ask in advance to be briefed in business -I have to think in advance in order to get clarification effects related to business -I am willing to take risks for the sake of business -I enjoy the uncertainty and risks of business since they energize me more than circumstances where there are predictable outcomes	4-items, 5-point Likert scale	0.838

	Antoncic et al. (2012)	-I like to take risks; -I am in favor of risk-taking (high correlations between the two items - Indicated a very good reliability of the measure)	2-item scale, 5 Point Likert scale	China 0.757 Finland 0.618 Oman 0.800 Portugal 0.783 Slovenia 0.657 US: 0.741
	Koe (2016)	-Act boldly -Invest time/money on something that yield high return -Take bold action by venturing into unknown	3-items, 5-point Likert scale from 1 = “strongly disagree” to 5 = “strongly agree”	0.766
Training and skills	Linan (2008) Denoble et al. (1999)	-Recognition of opportunity -Creativity -Problem solving skills -Leadership and communication skills -Development of new products and services -Networking skills, and making professional contacts	6-items, 7-point Likert scale	0.858
	Ho et al. (2018)	-I am able to see myself starting and running a business in future -I am confident of developing a product using needs identification techniques - I understand the mindset of consumers and how to market my product/service to them	11-items, 5-point Likert scale	0.85-0.86

		<ul style="list-style-type: none"> - I am able to communicate my business ideas to other people such as mentors, potential customers and potential business partners - I am capable of conducting a market research by myself -I know how to pitch and sell ideas and products/ services to people -I am able to determine appropriate pricing strategies and channels for marketing - I am confident of doing up a budget for my business -I understand the financial requirements and considerations to start and run a business - I am able to assess the strengths and weaknesses of my business idea in comparison to existing products/services in the market -I understand how to develop and analyze income statements 		
Innovativeness	Koe (2016)	<ul style="list-style-type: none"> -Prefer unique, one-of-a-kind approach -Favor experimentation and original approach -Try new and unusual activities -Try my own unique way 	4-items, 5-point Likert scale from 1 = “strongly disagree” to 5 = “strongly agree”	0.843
	Kumar et al. (2018)	<ul style="list-style-type: none"> -I have an ability in initiating new activities -I do not like routine task -I often like to try unusual activities that are not necessarily risky -I would rather try to solve the problem -I like to do something and reflect valued-added 	6-items, 5-point Likert scale	0.786

		-Someone who always manages according to rules will succeed		
Information seeking competencies	Mclelland et al. (1987) Ajekme and Ibiameke (2016)	- when starting a task, I gather a great deal of information - I seek advice of people who know a lot about the problem or task I am working on - I take action without seeking information -When working on a project for someone, I ask many questions to be sure I understand what the person wants -I go to several different sources to get information to help with tasks or projects	5 Items, 5-point Likert scale	-
	Vignesh and Vetrivel (2017)	-When starting a new task or project, I gather a great deal of information. -I seek advice of people who know a lot about the problems or tasks I am working on. -I take action without wasting time gathering information. -When working on a project for someone, I ask many questions to be sure I understand what that person wants.	4 items, 5-points Likert scale	0.840
	Mills et al. (2014)	- I use Internet technology to explore topics of interest. - I like to enroll in classes to continue my education. - I like to take classes from good professors. - I use Internet communications technology tools when I want to learn about something new. - Internet technology helps me be successful in my college classes. - I learn more when I regulate my own learning experience and seek information on things that I want to learn about.	7 items, 5-point Likert scale	0.77

		- I use Internet communications technology to keep current on topics related to my field of expertise.		
	Management Systems International (MSI) and McBer Team Azarcon, Ernie Roy S. (2008) Paladan (2015) Reyes et al. (2018)	-I first gather a great deal of information before starting a new task or project. -I seek the advice of people who know a lot about the tasks I am working on. -I take action without wasting time gathering information. -When working on a project for someone, I ask many questions to be sure I understand what the person wants. -I go to different sources to get information or to get help with tasks or projects,	5-items, 5-point Likert scale	-

The table above provides a comparison of the various measurement scales proposed by the literature to measure the set of competencies considered in this research.

Considering opportunity recognition competencies, a measurement scale used by Ozgen and Baron (2007) and Wang et al. (2013) provided a clear three items measure, according to a five-point Likert scale with a reliability index of 0.8.

The measurement scale related to risk-taking propensity was proposed by Nabi and Linan (2013) with seven items and reliability coefficient between 0.73 - 0.86. While other authors such as Antoncic et al. (2012), Koe (2016) and Kumar et al. (2018) proposed their own measurement scales, the one offered by Nabi and Linan (2013), apart from offering higher reliability, focusses on the individual's proper perception of the risk related to starting a business, taking into account positive perception and negative perceptions of risk-taking.

The measurement scale related to training and skills, Ho et al. (2018) provided an extensive 11 items scale with a reliability index of 0.85 to 0.86. The choice of such measurement scale was mainly based on the fact that with the items proposed, it takes into account the respondent's assessment of his skills, which he required through training and education, from running and managing a business to understanding consumers and paying taxes. Such skills are tightly related to the effective functioning of a business venture, and entrepreneurship education as well as business and economic education assumes to provide students with courses and programs to develop such skills.

Considering the innovativeness measurement scale, the one adopted for the present survey is from Koe (2016) who borrowed it from the innovative dimension of the individual entrepreneurial orientation by Bolton and Lane (2012). With a four items scale and a reliability index of 0.843, the relevance of such choice remains also in the fact that such scale was used with respondents having the same characteristics of the present sample. As the author quoted that the respondents were on the "final semester full-time undergraduate students of a public university" (Koe, 2016, p.4). Moreover, the scale was used to measure innovativeness to examine its impact on the entrepreneurial intention of students. Thus, the measure is relatively appropriate for the present survey.

Information seeking competencies measurement scales were abundant, still the one provided by Vignesh and Vetrivel (2017) appeared to be more appropriate. A scale of five items measured through a five-points Likert scale with a reliability index of 0.840 and a single reverse coded item. The relevance of such scale is related to the fact that information seeking is related to task, people and self, three dimensions that are crucial in the entrepreneurial field in general,

but also tightly linked to metacognitive knowledge and functioning. For the matter, the measurement scale was taken into account in the present study.

2.2.3. Cognitive adaptability

To measure cognitive adaptability within the entrepreneurial context, Haynie and Shepherd (2009) created the measure of adaptive cognition scale (MAC) on the works Schraw and Dennison (1994). In fact, the latter authors provided an assessment of metacognitive awareness within the educational context. They provided a thirty-six items measurement scale taking into account the five dimensions of metacognition that are goal orientation, metacognitive experience, metacognitive knowledge, metacognitive choice and metacognitive monitoring.

Botha and Bignotti (2017) quoted that the MAC scale provided a thorough measure of the five dimensions and proved a great level of validity and reliability when tested in a context of university students. They also quoted that while the previous works of Haynie and collaborators tested the scale within advanced economies, the study they conducted within the Sub-Saharan African with necessity-driven entrepreneurs provided great outcomes.

Urban (2012), in the same context, supported the reliability and validity of the measurement scale applied to post-graduate students with prior work experience. The MAC scale, as presented in the table 21 related to the comparative studies based on the cognitive adaptability measurement scale, landed a Cronbach’s alpha ranging from 0.7 to 0.885 in the different contexts it was applied. The authors recommended to randomize the items when administrating the instrument for best results (Haynie and Shepherd, 2009; Urban 2012).

Goal orientation was operationalized through a five items scale, presented as affirmation concerning the definition understanding and performance of a given task as shown in the table below.

Table 20: Items measuring goal orientation

Items	Cronbach’s alpha
I often define goals for myself.	0.882
I understand how accomplishment of a task relates to my goals.	
I set specific goals before I begin a task.	
I ask myself how well I’ve accomplished my goals once I’ve finished.	
When performing a task, I frequently assess my progress against my objectives	

Table 21: Comparative studies based on the cognitive adaptability measurement scale

Authors	Reference	Context	Scale	Cronbach's α
Haynie and Shepherd (2009)	Entrepreneurship: Theory and Practice, (315), 695–714.	432 undergraduate business students enrolled at a large western university.	11-point, semantic differential measure	0.885
Haynie et al. (2012)	Entrepreneurship: Theory and Practice, 36(2), 237–265.	217 undergraduate business students, all in their final year of study	11-point, semantic differential measure	0.77-0.834
Urban (2012a)	Journal of Enterprising Culture Vol. 20, No. 2 (June 2012) 203–225	199 post-graduate university students, with work experience from several business schools in a major urban area	6-point interval scale (1–6)	0.772 -0.857
Garcia et al. (2014)	Universitas Psychologica, 13(1), 311–320.	494 university students	5- Likert-type scale	0.7-0.73
Botha and Bignotti (2017)	International Entrepreneurship and Management Journal, 13(4), 1069–1095	602 individuals based in the Gauteng Province of South Africa and enrolled in different entrepreneurship education and training programs	6-point Likert scale	0.86

Metacognitive knowledge on the other hand, was measured through eleven items taking into account the respondent's capacity to of his or her own strengths and weaknesses when it comes to solving problems or performing a given task. It also evaluates the respondent's decisions when it comes to strategies either conscious, unconscious and their evaluation and finally, how the respondent's knowledge of others, their thinking patterns and how they could perceive him or her, capturing by such the essence of metacognitive knowledge as defined by Haynie and Shepherd (2009). The items are presented as following and scored a Cronbach's alpha of 0.726.

Table 22: Items measuring metacognitive knowledge

Items	Cronbach's alpha
I think of several ways to solve a problem and choose the best one.	0.726
I challenge my own assumptions about a task before I begin.	
I think about how others may react to my actions.	
I find myself automatically employing strategies that have worked in the past.	
I perform best when I already have knowledge of the task.	
I create my own examples to make information more meaningful.	
I try to use strategies that have worked in the past.	
I ask myself questions about the task before I begin.	
I try to translate new information into my own words.	
I try to break problems down into smaller components.	
I focus on the meaning and significance of new information.	

For metacognitive experience Haynie and Shepherd (2009) provided an eight-measurement scale capturing the thoughts process of the respondents during and after task accomplishment. It also evaluates the respondents' ability to organize their time according to goals and information according to priorities. Finally, it takes into account the intuitive side of the respondents in the formulation of strategies. The items measuring metacognitive experience are presented in the table below.

Table 23: Items measuring metacognitive experience

Items	Cronbach's alpha
I think about what I really need to accomplish before I begin a task.	0.718
I use different strategies depending on the situation.	
I organize my time to best accomplish my goals.	
I am good at organizing information.	
I know what kind of information is most important to consider when faced with a problem.	
I consciously focus my attention on important information.	
My "gut" tells me when a given strategy, I use will be most effective.	
I depend on my intuition to help me formulate strategies	

Metacognitive choice on the other hand was measured through a five items scale related to the respondents' self-questioning when it comes to problem solving decisions, evaluation of the task performance strategy and learning outcomes after finishing a task. The items are presented in table below.

Table 24: Items measuring metacognitive choice

Items	Cronbach's alpha
I ask myself if I have considered all the options when solving a problem.	0.742
I ask myself if there was an easier way to do things after I finish a task.	
I ask myself if I have considered all the options after I solve a problem.	
I re-evaluate my assumptions when I get confused.	
I ask myself if I have learned as much as I could have when I finished the task.	

Finally, metacognitive monitoring was measure through a seven items scale capturing the evaluation effort that the respondents perform before, during and after the execution of a given task. Such evaluation takes into account the comprehension and integration of information, the conscious use and order of importance of strategies. The items are presented in the table below.

Table 25: Items measuring metacognitive monitoring

Items	Cronbach's alpha
I periodically review to help me understand important relationships.	0.764
I stop and go back over information that is not clear.	
I am aware of what strategies I use when engaged in a given task.	
I find myself analyzing the usefulness of a given strategy while engaged in a given task.	
I find myself pausing regularly to check my comprehension of the problem or situation at hand.	
I ask myself questions about how well I am doing while I am performing a novel task.	
I stop and reread when I get confused.	

2.3. Data processing and analysis

The data processing and analysis was made in two phases and using two different statistical software as the sample of 314 respondents was appropriate for such an analysis process.

In fact, the first phase related to preliminary data organization and coding. Moreover, it resulted in a descriptive analysis, the verification of the reliability and validity of the measures as well as the statistical associations between the variables as the subject of the fifth chapter based on the outputs provided by the software IBM SPSS Statistics 22.

The second phase of the analyses takes part of a more in-depth statistical analyses. In fact, this phase, subject of the sixth chapter, provided a verification of the assessment criteria when it comes to the measurement and structural model of the current study, research hypotheses testing following a partial least square analysis provided by the software SmartPLS 2.3.8.

The use of SPSS and SmartPLS was an answer to the need of providing the appropriate tools to facilitate the handling, analysis and interpretation of data.

2.2.1. Overview of the preliminary data analysis

Using IBM SPSS Statistics 22 provided a tool for gathering and coding the data. First step was related to importing all the data collected from both paper and online forms of the questionnaire. All the items were coded and special attention was given to reverse coded items. 314 questionnaires were taken into, since 280 filled questionnaires were returned with 43

questionnaires that were incomplete, and 77 filled questionnaires were obtained from online distribution. 314 questionnaires were adequate for statistical analysis with no missing data, as all questionnaires involving missing data were eliminated.

* *Analysis of the sample's characteristics*: the distribution frequencies command in SPSS provides information on the characteristics of the sample. This procedure helped sort the population according to genre, age and university. Moreover, the students' answers regarding the prior professional experience, entrepreneurial education and training and entrepreneurial knowledge in terms of network were taken into account. The outputs of the procedure provide percentages regarding the items' answers and the relevance of such results is to inform about the activities and personal characteristics of the sample providing a basis for further analyses.

* *Descriptive analysis*: The descriptive analysis provided answers regarding the students' assessment of their entrepreneurial intentions, entrepreneurial competencies and cognitive adaptability. In fact, the outputs were presented in tables showing the percentages of agreement and disagreement of the students with the proposed items. The percentages obtained informed about the rate of entrepreneurial intentions within students to which reversed items allowed the verification. It also provided responses to what competencies are more developed and what competencies did students perceive as not already acquired.

* *Reliability of the measures*: The reliability test consists in measuring the Cronbach's alpha for the variables, allowing by such a first purification of the measurement scales used in the study. A Cronbach's alpha inferior to 0.5 is unacceptable. Items were deleted on the base of the degree of comprehension that the students had of them and this is provided through the output regarding the augmentation of the index with the elimination of the item as well as inter-items correlations. With each item deleted, reliability index was newly calculated to ensure proper execution of the test.

* *Factor analysis*: For proper factorization, a first step is to verify the Kaiser-Meyer-Olkin (KMO) coefficient and the significance of the Bartlett test of sphericity. A value superior to 0.5 for the KMO index and a significance at the level of 0.001% as considered in the present dissertation represent acceptable values for the factor analysis. A second step, is to verify the one or multiple factor structure of the variables. Variables presenting more factors that what was assumed by the literature are subject to interpretation. If arguments from the literature are provided on such multi-factors structures, the division of the variable in dimensions is accepted, if no insights are presented in the literature, and neither in the context, the theoretical form is

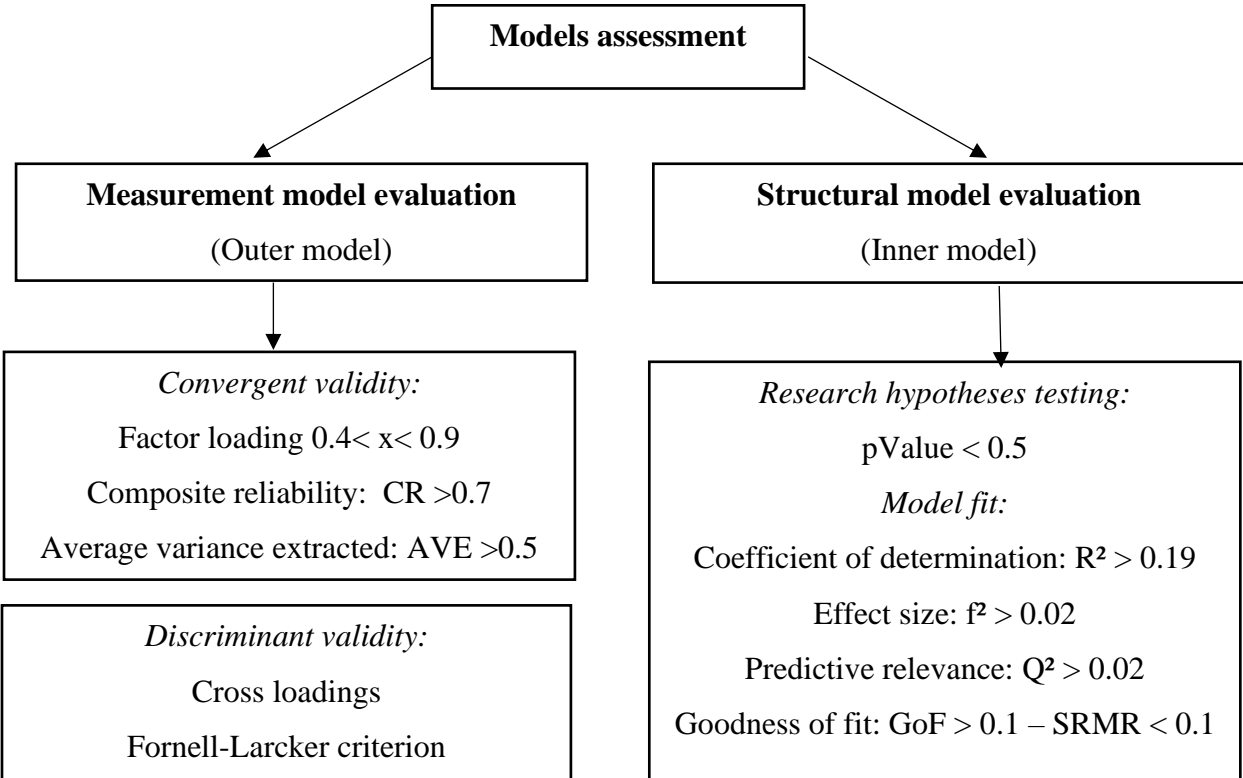
more appropriate for the analysis, taking into account a deeper interpretation of the multi-factors structures obtained with further analyses.

* *Correlation matrix*: Retaining the outputs of the factor analysis, the factors obtained are subject to a correlation test. Correlation serves to measure the degree of association between variables by measuring both the strength and direction of linear relationships between couples of variables. The results obtained from the correlation matrix provide a basis for the hypotheses testing as well as results related to the assessment of the measurement and structural model.

2.2.2. Overview of the models’ assessment and hypotheses testing procedures

The second statistical analysis was performed using the software SmartPLS 2.3.8. The outputs of such procedure provided answers regarding the nature of the measurement model, and the predictive power of the structural model. Matter of fact, Hair et al. (2017, p. 131) argued that “model estimation delivers empirical measures of the relationships between the indicators and the constructs (measurement models), as well as between the constructs (structural model)”. They added that it provides answers on the adequacy between the theory and the data collected through the comparison between the measurements established by the theory and structural models with reality.

Figure 26: Models’ assessment in SmartPLS



* *Measurement model assessment*: It is considered to be the outer model, thus linking the indicators to the construct. The construction of the model is a crucial step in SmartPLS. In fact, the arrows linking the indicators to the underlying constructs are subject to a theoretical reflection and statistical testing. Formative models, represented by arrow starting from the indicators to the construct assume that the indicators are forming the construct, are not interchangeable and the suppression of an item alters the meaning of the construct. Reflective models on the other hand, represented by an arrow starting from the construct to the indicators assume that indicators are manifestations of the constructs, are highly correlated, are interchangeable and the suppression of an item does not alter the meaning of the construct.

After defining the type of the measurement model, convergent validity and discriminant validity tests are performed. The convergent validity test, provides a further purification of the items through a PLS Algorithm procedure with a factor weighting scheme ensuring that factor loadings fall within the interval of]0.4, 0.9]. The suppression of indicators depends on the factor loading, the composite reliability and the average variance extracted values. It also depends on whether the measurement model is reflective or formative. Values of composite reliability that are inferior to 0.7 and values of average variance extracted that are inferior to 0.5 inform that items should be deleted.

Discriminant validity on the other hand is based on two tests; cross loadings and the Fornell-Larcker criterion. Cross-loadings inform about the extent to which the items differentiate among the constructs by verifying the degree to which a concept differs from other concepts, while the Fornell-Larcker criterion demonstrates if a given construct shares more variance with its indicators than with any other construct (Hair et al., 2017).

* *Structural model assessment*: It is considered to be the inner model, thus, representing the links between the constructs. Its assessment is made through two principal tests. First, the research hypotheses testing through a bootstrapping procedure, where the relationship between the variables is expressed through the pValue obtain assuming that a pValue that is superior to 0.5 informs about a significant relationship. Moreover, such relationship, if it exists, is then evaluated through the path coefficient with informs about its direction assuming that a positive coefficient results in a positive relationship between the given variables and a negative coefficient informs about a negative relationship between the variables.

After defining the various relationship in the inner model, four tests are performed. The coefficient of determination R^2 , the effect size f^2 and predictive relevance Q^2 inform

respectively about the predictive capacity of the model, the size of the effect of a given variable on the endogenous variable and the predictive relevance of the model. Values of R^2 that are superior to 0.19, f^2 that are superior to 0.02 and Q^2 that are superior to 0.02 are indicators of the model's predictive potency. Finally, to measure the model's fit, the goodness of fit index GoF, calculated manually, and the standardized root mean square residual SRMR provided through the PLS Algorithm procedure inform about the robustness of the model. Thus, a value of GoF that are higher than 0.4 indicate a moderate fit while a value of SRMR that is inferior to 0.1 indicate of good fit.

In order to provide answers to the research questions advanced in the present dissertation, a sample of Tunisian undergraduate students, in the last semester of their third year was selected. A questionnaire was built on items extracted from theoretical assumptions and was distributed both a face-to-paper within the studying hours and inside the classroom and an online questionnaire was provided to encounter geographic limitations. The answer rate was of 80% as 280 questionnaires were returned of the 350 questionnaires distributed. Moreover, 77 questionnaires were received through the online support. The questionnaires that were incomplete were discarded, ending up with an effective sample of 314 students mainly from north Tunisian and the capital Tunis. Insights on the geographic locations of the respondents are provided in the upcoming chapter.

To organize, analyze and interpret the data collected, a first preliminary statistical analysis was performed using the software SPSS, allowing a first purification of the items. Besides, a descriptive analysis was performed to provide insights on the demographic characteristics of the sample, as well as to present the students' assessment of their entrepreneurial intentions, entrepreneurial competencies and cognitive adaptability. Last but not least, a factor analysis was performed allowing the verification of the factor structure of each variable according to the theory. Finally, the extracted factors were subject to a correlation matrix to provide the possible associations between them. A second statistical phase was based on testing the models, both measurement and structural, and provide a statistical response to the research hypotheses.

Conclusion

The present chapter presented the ontological, epistemological and methodological positions of the present research. In fact, it fits into an objectivist ontological approach, a positivist epistemological position and a quantitative methodology.

Positioning the research is dependent on the research questions the researcher tries to answer, it also guides him or her towards choosing the right data collection instruments and the appropriate statistical tools for the analysis. The data was collected through a face-to-paper and an online distribution of the questionnaire. The target population is mainly focused on Tunisian undergraduate students, in the last semester of their three-year diploma journey.

The choice of this population was based on literature recommendations, but also on the central research problem, concerned with the impact of entrepreneurial competencies on entrepreneurial intentions on one hand, and the moderating role of cognitive adaptability on the other hand, taking into account the educational, university context, in an effort to understand the gap between the governmental and institutional expectations and the effective outcomes of entrepreneurship promotion educational programs. The answer to the latter gap can be explained through the identification of the set of entrepreneurial competencies that do have an impact on entrepreneurial intentions within students. Moreover, as cognitive adaptability was presented as a key resource for the entrepreneurial context, and takes sources in the educational context, verifying its moderating role can lead to a better understanding of metacognitive functioning, and clear recommendations based on the development of metacognitive abilities within students.

This chapter will, in fact, serve as a guide for the following two chapters, mainly concerned with the statistical analysis and the interpretation and discussion of the results, to provide theoretical, empirical and practical contributions in regards to entrepreneurship education, serving as a guide for policy makers.

Chapter V:
Research findings

Introduction

The aim of this dissertation is to study the effect of entrepreneurial competencies on entrepreneurial intentions within undergraduate, business Tunisian students in their third year of university studies taking into account the moderating role that cognitive adaptability plays in such relationship.

This chapter aims to provide the results obtained through data analysis. In fact, the first section will be interested in presenting the descriptive statistics related to the student's sample, as such analysis informs about the characteristics of Tunisian students and their perception of their own entrepreneurial intentions as well as entrepreneurial competencies. Moreover, it will be focus on the statistical outputs such as the measurements' validity and reliability, including reliability tests, factor analysis and correlation tests. The latter three statistical tools were provided by the software IBM SPSS Statistics 22.

The second section will be focusing on answering two fundamental questions, first, the impact of entrepreneurial competencies on entrepreneurial intentions within undergraduate Tunisian students in their third year (Model M1). Secondly, the role that metacognitive adaptability plays in such relationship, more precisely, if metacognitive adaptability serves as a moderator of the hypothesized positive relationship between entrepreneurial competencies and entrepreneurial intentions (Model M2).

This fifth chapter is serving as a basis for the following chapter related the discussion of the research results.

Section I: Preliminary data analysis

After collecting data resulting in 314 valid responses from Tunisian undergraduate students in their third year, this section is concerned with data analysis. A description of the demographic characteristics will be provided, before presenting the students' ratings of entrepreneurial intention, entrepreneurial competencies and cognitive adaptability.

1. Analysis of the sample's characteristics and descriptive analysis

This paragraph informs about the population of interest, by providing distribution frequencies and descriptive analysis. The objective is to shed light on the perception of Tunisian students and their ratings of their entrepreneurial intentions, the entrepreneurial competencies they believe they developed and the levels of their cognitive adaptability through their answers to the survey questions.

1.1. Analysis of the sample's characteristics

The student's demographic characteristics (N = 314) are presented in this subsection according to gender, age and the university's location. The sample presented a higher proportion of women. Students ranged in age from 21 to more than 25 years old. The majority of the population is less than 25 years old. The highest frequency for the respondents' age is between 22 and 25 years old with 57%. The highest number of students, on the other hand, was situated in the capital Tunis and its provinces with a percentage of 97.1 %.

1.1.1. Gender

Table 26: Distribution frequency according to gender (N =314)

Characteristic	Category	Frequency	Percentage
Gender	Women	218	69.4
	Men	96	30.6
	<i>Total</i>	<i>314</i>	<i>100</i>

The total studied sample of 314 students presented 218 (69.4 %) women and 96 (30.6 %) men. As unbalanced this distribution is, it reflects the real distribution of Tunisian students. According to the latest report of the Tunisian ministry of higher education and scientific research (2013/2014. - 2017/2018), 65 % of university students are women as seen in the table below.

Table 27: Evolution of the number of students from 2013 to 2018

Year	2013-2014		2014-2015		2015-2016		2016-2017		2017-2018	
	Total	women	Total	women	Total	women	Total	women	Total	women
Total	305783	192899	292291	185481	263817	170236	250900	164250	241084	157743
%	100%	63.08%	100%	63.45%	100%	64.52%	100%	65.46%	100%	65.43%

(Source: Ministry of higher education and scientific research Tunisia, 2018)

Although the number of students registered in Tunisian university is showed a remarkable decline from 2013 to 2018, the percentage of registered women is proportionally higher than that of men. In 2018, the percentage of registered women is equal to 65.43%, which is adequate with the percentage obtained in our sample.

1.1.2. Age

The age of the respondents informs about the most represented age range. The majority of the respondents are between 22 and 25 years old and representing 57% followed by students that are less than 22 years old, representing 38.9%. The lowest percentage is that of students that are more than 25 years old with 4.1%. Since our study was specifically concerned with undergraduate students in their third year, they should have a minimum of 21 years.

Table 28: Distribution frequency according to age (N =314)

Characteristic	Category	Frequency	Percentage
Age	< 22 years old	122	38.9
	22 - 25 years old	179	57.0
	More than 25 years old	13	4.1
	<i>Total</i>	<i>314</i>	<i>100</i>

1.1.3. University

The greater proportion of students in our sample is from the capital Tunis. Although the questionnaire was distributed online to guarantee a greater visibility, the respondents' university location is concentrated in the capital with 97.1%. Although such percentage could be explained through the location of most Tunisian universities, as 50% of universities is situated in the capital and surrounding provinces with 62.14 % of the total number of

registered students in the academic year of 2017-2018 (Tunisian Ministry of Higher Education and Scientific Research, 2018). A further explanation would be that of the national institute of statistics, as they showed that 24.68 % of the population is located either, in the capital or its provinces in 2018 (INS, 2018).

Table 29: Distribution frequency according to the university's region (N =314)

Characteristic	Category	Frequency	Percentage
University location	The capital	305	97.1
	Northern Tunisia	1	0.3
	North West Tunisia	2	0.6
	East Tunisia	3	1
	South-west Tunisia	1	0.3
	Center-east Tunisia	2	0.6
	<i>Total</i>	<i>314</i>	<i>100</i>

1.1.4. Professional and associative experience

An active participation in the university and community life expresses the student's openness and desire of achieving activities other than those offered by the educative curricula. Matter of fact, non-governmental organizations provide an environment, which enables potential entrepreneurs to operate as they behave according to the environment that they consider as favorable for their enterprises (Auplat, 2006).

Table 30: Distribution frequency according to the associative experience (N =314)

Characteristic	Category	Frequency	Percentage
Member of an NGO or a students' club	Yes	119	37.9
	No	195	62.1
	<i>Total</i>	<i>314</i>	<i>100</i>

As shown in the table above, less than half of the sample affirmed to be a member of a non-governmental organization. The participation in the university and community life within our sample is about 37.9% while 62.1% affirmed not being a member of an NGO neither a students' club although the number of active NGOs in Tunisia exceeded 22690 in 2019. According to IFEDA (the center of information, studies elaboration and documentation of associations), more

than 20% of NGOs are located in Tunis, with 7191 entities in the capital and its provinces. Matter of fact, 291 (1.28%) of existing NGOs are specialized in micro-credit for self-employment, 2362 (10.41%) are specialized in development, and more than 37% are either scientific, cultural or social NGOs. With such an important number of organizations, the low rate of students' participation may be linked to either the organizations' lack of communication and advertisement, or the students' failure to take into consideration the importance of such activities in developing, helping and guiding undergraduates towards achieving higher rates of entrepreneurial activates.

Table 31: Being a member of an ONG or a student's club according to the gender of the respondent (N =314)

Characteristic	Answer	Gender		Total
		Women	Men	
Member of an ONG or a students' club * Gender	Yes	76	43	119
	No	142	53	195
	<i>Total</i>	<i>218</i>	<i>96</i>	<i>314</i>

Within the 37.9% of the university and community life active students, 63.86% are women for 36.13% of men. Although the women's participation seems higher, it may be explained by the higher presence of women in the university compared to men. In fact, when considering the positive response proportion within each gender group, we obtain 34.86% of women for 44.79% of men.

Table 32: Distribution frequency according to the prior professional experience (N =314)

Characteristic	Category	Frequency	Percentage
Prior professional experience	Yes	172	54.8
	No	142	45.2
	<i>Total</i>	<i>314</i>	<i>100</i>

Students' prior professional experience, on the other hand, was tightly related to skills and tacit knowledge acquisition, thus, providing them with realistic expectations about the tasks to perform and the required expertise for an efficient decision-making process within the entrepreneurial context (Morris et al., 2017).

Table 33: Prior professional experience according to the gender of the respondent (N =314)

Characteristic	Answer	Gender		Total
		Women	Men	
Prior professional experience * Gender	Yes	109	63	172
	No	109	33	142
	<i>Total</i>	<i>218</i>	<i>96</i>	<i>314</i>

Students with prior professional experience constitute 54.8% of the sample, while 45.2% affirm not having any professional experience. Of the 54.8% responding positively, 63.37% are women and 36.62% are men. Proportionally, 50% of women responded positively, and 65.62% are men as seen in the table below.

1.1.5. Entrepreneurship education outside of the university context

Searching for entrepreneurship education sources outside of the university context, informs about how motivated the student is towards acquiring more knowledge about entrepreneurial activities.

Table 34: Entrepreneurial event participation

Characteristic	Category	Frequency	Percentage
Participating in an entrepreneurial event	Yes	148	47.1
	No	166	52.9
	<i>Total</i>	<i>314</i>	<i>100</i>

According to the table above, almost half of the respondents did participate in an entrepreneurial event. In fact, 47.1% of the students affirmed to have participated in an event taking entrepreneurship as a subject, while 52.9% did not.

The voluntary participation in entrepreneurship programs informs about the actions undertaken by students to acquire entrepreneurial knowledge. Entrepreneurship courses are offered by Tunisian universities, are free but obligatory as they take part of the educative curricula, entrepreneurship programs, on the other hand, are voluntary and require fees. The act of participating in these programs means that the students did invest their own money to acquire knowledge they consider as inaccessible within the university offered courses context.

Table 35: Voluntary participation in an entrepreneurship program

Characteristic	Category	Frequency	Percentage
Voluntarily participate in an entrepreneurship program	Yes	138	43.9
	No	176	56.1
	<i>Total</i>	<i>314</i>	<i>100</i>

On the other hand, 43.9% of the students voluntarily took part of an entrepreneurship program, while 56.1% affirmed that they did not participate in any program of that kind.

The latter results can be explained through the lack of practical knowledge within the educational programs offered by universities. For Abdennadher and Boudabbous (2014), the decision to pursue a vocational training in a specific field is generally accompanied by the intention of launching a business as the educational content offered by Tunisian universities do not allow a familiarization with business creation. Thus, 43.9% of our sample expressed their intention to launch a new business venture through engaging in an entrepreneurship program outside of the educational context, showing by such that the educational offer did not provide them with the required knowledge and skills.

1.1.6. Entrepreneurial knowledge and network

Entrepreneurial knowledge and network inform about the various sources of entrepreneurial knowledge of the respondents. Matter of fact, the literature argued that individuals that are embedded in communities with entrepreneurial experience are more likely to become entrepreneurs themselves (Morris et al. 2017).

Table 36: Knowing an entrepreneur

Characteristic	Category	Frequency	Percentage
Knowing an entrepreneur	Yes	215	68.5
	No	99	31.5
	<i>Total</i>	<i>314</i>	<i>100</i>

In response to knowing an entrepreneur, 68.5% of the students responded positively, while 31.5% responded negatively, as shown in the table above. The relevance of knowing an entrepreneur informs about the presence of entrepreneurial role models in the student's environment. In fact, the survey conducted by Amouri et al. (2016) showed that role models

have a positive impact on the entrepreneurial intention. For the matter, 68.5% of the sample are more likely to develop entrepreneurial intentions.

Another important key source of entrepreneurial knowledge is entrepreneurial support structures. Matter of fact, being conscious of the existence of entrepreneurship support structures either governmental or non-governmental and knowing what type of activities they offer is important when considering the entrepreneurial intention of students. In fact, the knowledge of such structures is associated significantly with the students' attitude towards being an entrepreneur as they represent a valuable tool in stimulating the entrepreneurial intention (Malebana 2014).

Table 37: Knowing entrepreneurship support structures

Characteristic	Category	Frequency	Percentage
Knowing entrepreneurship support structures	Yes	116	36.9
	No	198	63.1
	<i>Total</i>	<i>314</i>	<i>100</i>

Our sample presented a relatively low percentage of students who know entrepreneurial support structures. Matter of fact, only 36.9% of students responded positively while 63.1% responded negatively to the question of knowing about entrepreneurial support structures as shown in the table above. Accordingly, only 42% of the students responded positively to knowing non-governmental structures specialized in entrepreneurship while 58% responded negatively as shown in the table below.

Table 38: Knowing non-governmental organizations specialized in entrepreneurship

Characteristic	Category	Frequency	Percentage
Knowing NGOs specialized in entrepreneurship	Yes	132	42
	No	182	58
	<i>Total</i>	<i>314</i>	<i>100</i>

Such results can be explained through the inefficient communication strategies adopted by governmental support structures and a lack of research efforts from the students' part. In fact, the SALEEM project's report of 2018 showed a level of 6% of positive responses from students when asking about support structures and their services. Through the report, such low levels

are explained by a major failure of the communication policies of such structures and a deficiency in the university education system, as they cannot manage to sufficiently inform students about the entrepreneurial ecosystem structures available (SALEEM project 2018).

The entrepreneurial network plays a crucial role in developing the intention to launch a new business venture within undergraduate students. The literature provided many insights on the impact of family and peers in increasing the entrepreneurial intention.

Table 39: Entrepreneurial network

Characteristic	Category	Frequency	Percentage
Your father or mother are entrepreneurs	Yes	34	10.8
	No	280	89.2
	<i>Total</i>	<i>314</i>	<i>100</i>
Your brother or sister are entrepreneurs	Yes	12	3.8
	No	302	96.2
	<i>Total</i>	<i>314</i>	<i>100</i>
An entrepreneur within your close familiars	Yes	87	27.7
	No	227	72.3
	<i>Total</i>	<i>314</i>	<i>100</i>
An entrepreneur within your circles of friends	Yes	92	29.3
	No	222	70.7
	<i>Total</i>	<i>314</i>	<i>100</i>
An entrepreneur within your acquaintances	Yes	175	55.7
	No	139	44.3
	<i>Total</i>	<i>314</i>	<i>100</i>
You do not know any entrepreneur	Yes	88	28
	No	225	71.7
	<i>Total</i>	<i>313</i>	<i>99.7</i>

When asking students about the nature of the presence of entrepreneurs within their network, the highest positive rate is of 55.7% of positive responses regarding knowing an entrepreneur within the student's acquaintances. The lowest rate is 3.8% and is related to the student's siblings. On the other hand, students with entrepreneurial parents represent 10.8%, entrepreneurs within the close family is about 27.7% and entrepreneurs within the circle of friends is about 29.3%. Almost a third of the students stated they did not know any entrepreneur.

The relevance of entrepreneurial network emerges from the fact that it is a primary source of entrepreneurial knowledge, as it contributes in providing the students with a realistic perception of the entrepreneurial activity (Linan, 2005). The literature presented the entrepreneurial family background as a learning opportunity. In fact, students growing up with self-employed parents are more likely to be entrepreneurs themselves as the family bond has the strongest impact on the children's career choices, attitudes, knowledge and intentions to launch a new business venture (Amouri et al., 2016). Friends and acquaintances can also represent role models when it comes to entrepreneurship. In fact, such role models have a great impact on career decisions and may enhance to desire to be an entrepreneur by providing practical support and advices as well as valuable information such as markets and administrative regulations (Bosma et al., 2012). For the matter, half of the sample are likely to increase their entrepreneurial intention through their entrepreneurial networks.

1.2. Descriptive analysis

This subsection is interested in detailing the participants' answers under three central variables: entrepreneurial intention, entrepreneurial competencies (information seeking, opportunity identification, risk-taking propensity, Innovativeness and training and skills) and finally cognitive adaptability (goal orientation, metacognitive choice, metacognitive experience, metacognitive knowledge, metacognitive monitoring).

1.2.1. Students' rating of entrepreneurial intention

Students were asked to evaluate their entrepreneurial intention through a 1 to 5 Likert scale, 1 expresses the total disagreement and 5 expresses the total agreement to the statement. Reverse scored items were present and were specified in the explanatory table. Distracter items were not included in the analysis as recommended by Thompson (2009).

Table 40: Students' assessment of their entrepreneurial intention

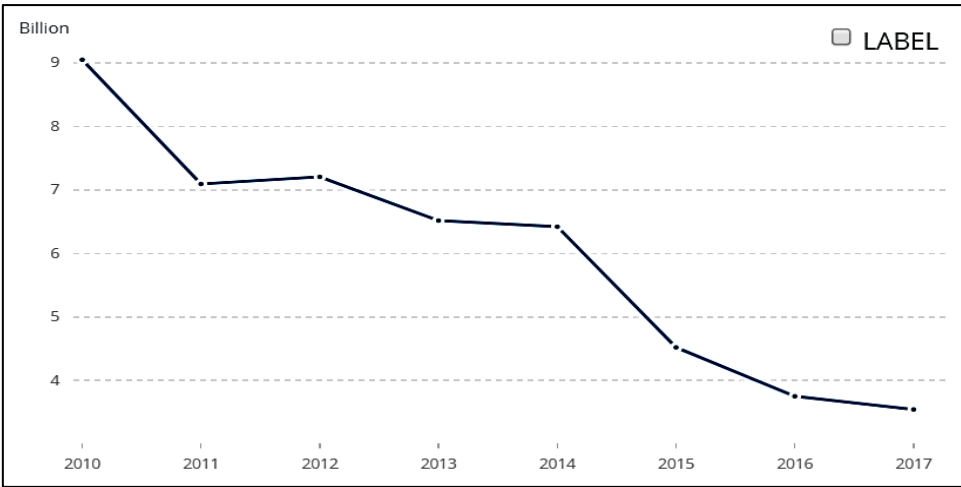
#	Statements	Agree	%	Disagree	%
I1	I intend to set up a company in the future	238	75.79	34	0.1
I4	I never search for business start-up opportunity (Reverse scoring)	48	15.28	211	67.19
I6	I am saving money to start a business	104	33.12	142	45.22
I7	I do not read books on how to set up a firm (Reverse coding)	116	36.94	141	44.9
I9	I have no plans to launch my own business (Reverse coding)	16	5.09	139	44.26
I10	I spend time learning about starting a firm	187	59.55	73	23.24

The first item (I1) asks directly about the intention to launch a business venture in the future, while ninth item (I9) was reverse coded and expresses the rejection of the idea to launch a business. Matter of fact, 75.79% of the students expressed their intention to launch a business in the future with a rate of 0.1% of disagreement; while 5.09% of them expressed that, they disagree with not having plans to launch their own business. Between 25 and 50% of the sample expressed their indifference to such an intention.

When responding to the items related to the effective efforts towards developing and expressing the entrepreneurial intention, percentages of positive responses varied between 33 and 67%. For the fourth item, (I4): “I never search for business start-up opportunity”, 67.19% expressed their disagreement and 15.28% of the students did agree with the statement. It is relevant to recall that opportunity identification is a key competency when it comes to entrepreneurship. Moreover, students who report high scores in terms opportunity identification are more likely to have high entrepreneurial intentions (Solesvik, 2019). Matter of fact, if a student capable of identifying business opportunities is more prone to become an entrepreneur, as he is, firstly, conscious of the various opportunities available in the market, but he is also consciously searching for them.

The sixth item (I6) showed a percentage of 33.12% of students saving money to start a business and 45.22% disagreeing with the statement. The percentage is relatively low, and can explained through the savings culture in Tunisia. As seen if the figure below, during the post-revolutionary period (2010-2018) the amount of household savings kept decreasing showing a significant drop of almost 6 Billion US Dollars.

Figure 27: Tunisia gross savings in current US\$



(Source: World Bank, 2018)

The socioeconomic environment can thus explain the low rate of responses regarding saving money to launch a business. According to Romdhane and Amar (2019), the socio-economic situation of the country explains both the deterioration of the Tunisian Dinar and the increase and persistence of inflation during the post-revolutionary period. Such instability in the economic, social and political environment has a negative impact on savings and investment as it adds to the entrepreneurial environment's uncertainty.

Finally, items (I7) and (I10) were concerned with learning efforts, 36.94% affirmed not reading books about how to set up a firm while 59.55% agreed that they were spending time learning about starting a firm. Such difference in rating can be explained through information and communication technologies. Nowadays, internet represents the first source of information for students, adding that in the survey conducted by Mellouli et al. (2018) under-graduation represents the most influential factor on internet use in Tunisia. Thus, students are more likely to use internet than books to search for information and to fulfill their needs of learning.

1.2.2. Students' rating of entrepreneurial competencies

Students were asked to evaluate their entrepreneurial competencies through a 1 to 5 Likert scale, 1 expresses the total disagreement and 5 expresses the total agreement to the statement. Reverse coded items were present and were specified in the explanatory tables (see Appendix B). No distracter items were included in the scales. Five competencies were measured and questions were in the first person. Students were asked to rate their appreciation of the statements.

1.2.2.1. Information seeking competencies

Information seeking competencies are crucial for any aspiring entrepreneur. Matter of fact, a potential entrepreneur must be able to seek and collect information about himself, his activity and his environment. Moreover, holding such competencies prepares for opportunity identification and thus for developing and stabilizing the entrepreneurial intention.

Table 41: Students' assessment of information seeking competencies

#	Statements	Agree	%	Disagree	%
IF1	I first gather a great deal of information before starting a new task or project.	258	82.15	22	7
IF2	I seek the advice of people who know a lot about the tasks I am working on.	255	81.21	29	9.23
IF3	I take action without wasting time gathering information. (Reverse scoring)	86	27.38	183	58.28
IF4	When working on a project for someone, I ask many questions to be sure I understand what the person wants.	256	81.52	29	9.23

Our sample of 314 undergraduate students responded to four questions in the aim of measuring their information seeking competencies and evaluating if they adopt an information seeking behavior. The first item (IF1): “I first gather a great deal of information before starting a new task or project”, informs about the consciousness of the students of how important it is to gather enough information before starting a task. In fact, 82.15% of the students agreed with such a statement, while only 7% disagreed.

When asking them about seeking advice from people with more experience (IF2), 81.21% agreed while only 9.23% disagreed. In these terms, it is relevant to recall the importance of role models in the development of entrepreneurial intentions. The students, thus, agreed to the fact that they consciously and voluntarily seek information from individuals they consider as holding more expertise in the task they are performing.

The third item (IF3) in the information seeking competencies measurement scale is reverse coded, and links gathering information with actively performing a task in an organizational manner, as to what activity comes first. Gathering a maximum of information about a given task before initiating it is the core of information seeking and it demonstrates a certain organization, planning and clearness of mind from the students' part. Almost two thirds of the sample disagreed with the statement while almost a third affirmed to take action without *wasting time* gathering information. It is important to point out that the term “*wasting time*” informs about the negative connotation of the act of gathering information, as for those who agreed with such statement consider information seeking prior to task initiating is a waste of time.

The final item (IF4) is concerned with asking as many questions as possible to guarantee clear understanding and assimilation of the person's expectations when working for them. 81.52% of the students agreed with the statement while only 9.23% disagreed. This item informs about the task preparation as well as planning to meet all expectations and fulfill the task efficiently. It may also inform about the openness of the student, as to express his need for information or further clearing of the situation.

1.2.2.2. Innovativeness

Innovativeness expresses the extent to which an individual is likely to accept and adopt the products of innovation. The acceptance of innovation emerges from the individual's capacity to adapt and if he or she is attracted to uniqueness and novelty.

Table 42: Student's assessment of innovativeness

#	Statements	Agree	%	Disagree	%
INN1	Prefer unique, one-of-a-kind approach	194	61.78	54	17.19
INN2	Favor experimentation and original approach	202	64.33	56	17.83
INN3	Try new and unusual activities	180	57.32	71	22.61
INN4	Try my own unique way	240	76.43	34	10.82

Responding to the first item (INN1), 61.78% of the students expressed their preference to unique and one-of-a-kind approach, while 17.19% disagreed with the statement. Almost the same percentages are presented in the second item (INN2) as 64.33% expressed their agreement with favoring experimentation and original approaches and 17.83% expressed their disagreement. Thus, in the preference related items of the innovativeness measurement scale, almost two thirds of the sample are in favor of trying new and original things. The relevance of such competency remains in its tight link with both risk-taking and opportunity identification. In fact, the actual entrepreneurial environment requires creative and innovative ideas as they represent a crucial resource for entrepreneurship. Moreover, innovative behaviors are tightly linked to creativity and openness. Thus, almost two thirds of the sample are more likely to develop entrepreneurial intention, to be creative and are more to accept risk, identify business opportunities and are, therefore, more likely to become entrepreneurs.

For the second and third items of innovativeness, "Try new and unusual activities" and "Try my own unique way", they are more related to the respondent's efforts to act on innovatively, while the first two items were more concerned with preferences. Matter of fact, the third item

(INN3) were positively perceived by the students as more than half of them (57.32%) agreed with the statement while only 22.61% disagreed. the fourth item, on the other hand, received a higher rate of agreement with 76.43% of agreement for 10.82% of disagreement from the students' part. It is relevant to point out that, the difference between the two latter items is related to the source of innovation. Therefore, more than half of the sample were open to innovation as to using, adopting or trying its products or innovation-related activities, as to such activities or products are presented to them by the environment. Moreover, more than three-quarters of the students declared trying their own unique way, thus, using their own strategies or solution when facing a given situation or when performing a given task or project. Such statement informs about the student's effort towards creating new ways of dealing with situations, and the proper consciousness of the uniqueness of his or her actions.

Matter of fact, analyzing the students' assessment of their innovativeness leads to speculate that more than half of the students are attracted to novelty and originality, and such capacity to appreciate and adapt novelty informs about the students' likability to have a positive perception and attitude towards entrepreneurship as a career, and are, thus, more prone to develop entrepreneurial intentions.

1.2.2.3. Opportunity identification competencies

Recognizing and identifying business opportunities has long been considered as a key competency by the literature. Starting from the Schumpeterian perspective until the latest researches, the capacity to detect opportunities in the market and act on them represents the proper core of entrepreneurship. Students were, thus, asked to assess their alertness to business opportunities through their daily life.

Table 43: Student's assessment of opportunity identification competencies

#	Statements	Agree	%	Disagree	%
OP1	Seeing potential opportunities does not come very naturally to me (reverse scoring)	108	34.39	114	36.3
OP2	I have a special alertness or sensitivity toward new opportunities.	210	66.87	42	13.37
OP3	While going about routine day-to-day activities, I see potential new venture ideas all around me.	235	74.84	28	8.91

The first item (OP1) is reverse scored, thus the students were asked about the opposite behavior. The results show that the sample was divided into three, almost equal, categories. third the students (36.3%) disagreed with the fact that seeing potential opportunities does not come

naturally to them, while the other two thirds were parted between those who agreed (34.39%) and those who were indifferent (29.31%) to the statement. Such result shows that only a third of the sample has the capacity to recognize business opportunities “*naturally*”. In other terms, the latter group of students is more likely to perceive opportunities and thus they are more likely to act on such opportunities and launch a business venture.

The second item (OP2) is related to the student’s alertness and sensitivity toward new opportunities. More than two thirds (66.87%) of the sample responded positively while only 13.37% responded negatively to the statement. Alertness to business opportunities informs on the student’s capacity to identify opportunities on the market. It is nonetheless important to recall that the question did emphasize the particularity of such skill by describing it as “*special alertness or sensitivity*”, for the matter, students who responded positively are admitting to having a high alertness toward business opportunities.

The third item (OP3) is also related to the alertness and sensitivity toward new opportunities, but puts that capacity in a day-to-day routine activity. More than 74% of the students admitted to seeing potential new venture ideas “*all around*” them while going about routine day-to-day activities, while less than 9% disagreed with the statement. This item follows up with the preceding one, thus, students responding positively admit to being capable of recognizing business opportunities in their day-to-day life.

It is important to note that the first item did not receive as much positive responses as the other two, such result can be caused by the fact that it was reverse coded, and thus, it might have been a problem of misunderstanding or misreading the item. the evaluation of the latter will be done in the upcoming analysis.

1.2.2.4. Risk-taking propensity

A scale proposed by Nabi and Liñán (2013) was used to measure risk-taking propensity. The authors argued that the scale is meant to measure the individual’s perception of risk both as a threat and as an opportunity. For the matter, the descriptive analysis will consider the two categories.

As seen in the table below, risk as a threat related items scored a percentage between 36% and 61%. Students were asked to assess the riskiness of launching a business and its viability. 61.78% agreed that starting a business is very risky while only 23.24% disagreed with such a statement. The proportion of students perceiving risk as a threat is two times greater than the proportion of those who consider it as an opportunity.

When asked about the performance of a business venture, 36.3% agreed that the probability that a new business performs poorly is very high. On the other hand, the proportion of students who disagreed with the statement and supposed that the probability of a business doing poorly is low is more than 43%. The second group, thus, have a positive evaluation of future performance of businesses. Moreover, when asked about the uncertainty that surrounds the prediction of business future performance, 55.41% agreed that it is not possible to give a certain prediction of how well a new venture will do, while only 19.42% disagreed with the statement.

Table 44: Student's assessment of risk-taking propensity

#	Statements	Agree	%	Disagree	%
RT1	Starting a new business is very risky	194	61.78	73	23.24
RT3	The probability of a new venture doing poorly is very high	114	36.3	138	43.94
RT5	There is great uncertainty when predicting how well a new venture will do	174	55.41	61	19.42
RT7	The overall riskiness of a new venture is high	178	56.68	63	20.06
RT2	I see the possibility of starting a business as a potential opportunity to pursue	235	74.84	38	12.1
RT4	If I don't start my own business, I may be missing a great opportunity	173	55.09	81	25.79
RT6	Overall, I would label the option of starting a business as something positive	242	77.07	27	8.59

Items related to perceiving risk as an opportunity scored higher, as more than half, the sample considered launching a new business venture as an opportunity. Matter of fact, more than 74% perceive the possibility of starting a new venture as a potential opportunity to pursue. Thus, almost three-quarters of the sample perceive risk as an opportunity and are more likely to launch a business for the fact that they have a positive attitude towards entrepreneurship as a career. Only 12% do not see the act of launching a business as an opportunity. Moreover, 55% claimed that if they do not launch their own business they might be missing a “*great opportunity*”, thus, more than half of the students agree that starting an entrepreneurial career is a great opportunity, while 25% did not perceive it as an opportunity to pursue.

When asked about the overall perception of starting a new business, 77% of the students considered starting a business as something positive while less than 9% labeled it as negative. On the other hand, the student's perception of the overall riskiness of a business venture was relatively high as 56.58% agreed that a new venture comes with high risks while only 20% of

the students dismissed such possibility. Thus, the majority of the students have a positive attitude towards entrepreneurship but are also aware of the riskiness and uncertainty that are related to launching a new business venture. This can be explained by the fact that such group of students do perceive risk as an opportunity and not as a threat. In fact, individuals who perceive risk as an opportunity are more likely to have stronger salient beliefs conforming higher levels of personal attitudes, having by such a positive valuation of entrepreneurship. On the other hand, individuals who perceive risk as a threat are more likely to have salient beliefs conforming lower levels of personal attitudes, having by such a negative valuation of entrepreneurship (Linan and Nabi, 2013).

1.2.2.5. Training and skills

Taking into account the importance of training in providing students with the required set of skills to start a new business, students were asked to evaluate their own capacities.

Table 45: Student's assessment of training and skills

#	Statements	Agree	%	Disagree	%
TS1	I am able to see myself starting and running a business in future	239	76.11	33	10.5
TS2	I am confident of developing a product using needs identification techniques	190	60.5	78	24.84
TS3	I understand the mindset of consumers and how to market my product/service to them	231	73.56	40	12.73
TS4	I am able to communicate my business ideas to other people such as mentors. potential customers and potential business partners	200	63.69	67	21.33
TS5	I am capable of conducting a market research by myself	183	58.28	70	22.29
TS6	I know how to pitch and sell ideas and products/ services to people	214	68.15	54	17.19
TS7	I am able to determine appropriate pricing strategies and channels for marketing	185	58.91	68	21.65
TS8	I am confident of doing up a budget for my business	166	52.86	101	32.16
TS9	I understand the financial requirements and considerations to start and run a business	171	54.45	82	26.11
TS10	I am able to assess the strengths and weaknesses of my business idea in comparison to existing products/services in the market	213	67.83	47	14.96
TS11	I understand how to develop and analyze income statements	147	46.81	116	36.94

Almost half of the students agreed with all the statements. The higher frequency was attributed to the first item, as 76% confirmed that they are able to see themselves starting and running a business in the future while only 10% did not consider such possibility. In fact, 60.5% of the students confirmed that they are able to develop a product using needs identification techniques, 73% claimed to understand the mindset of consumers and being able to market products and services to them. When it comes developing and marketing entrepreneurial ideas, 63.69% of the students admitted having the ability to communicate business ideas to potential partners and customers, 58.28% stated that they are capable of conducting a market research by themselves. In addition, 68.15% knew how to pitch and sell ideas and products or services to others.

When asked about specific business skills, more than half of the students expressed their ability to determine the appropriate pricing and marketing strategies, as well as budgeting, while 46.81% claimed that they are able to develop and analyze income statements.

More importantly, almost 68% affirmed being able to identify and compare the strengths and weaknesses of their business ideas to the offer of potential competitors. In addition, more than half of the sample are conscious of the financial requirements to launch and run a business.

It possible to say that at least half of the students affirmed to be holding the necessary skills to go through the entrepreneurial process from ideas development, evaluation, and communication with potential partners and customers to being able to guarantee the existence of the financial requirement to run a business venture. It is important to recall that training and skills provide students with the required exposure to entrepreneurship leading them to have greater likelihood to become entrepreneurs. Since our sample is composed solely of business students, they indeed received the adequate education to be able to start and run a firm.

1.2.3. Students' rating of cognitive adaptability

To assess the students' rating of their levels of cognitive adaptability the MAC measurement scale as used as developed and recommended by Haynie et al. (2012). Students were asked to evaluate the five metacognitive dimensions.

1.2.3.1. Goal orientation

Goal orientation is defined as “the extent to which the individual interprets environmental variations in light of a wide variety of personal, social and organizational goals” (Haynie and Shepherd, 2009, p. 699). When asked if they *often* define goals for themselves (GO1), 70% responded positively while less than 12% disagreed with the statement. More than 80%

admitted they set specific goals before beginning a new task (GO3) while less than 7% claimed they do not. The importance of setting goals is related to the fact that individuals assign a meaning to their environment according to the goals they previously fixed and looking to fulfill.

Table 46: Student's assessment of goal orientation

#	Statements	Agree	%	Disagree	%
GO1	I often define goals for myself.	222	70.7	37	11.78
GO2	I understand how accomplishment of a task relates to my goals.	250	79.61	18	5.73
GO3	I set specific goals before I begin a task.	253	80.57	20	6.36
GO4	I ask myself how well I have accomplished my goals once I have finished.	254	80.89	25	7.96
GO5	When performing a task. I frequently assess my progress against my objectives.	236	75.15	33	10.5

Moreover, when asked about the actual progression of task accomplishment, more than 79% agreed that they understand how the accomplishment of tasks is related to the goals they have set (GO2), while only 5.73% did not consider such link. Besides, 80.89% argued that they evaluate the fulfillment of their goals after finishing a given task whereas less than 7% did not perceive such operation necessary. Finally, 75.15% of the students exert a monitoring process by *frequently* assessing their progress against their objectives when carrying out a given task, while only 10.5% disagreed.

It is relevant to note that more 70% of the students responded positively to the items related to goal orientation. In fact, goal orientation determines the entrepreneur's perception of his or her own environment, thus, has an impact on his or her entrepreneurial intentions. Therefore, since almost three quarters of the sample responded positively, they are more likely to develop entrepreneurial intentions. Moreover, goals define what activities students will pursue according to the resources of which they dispose, thus, higher scores of goal orientation enable them to develop entrepreneurial competencies in response to the requirements of the environment.

1.2.3.2. Metacognitive choice

Students were asked to evaluate their metacognitive choice abilities. As seen in the table below the sample presented a high score of positive responses to the statements

Table 47: Student's assessment of metacognitive choice

#	Statements	Agree	%	Disagree	%
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MC1	I ask myself if I have considered all the options when solving a problem.	208	66.24	33	10.5
MC2	I ask myself if there was an easier way to do things after I finish a task.	219	69.74	41	13.05
MC3	I ask myself if I have considered all the options after I solve a problem.	196	62.42	41	13.05
MC4	I re-evaluate my assumptions when I get confused.	242	77.07	39	12.42
MC5	I ask myself if I have learned as much as I could have when I finished the task.	230	73.24	31	9.87

Matter of fact, 66.24% affirmed that go through a phase of questioning themselves if they did consider all the possible options when solving a problem (MC1), 69.74% argued that, after finishing a given task, they evaluate the decisions they made by asking themselves if other easier solutions exist (MC2) and 62.42% question if they took into consideration all the possible options when solving a given problem (MC3). Moreover, 77% affirmed that the re-evaluate their assumptions when getting confused (MC4) and 73.24% admitted to evaluating their learning outcomes after finishing a given task (MC5). Respectively, 10.5%, 13.05%, 13.05%, 12.42% and 9.87% disagreed with all the statements.

1.2.3.3. Metacognitive experience

Metacognitive experience enables the individual to provide a better interpretation of his or her social world and is defined as a set of affective past events that are drawn from cognitive activities, it channels resources such as emotions, intuition, and memories that can be employed throughout the process of a specific task sense making (Haynie et al., 2012). In the present survey, students scored a minimum of 59.87% of positive responses to the metacognitive experience items.

Table 48: Student's assessment of metacognitive experience

#	Statements	Agree	%	Disagree	%
ME1	I think about what I really need to accomplish before I begin a task.	244	77.7	24	7.64
ME2	I use different strategies depending on the situation.	267	85.03	18	5.73
ME3	I organize my time to best accomplish my goals.	216	68.78	49	15.6
ME4	I am good at organizing information.	230	73.24	34	10.82
ME5	I know what kind of information is most important to consider when faced with a problem	224	71.33	37	11.78
ME6	I consciously focus my attention on important information.	258	82.16	23	7.32

ME7	My “gut” tells me when a given strategy, I use will be most effective.	196	62.42	60	19.1
ME8	I depend on my intuition to help me formulate strategies.	188	59.87	52	16.56

The items were concerned with information and time organization and formulating strategies. When asked if they think about what they need to accomplish before starting a task (ME1), 77.7% of the students responded positively, while less than 8% disagreed with the statement. In addition, 68.78% of the students stated they organize their time to accomplish efficiently their goals (ME3). In fact, such capabilities are related to past tasks, helping students evaluate and compare what they really need to do and how much time such task requires. Thus, students drawing on past experience are more likely to have a greater performance in related tasks.

When considering the information selection and organization, 73.24% stated that they could organize information effectively (ME4), 71.33% affirmed that they were capable to identify what type of information is important to consider when facing a given problem (ME5), and 82.16% argued that they *consciously* focus their attention on important information (ME6). A great portion of the students’ sample are capable of identifying information, organizing it according to the level of importance and focus mainly on the more relevant ones. Such capacity is tightly related to information-seeking behaviors as a student with high levels of metacognitive experience is more likely to effectively develop information-seeking competencies. In addition, the latter competencies are related to opportunity identification and thus to entrepreneurial intention.

When considering strategies formulation and adaptation, 85% affirmed that they use different strategies according to the situation (ME2), almost 60% depend on their intuition to formulate strategies (ME8), in the same context, 62.42% argue that they use their instinctive emotional responses to evaluate the performance of a strategy in a given situation (ME7). The choice of a given strategy to solve a given problem or perform a task is not arbitrary in most cases, but is based on past similar situations. Emotions, intuition and memories guide students towards choosing the appropriate strategy among the decision framework available for them.

1.2.3.4. Metacognitive knowledge

Metacognitive knowledge expresses knowledge of self-strengths and weaknesses, others and surrounding environment, knowledge of task and knowledge and management of strategies. (Flavell, 1979, Schraw et al., 2006, Haynie and Shepherd, 2009). In the context of the present survey, it seemed more relevant to translate the information provided by the items into four

sub-groups, namely, information management, task performance, strategy management and others perception.

Table 49: Student's assessment of metacognitive knowledge

#	Statements	Agree	%	Disagree	%
MK1	I think of several ways to solve a problem and choose the best one.	254	80.89	23	7.32
MK2	I challenge my own assumptions about a task before I begin.	255	81.21	24	7.64
MK3	I think about how others may react to my actions	144	45.85	88	28.02
MK4	I find myself automatically employing strategies that have worked in the past.	183	58.28	55	17.51
MK5	I perform best when I already have knowledge of the task.	261	83.12	20	6.36
MK6	I create my own examples to make information more meaningful.	216	68.78	25	7.96
MK7	I try to use strategies that have worked in the past.	230	73.24	41	13.05
MK8	I ask myself questions about the task before I begin.	246	78.34	27	8.59
MK9	I try to translate new information into my own words.	232	73.88	28	8.91
MK10	I try to break problems down into smaller components.	212	67.51	50	15.92
MK11	I focus on the meaning and significance of new information.	206	65.6	45	14.33

Regarding the strategy management, 80.89% of the students stated that they go through a selection process, choosing the best way to solve a problem from the alternatives they have available (MK1), only 7.32% disagreed with the statement. Furthermore, a little more than half the sample agreed that they *automatically* employ strategies that have worked in the past (MK4), while 17.51% disagreed. In the same context, 73.88% agreed that they try to employ strategies that have worked in the past. Such conscious management of strategies is explained by the fact that metacognitive knowledge allows students to learn from past changes in their environment, thus, adapt effectively to uncertainty (Botha and Bignotti, 2017).

Considering the task-performance sub-group of metacognitive knowledge, 81.21% of the students challenge their own assumptions about a task before starting it (MK2), while 7.64% did not. Moreover, 78.34% admitted to going through a phase of questioning themselves before starting a given task (MK8) while 8.59% did not. Such cognitive processes inform about the students' effort to evaluate themselves, as to understand the task's requirements and compare them to their own abilities. Besides, 67.51% argued that they try to break problems into smaller

components (MK10) while almost 16% did not perceive it as an action they would exert. Finally, 83.12% admitted to obtaining higher performance when having prior knowledge about the task, thus knowledge of task participates directly in increasing task performance. In fact, a relatively high proportion of the students did perceive the importance of questioning and evaluating themselves and the task requirements before starting it. Such cognitive enterprise prepares the students to draw on what they already know and learned, as well as the methods he or she perceived as effective to guarantee a greater performance focusing on one's own strengths and weaknesses.

When asking about information management, 68.78% affirmed to count on examples they create to guarantee a better assimilation of the information (MK6). In the same context, 73.88% confirmed that they try to translate new information into their own words (MK9). Using their own examples, students relate to their own knowledge and information they have stored.

Moreover, 65.6% of the students focus on the meaning and significance of new information. Such exercise is tightly related to information sense making as it represents a new resource to store for subsequent usage. In fact, metacognitive knowledge in these terms, assists students to effectively allocate their resources given an uncertain and dynamic learning or working environment (Haynie and Shepherd, 2009).

Finally, metacognitive knowledge is also concerned with the knowledge of others. In fact, almost 46% of the students affirmed that they think about how others may react to their actions. This was explained by Haynie and Shepherd (2009) as thinking about how others think in the knowledge about self and others dimension. It possible to conclude that students with higher scores in metacognitive knowledge are more likely to obtain higher performance in entrepreneurial contexts as metacognitive knowledge a crucial resource in a learning context, most importantly, in a context where individuals are characterized by a lack of entrepreneurial experience (Haynie et al. 2012).

1.2.3.5. Metacognitive monitoring

Metacognitive monitoring is concerned with auto-regulatory mechanisms that serve to higher task performance. The items provided two types of information, firstly, the ongoing monitoring and evaluation during the performance of a given task and secondly, the evaluation of the strategies used to perform a given task.

Table 50: Student's assessment of metacognitive monitoring

#	Statements	Agree	%	Disagree	%
MM1	I periodically review to help me understand important relationships.	215	68.47	29	9.23
MM2	I stop and go back over information that is not clear.	236	75.15	29	9.23
MM3	I am aware of what strategies I use when engaged in a given task.	244	77.7	29	9.23
MM4	I find myself analyzing the usefulness of a given strategy while engaged in a given task.	212	67.51	28	8.91
MM5	I find myself pausing regularly to check my comprehension of the problem or situation at hand.	217	69.1	45	14.33
MM6	I ask myself questions about how well I am doing while I am performing a novel task.	230	73.24	31	9.87
MM7	I stop and reread when I get confused.	232	73.88	37	11.78

The percentage of agreement with the statements scored a minimum of 67.51%. Considering the items related to ongoing monitoring, 68.47% of the students admit to periodically reviewing to help them understand important relationships (MM1), while less than 10% did not agree. Besides, 75.15% confirmed stopping and going back over information that are not clear (MM2) and 73.88% stated that they reread when they are confused (MM7). A relatively great portion of students, in this case are constantly evaluating their learning and thinking about their own comprehension of the content they are studying; thus, they are carrying out continuous monitoring of their learning processes. In the same context, 69% admitted to take regular pauses to check their levels of comprehension of a given problem (MM5) and 73.24% tend to ask questions about their performance in a given task (MM6). Such evaluation is clearly at the metacognitive level, as the monitoring is performed on comprehension and assimilation process and not on the effective content to be learned.

On the other hand, and regarding the evaluation of cognitive strategies, 77.7% of the students are *aware* of what strategies they use when performing a given task and 67.51% analyze the usefulness of the strategies they chose while engaging in a given task, less than 10% disagreed with such statements.

The overall responses were positive to metacognitive monitoring, this informs about the future performance of students in an entrepreneurial context. Matter of fact, students with high scores of metacognitive monitoring are more likely to have a higher awareness of their cognitive strengths and weaknesses. It is also worth noting that, higher levels of cognitive monitoring serve as self-regulatory mechanisms allowing the assessment, regulation and improvement of entrepreneurial performance.

1.3. Summary of the data analysis

The section above was interested in describing the characteristics of the sample and the percentage of the responses received in the aim of explaining the factors that intervene in the relationship between entrepreneurial competencies and entrepreneurial intention, taking into account the students' ratings of cognitive adaptability and thus, introducing the alleged role it could play in moderating the latter link.

When it comes to the items related to entrepreneurial intention, the majority of the students had a positive attitude towards launching a new business venture as more than three-quarters expressed their intentions to set up a company in the future. Although the responses were relatively positive when asked about actively searching for business opportunities and spending time learning about starting a firm, effective actions towards the launching process, such as saving money received less interest as a response to the saving culture and an uncertain post-revolutionary entrepreneurial environment.

For entrepreneurial competencies, the students' perception of their competencies was relatively positive. In fact, considering the students' assessment of their information seeking competencies, more than four-fifth of the sample agreed to paying attention to gathering the right set and amount of information from the sources they have available if they consider them necessary to the performance of a given task. The students' assessment of their innovativeness was relatively positive as more than half of the sample agreed to preferring unique, unusual and original approaches and activities. Thus, at least half of the sample are open to adopt products of innovation and are by such more likely to detain one of the major resources of entrepreneurship. For the opportunity recognition dimension of entrepreneurial competencies, at least half of the students admitted to having the capacity to identify business opportunities in their environment. Moreover, individuals who developed such competency might have also developed information-seeking competencies, as identifying business opportunities is a result of collecting and analyzing information. As argued by Cox and Castrogiovanni (2016), opportunities can be created through unearthing and finding important information. When asked about their propensity to take risks, students seemed to be conscious both about the inherent threats and opportunities of risk taking, as the response rate for perceiving risk as a threat and perceiving risk as an opportunity were somewhat similar. Still, the overall riskiness of new venture creation received relatively less appreciation from the students, than the overall positive perception of starting a business.

Considering the items related to training and skills, at least half of the sample, consisting solely in third year business students, held the required skills to launch and manage a business venture.

When it comes to cognitive adaptability, students had relatively positive responses. In fact, at least 70% of them responded positively to goal orientation, thus, at least 70% of the students are likely to focus on feedbacks from the environment to define their motives. On the other hand, the results related to metacognitive choice show that more than 62% of the students have the ability to perform an active selection process of a specific decision framework that responds the best and is more appropriate their goals. The items related to metacognitive experience were divided into two groups, as to, information and time organization and formulation of strategies. In fact, a great portion of the students' sample are capable of identifying information, organizing it according to the level of importance and focus mainly on the more relevant ones. Such capacity is tightly related to information-seeking behaviors as a student with high levels of metacognitive experience is more likely to effectively develop information-seeking competencies. They are thus, more likely to be guided by emotions, intuition and memories towards choosing the appropriate strategy among the decision framework they have available. Besides, students scored relatively high in the items related to strategy management and thus able to effectively adapt to changing or uncertain situations and tasks. More than half of the students expressed their ability to effectively allocate their cognitive resources in dynamic situations such as learning contexts. Moreover, less than half of the students agreed to thinking about how others perceive their actions. Finally, Students scored relatively high when it comes to the items related to metacognitive monitoring. They are, thus, more likely to be capable to interpret feedback from the environment and translate it into regulatory actions according to the goals they aim to achieve.

2. Validity and reliability of the measuring instruments

This section presents the various statistical analysis that were used, and the results obtained. The statistical tools used in this part of the dissertation are namely, the reliability test of the measurement scales, the exploratory factor analysis and correlation through the Pearson correlation coefficient (r). The software used was IBM SPSS Statistics 22.

2.1. Reliability

Reliability is concerned with whether past scores using the instrument demonstrate acceptable reliability proving by such that the instrument is consistent and reliable (Creswell and Creswell, 2018). Since scale items should be measuring the same underlying construct, items should be behaving the same way, thus demonstrating an acceptable degree of internal consistency. “A scale’s internal consistency is quantified by a Cronbach’s alpha (α) value that ranges between 0 and 1, with optimal values ranging between .7 and .9.” (Creswell and Creswell, 2018, p. 208)

In the same context, Fisher et al. (2014) supported the latter statement by adding that values ranging from 0.7 to 1 of Cronbach’s alpha indicate a high to perfect reliability. Matter of fact, the higher the values, the more correlation there is between the items.

A rule of thumb presented by George and Mallery (2003) offer the following insights: $\alpha > .9$ – Excellent, $\alpha > .8$ – Good, $\alpha > .7$ – Acceptable, $\alpha > .6$ – Questionable, $\alpha > .5$ – Poor, and $\alpha < .5$ – Unacceptable.

In compliance with the above-mentioned definition and rule of thumb, a reliability test was conducted using the software IBM SPSS Statistics in its 22nd version. The results showed in the table below were obtained. Six items in total were dismissed and would not be included in future analysis.

Table 51: Reliability of the measurement scales

	α	Deleted items	α after deleting items	Number of items	Judgement
Entrepreneurial intention					
IEI	0.648	I6	0.657	5	<i>Acceptable</i>
	0.657	I7	0.697	4	<i>Acceptable</i>
Entrepreneurial competencies					
Information seeking	0.669	IF3	0.823	3	<i>Optimal</i>
Innovativeness	0.750	-	-	4	<i>Optimal</i>
Opportunity identification	0.225	OP1	0.563	2	<i>Poor but acceptable</i>
Risk-taking propensity	0.742	-	-	7	<i>Optimal</i>
Training and skills	0.891	TS11	0.896	10	<i>Optimal</i>
Entrepreneurial competencies	0.908	3	0.925	26	<i>Excellent</i>
Cognitive adaptability					
Goal orientation	0.806	-	-	5	<i>Optimal</i>
Metacognitive choice	0.753	-	-	5	<i>Optimal</i>
Metacognitive knowledge	0.823	MK3	0.837	10	<i>Optimal</i>
Metacognitive experience	0.775	-	-	8	<i>Optimal</i>
Metacognitive monitoring	0.746	-	-	7	<i>Optimal</i>
Cognitive adaptability	0.941	1	0.943	35	<i>Excellent</i>

2.1.1. Entrepreneurial intention

Reliability tests were conducted to verify the internal consistency of Thompson's (2009) scale of the individual entrepreneurial intent. A value of 0.648 was first obtained. The suppression of the item I6 results in obtaining a higher value of Cronbach's alpha (0.657). The coefficients of correlation between the items and the latter presented values ranging from 0.048 to 0.197 with a maximum value of 0.276 which are relatively low and explain why the suppression of I6 help increase the value of Cronbach's alpha. Moreover, the item I6 was concerned with saving behaviors; students were asked to assess the following statement: "I am saving money to start a business". Considering the actual Tunisian socio-economic environment, there is a great uncertainty surrounding both investments and entrepreneurial behaviors.

Furthermore, the suppression of the item I7 "I do not read books on how to set up a firm", provided a Cronbach's alpha value of 0.697. The correlation coefficients regarding I7 ranged

between 0.075 and 0.215 with a maximum value of 0.252, which are the results of a relatively low correlation and thus significance. Such results are explained by the great use of technologies by students, as worldwide internet represents a great tool to learn and search for information. The entrepreneurial intention measurement scale provided by such a Cronbach's alpha value of 0.697, considered as an acceptable value. Further analysis will not include the deleted items and thus consider the measurement scale of entrepreneurial intention as a four items scale.

2.1.2. Entrepreneurial competencies

The overall internal consistency of the entrepreneurial competencies scale provided a Cronbach's alpha value of 0.908, which is considered as an excellent value by the rule of thumb. Innovativeness and risk-taking propensity provided a Cronbach's alpha value of 0.750 and 0.742 and did not show any signs of inconsistency or low loadings of inter-items correlation, for the matter none of the dimensions had items deleted.

On the other hand, three items were respectively dismissed from the remaining three dimensions. Matter of fact, information seeking competencies offered an internal consistency value of 0.669. The item IF3 "I take action without wasting time gathering information" presented relatively low correlation coefficients with the rest of the items, ranging from 0.085 to 0.173 with a maximum value of 0.183 while other items obtained correlation coefficients higher than 0.54. Since the item was reverse coded, and contained a negative connotation (wasting time), it is possible that respondents did not assimilate it well. Matter of fact, the suppression of the items results in a Cronbach's alpha value of 0.823 which is considered as high.

The opportunity identification scale did not provide an acceptable internal consistency, as the Cronbach's alpha value obtained was of 0.225, considered as unacceptable since it is lower than 0.5. Effort to improve the measurement scale resulted in a Cronbach's alpha value of 0.563 through the suppression of one item. The first item OP1 "Seeing potential opportunities does not come very naturally to me" is reverse coded and scored. Inter-items correlation is non-significant as coefficients with the remaining two items were respectively equal to 0.002 and -0.092. For the matter, OP1 was deleted, to obtain a higher alpha value. Although 0.563 is considered as a poor value according to the rule of thumb, it is preferable to retain the opportunity identification competencies dimension for future analysis, as opportunity identification is the core of entrepreneurship. It is possible, though; that such dimension was

not well assessed by students as the actual curricula does not offer practical methods to identify opportunities or specialized courses in identifying and seizing business opportunities in the market.

The training and skills dimension of entrepreneurial competencies provided an internal consistency value of 0.891, which is considered as a relatively high value. However, the last item TS11 was the less correlated item within the whole scale. Low correlation loadings inform about the inconsistency of the scale, and if given items do measure the underlying construct or not. For the actual case, TS11 was either misunderstood or misconceived by the students and its suppression results in a higher value of Cronbach's alpha, as to 0.896.

2.1.3. Cognitive adaptability

The overall measurement scale of cognitive adaptability provided an excellent internal consistency of 0.941. In the thirty-six items scale, one single item was dismissed as to the third item of metacognitive knowledge MK3, "I think about how others may react to my actions". Such item could be subjectively hard to assess as it represents both the knowledge of self, knowledge of others and the acknowledgment of their ideas about self. In other terms, the item was directly related to judgmental behaviors, as to how a person perceives their actions through the reactions of others, and such behavior could be considered, not as controlling and knowing the surrounding environment, but more like being controlled subject to the social environment.

2.2. Exploratory factor analysis

Although the various measurement scales were adopted from previous studies, tested and validated, exploratory factor analysis (EFA) serves as a response to testing such measurement scales in a different context. Matter of fact, such analysis informs about the unidimensional or multidimensional character of each variable. Matter of fact, "the overriding objective of EFA is to evaluate the dimensionality of a set of multiple indicators (e.g., items from a questionnaire) by uncovering the smallest number of interpretable factors needed to explain the correlations among them" (Brown, 2015, p.18). Watkins (2018) argued that, for social and behavioral sciences researches, factors are considered as unobservable characteristics of the individuals measured and presented through the variations of scores they obtain regarding the measured variables. The EFA was conducted on all three variables and underlying dimensions, both Kaiser-Meyer-Olkin (KMO) and Bartlett tests were verified to ensure proper factorability.

KMO values lie between 0 and 1. Values that are either equal or superior to 0.7 are desired and values that are less than 0.5 are unacceptable as they indicate that the correlation matrix

cannot factorable (Watkins, 2018). Kaiser (1974, as cited in Watkins, 2018, p. 227) set a rule of thumb as to, KMO values “in the .90s, marvelous; in the 80s, meritorious; in the .70s, middling; in the .60s, mediocre; in the .50s, miserable; below .50, unacceptable”.

The correlation matrix is Bartlett’s (1954) test of sphericity is “an objective test of the factorability of, which statistically tests the hypothesis that the correlation matrix contains ones on the diagonal and zeros on the off-diagonals. Hence, that it was generated by random data. This test should produce a statistically significant chi-square value to justify the application of EFA” (Watkins, 2018, p. 226).

Table 52: Factor analysis: KMO and Bartlett’s test

KMO	Bartlett		N	TEV
0.923	Approx. chi-square	11603,012	13	62.832%
	df	2145		
	Sig.	0.000		

(N: number of extracted factors, TEV: total extracted variance)

By effectuating both tests, a value of 0.923 was obtain for KMO which is considered as high, and the Bartlett test was statistically significant with 0.000 ($p < 0.001$). Proper factorability is thus ensured. Moreover, the tests inform that the sample size of 314 students is sufficient and the variables’ correlation is large enough to grant an EFA. The number of factors obtained was higher than the number of the theoretical dimensions. For the matter, it is extremely relevant to effectuate EFA on all variables to make sure if the theoretical unidimensional character is verified or not.

2.2.1. Exploratory factor analysis of entrepreneurial intention

The measurement scale for the individual entrepreneurial intent developed by Thompson (2009) was presented as a unidimensional construct. EFA was conducted to verify if the one-dimensional nature is confirmed.

Table 53: EFA of entrepreneurial intention

KMO	Bartlett		N	TEV
0.706	Approx. chi-square	264,563	1	44.681%
	df	10		
	Sig.	0.000		

As seen in the table above, one factor was extracted with total extracted variance of 44.68%. Factorability is granted as KMO value is superior to 0.7 and Bartlett test is statistically significant ($p < 0.001$). Entrepreneurial intention, will be thus, considered as a single factor in future analysis.

2.2.2. Exploratory factor analysis of entrepreneurial competencies

The measurement scale for entrepreneurial competencies consists of five distinct measurements for each dimension. Although each dimension was considered as a single factor in the literature, EFA should be made on each dimension separately. As seen in the table below, information seeking competencies, innovativeness, opportunity identification competencies and training and skills were confirmed to be unidimensional and one factor was extracted from each.

Table 54: EFA of entrepreneurial competencies

Variable	KMO	Bartlett		N	TEV
Entrepreneurial competencies	0.923	Approx. chi-square	4414,980	6	58.647%
		df	325		
		Sig.	0.000		
Information seeking	0.705	Approx. chi-square	351.720	1	74.163%
		df	3		
		Sig.	0.000		
Innovativeness	0.761	Approx. chi-square	276.015	1	57.292%
		df	6		
		Sig.	0.000		
Opportunity identification	0.5	Approx. chi-square	51.955	1	69.597%
		df	1		
		Sig.	0.000		
Risk-taking propensity (Risk-taking as a threat, $\alpha=0.775$ Risk-taking as an opportunity, $\alpha=0.720$)	0.718	Approx. chi-square	685.646	2	63.798%
		df	21		
		Sig.	0.000		
Training and skills	0.896	Approx. chi-square	1544.379	1	52.634%
		df	45		
		Sig.	0.0000		

However, risk-taking propensity was divided into two factors. Such result can be explained

through the work of Nabi and Liñán (2013). Matter of fact, the latter authors defined risk-taking propensity as divided in two factors according to the student's perception. Thus, the two factors were named, in accordance to Nabi and Liñán (2013), as risk-taking as a threat and risk-taking as an opportunity. The reliability of both dimensions was later tested and confirmed as optimal as it was respectively equal to 0.775 and 0.720. The risk-taking propensity dimension will be no more considered as a single dimension, but as two, distinct dimensions in future analysis.

2.2.3 Exploratory factor analysis of cognitive adaptability

Cognitive adaptability is the aggregate of five metacognitive dimensions (Haynie and Shepherd, 2009), the measurement scale was, thus, divided in five distinct dimensions as to goal orientation, metacognitive choice, metacognitive knowledge, metacognitive experience and metacognitive monitoring. EFA was conducted on all items of cognitive adaptability and resulted in obtaining seven extracted factors which does not consistent with the literature (Haynie and Shepherd, 2009; Haynie et al. 2012; Urban, 2012; Botha and Bignotti, 2017).

Table 55: EFA of cognitive adaptability

Variable	KMO	Bartlett		N	TEV
Cognitive adaptability	0.930	Approx. chi-square	5043,716	7	57.929%
		df	6.30		
		Sig.	0.000		
Goal orientation	0.816	Approx. chi-square	466.811	1	56.879%
		df	10		
		Sig.	0.000		
Metacognitive choice	0.783	Approx. chi-square	337.899	1	50.701%
		df	10		
		Sig.	0.000		
Metacognitive experience	0.781	Approx. chi-square	592.651	2	54.351%
		df	28		
		Sig.	0.000		
	0.781	Approx. chi-square	592.652	1	39.754%
		df	28		
		Sig.	0.000		
Metacognitive knowledge	0.871	Approx. chi-square	1008.153	2	51.472%
		df	55		
		Sig.	0.000		

	0.875	Approx. chi-square	961.346	1	41.821%
		df	46		
		Sig.	0.000		
Metacognitive monitoring	0.792	Approx. chi-square	413.846	1	40.105%
		df	21		
		Sig.	0.000		

All variables, cognitive adaptability included, were confirmed to be factorable as KMO index ranged between 0.781 and 0.930. Goal orientation, metacognitive choice and metacognitive monitoring were confirmed to be unidimensional, while two factors were extracted from both metacognitive experience and metacognitive knowledge. No theoretical proof was found to argument such classification. However, one work was found to obtain similar results. In fact, Morallane and Botha (2016) obtained similar classification in a PhD thesis research in a south African context, and divided metacognitive experience to prior and current cognitive experience and metacognitive knowledge to prior and current metacognitive knowledge. Since cognitive adaptability's dimensions were defined to be unidimensional by founders (Haynie, 2005; Haynie and Shepherd, 2009; Haynie et al. 2012) and were found be unidimensional by Urban (2012) and Botha and Bignotti (2017), cognitive experience and cognitive knowledge were kept as unidimensional variables. As separating the latter in two factors lacks theoretical proofs and basis, the dimensions will be further studied and verified through future analysis.

2.3. Correlation matrix

Correlation serves to measure the degree of association between variables by measuring both the strength and direction of linear relationships between couples of variables. The coefficients obtained range between -1 and 1, where the sign informs about the direction and the numbers inform about the strength of the relationship and where 0 informs that there is no relationship between the variables. The correlation matrix was obtained through available command on the software IBM SPSS Statistics 22 and the results are presented in a table, as shown below.

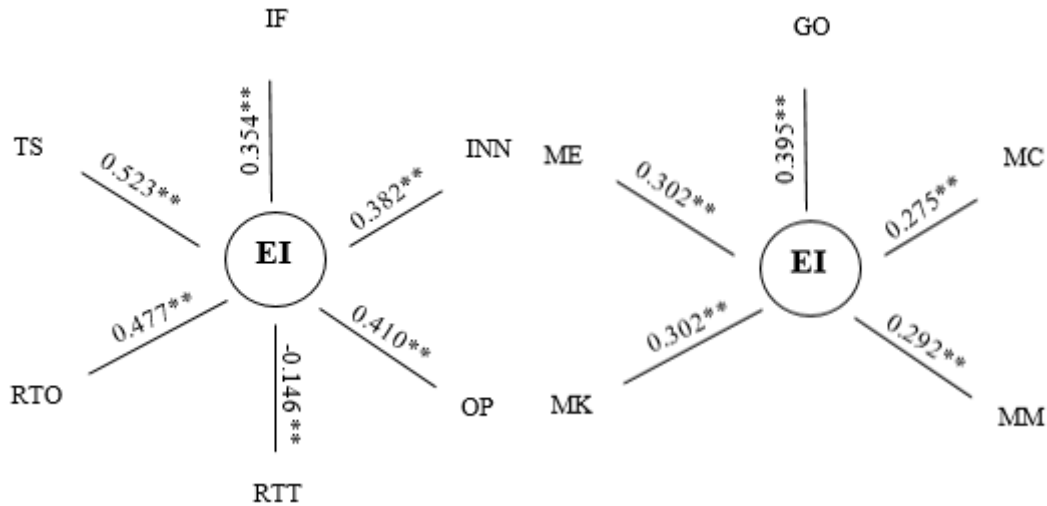
To assess the strength of a correlation coefficient (r), a rule of thumb was developed by Grimm (1993, as cited in Martin and Bridgmon, 2012, p. 412) as to $r < 0.39$ (positive or negative) is low, $0.40 < r < 0.69$ (positive or negative) is moderate and $r > 0.7$ (positive or negative) is large.

A more general rule of thumb in social sciences for the absolute value of r considers that: $0.0 < r < 0.2$ is weak, $0.2 < r < 0.4$ is small to modest, $0.4 < r < 0.6$ is moderate, $0.6 < r < 0.8$ is moderately strong and $0.8 < r < 1.0$ is strong.

The following table illustrates the correlation matrix, and presents, thus, all the various relationships.

2.3.1. Correlation results for entrepreneurial intention

Figure 28: Correlation results for entrepreneurial intention with each dimension of entrepreneurial competencies and cognitive adaptability



*. Correlation is significant at 0.05, **. Correlation is significant at 0.01.

The correlation test results between entrepreneurial intention and the six dimensions of entrepreneurial competencies show relatively high correlation coefficients unless for one dimension which is perceiving risk as a threat. In fact, entrepreneurial intention appears to be moderately, significantly and positively correlated with training and skills, such result informs that the more students develop skills and receive proper training related to entrepreneurship the more they are likely to develop entrepreneurial intention. Thus, the latter emphasizes the importance of entrepreneurial education and training in driving students towards considering entrepreneurship as a possible career.

Moreover, entrepreneurial intention was moderately, significantly and positively correlated to perceiving risk as an opportunity, thus, the more students have a positive perception of risk the more they are likely to develop entrepreneurial intentions. In fact, risk-taking propensity is a predictor of entrepreneurial behaviors, as the attitude towards risk can condition the development of entrepreneurial intentions (Antoncic et al., 2018).

In the same context, entrepreneurial intention was moderately, significantly and positively correlated to opportunity recognition. Such result suggest that the more students are able to

recognize business opportunities, the more they are likely to have entrepreneurial intentions. This is relevant when it comes to entrepreneurial education, as, if the educational curricula offered by universities provide students with the required techniques and skills allowing them to recognize opportunities, and later act on them, there is more chance for students to consider entrepreneurship as a career.

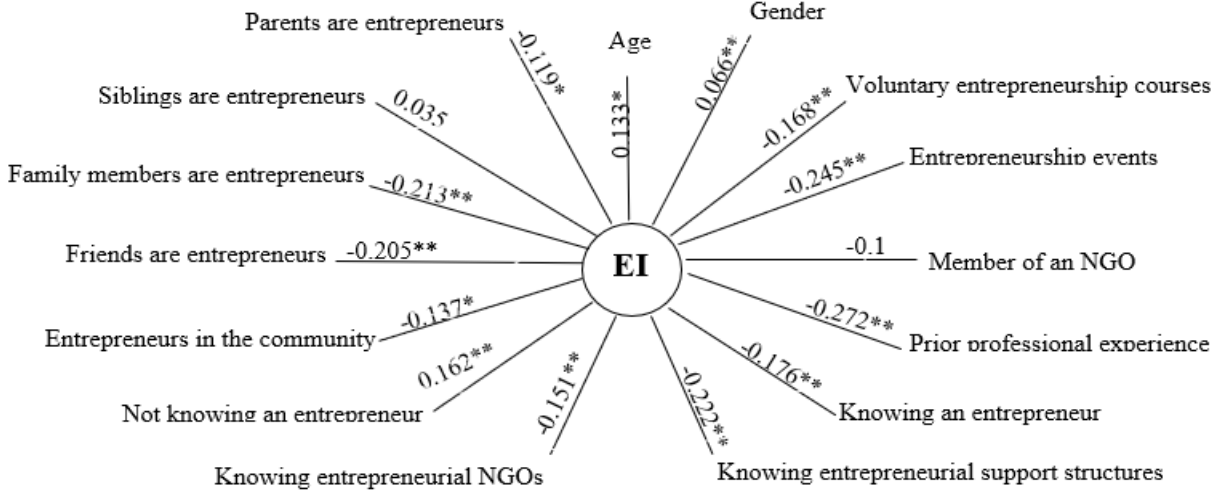
On the other hand, entrepreneurial intention appears to be modestly, significantly and positively correlated with information seeking competencies, this means that, students who adopt information seeking behaviors are more prone to develop entrepreneurial intentions. In fact, information seeking behavior are tightly linked to opportunity recognition and express a personal effort towards acquiring knowledge about the self, others and the surrounding environment. Besides, entrepreneurial intention appears to be modestly, significantly and positively correlated with innovativeness. Such result suggest that the more students are innovative the more they are likely to develop entrepreneurial intentions. Thus, the more students are able to accept and adopt products of innovation the more they are likely to launch a business venture. Innovativeness, as a competency, should be nurtured by universities as it is tightly linked to future performance of small and medium businesses, as well as, representing a crucial resource for developing competitive advantages and thus, business success (Sajilan and Tehseen, 2019). Finally, entrepreneurial intention had a weak, significant and negative correlation with perceiving risk as a threat. Although the correlation is statistically significant, the results show that there is a weak negative relationship between both variables. In other terms, perceiving risk as a threat could decrease the chances of developing entrepreneurial intentions within students. In fact, and as explained previously, adopting a negative attitude towards risk can condition the general perception of entrepreneurship, and thus reduce the desire to consider launching a new business venture.

Considering possible relationships between entrepreneurial intention and cognitive adaptability, correlation coefficients were modest, positive and significant for all the metacognitive dimensions. Firstly, entrepreneurial intention was modestly, significantly and positively correlated to goal orientation. In fact, goal orientation focuses on the interdependence between the environment and the students' motives and determines, by such, their perception of their surrounding environment. Thus, the higher the goal orientation of students, the more they are likely to develop entrepreneurial intentions.

Moreover, entrepreneurial intention was equally correlated (modestly, positively and significantly) to metacognitive knowledge and metacognitive experience. In fact, metacognitive knowledge and

metacognitive experience enable students to generate various decision framework according to the goals they have set. It is relevant to recall that both dimensions were considered to directly intervene in the formulation of entrepreneurial intention (Urban, 2012: Botha and Bignotti, 2017), thus, higher levels of metacognitive knowledge and experience result in higher possibilities of developing entrepreneurial intention. Metacognitive choice was found to be modestly, significantly and positively correlated to entrepreneurial intention. In fact, metacognitive choice consists of choosing the right decision framework and eliciting various cognitive outcomes such as actions, understanding or adopting specific behaviors (Haynie and Shepherd, 2009). For the matter, metacognitive choice serves to elicit the desire of students to launch a business venture and thus, pertain actions expressing the inner decision to be an entrepreneur. Finally, metacognitive monitoring is modestly, significantly and positively correlated to entrepreneurial intentions. In fact, monitoring is an answer to the instability of entrepreneurial intentions within students as such inner desire is constantly monitored and evaluated according to the inner and outer environment. For the matter, the higher the entrepreneurial intention, the higher the level of metacognitive monitoring.

Figure 29: Correlation results for entrepreneurial intention with control variables



When considering control variables, as shown in the figure above, the sample provided vary differentiated results. Matter of fact, the items related to gender, being member of a student’s club or a non-governmental organization and having siblings that are entrepreneurs had low correlation coefficients, also, the two latter were not statistically significant, for the matter, the relationship is not to consider. Age on the other hand, was weakly, positively and significantly correlated with entrepreneurial intention. This suggest that the positive relationship between age and

entrepreneurial intention is weak and age does not have a major impact on entrepreneurial intentions according to our sample but the latter can slightly be positively influenced the more students age.

When it comes to entrepreneurial social network, most of the coefficients were negative, significant and modest to low. In fact, having entrepreneurs within the family, within friends, in the community or knowing an entrepreneur in general is negatively correlated to entrepreneurial intention. Although the literature presented role models are positively influencing the decision to launch a new business venture, it is relevant to consider that the post-revolutionary period caused an increase in the uncertainty of the entrepreneurial environment, an environment already known to be extremely uncertain and unstable. Such result can also be explained by the nature of the role models' influence. In other terms, students with an entrepreneurial network who presents unattainable achievements in terms of abilities and timing will feel less attracted to entrepreneurial careers, as only successful social role models and parental role models are able to increase inspiration and proactive behaviors as well as positive perceptions of desirability and feasibility (Nowiński and Haddoud, 2019).

When it comes to prior professional experience, the correlation with entrepreneurial intention is significant, negative and modest. While the literature provided insights on the positive relationship between prior experience and intention, such relationship was mainly concerned with entrepreneurial experience. For the sample's case, the more students accumulate professional experience the less they are drawn to launching a business venture. Such dilemma can be explained through the perceived gratification and models of reference. Matter of fact, attractive career choices, are built upon how the student identifies with roles models, and the perceived intrinsic and extrinsic rewards related to such career choices. For the matter, students are more attracted to the employee's status than to the entrepreneur's profile. Such results are thus related to the previous results related to entrepreneurial network and explain that the negative impact of the latter is derived from the fact that role models participate in increasing the attractiveness towards other career choices, and less towards entrepreneurship.

Finally, the control variables related to entrepreneurship support structures, the results were very differentiated. Firstly, knowing entrepreneurial support structures was significantly, modestly and negatively correlated with entrepreneurial intention. In other terms, the more students know about entrepreneurial supports structures the less they are likely to develop entrepreneurial intentions. Although more than 60% of the sample agreed to not knowing such organizations, the negative impact might have emerged from two levels; the personal dimensions and the institutional

dimensions. Either the problem emerged from the lack of interest of students in pursuing a learning process outside of the university or by the lack of communication between the support structures and students as they suffer from various deficiencies. The most important ones being the absence of an encouragement program for students, as raising funds requires being titular of a diploma and the slowness and complexity of the administrative procedures (SALEEM project 2018).

The participation of students in entrepreneurial events and the voluntary participation in entrepreneurship courses received negative assessment. The voluntary participation in entrepreneurship courses was significantly, negatively and weakly correlated to entrepreneurial intention. Such negative relationship can be explained by the fact that students did not appreciate the content offered by such courses. Matter of fact, most voluntary courses include fees, and such investment should express the student's desire to launch a business venture, however, in this case, it had a negative impact on their intentions. One of the reasons would be the practicality of the content offered by such courses. In fact, the approach most commonly used is the creation of business plans (Liñán, 2004) and although it was defined as a clear graphic representation of the entrepreneurial idea, business plan canvas was widely criticized to be a static representation of an extremely dynamic process (Honig, 2004). Moreover, business planning turned out to be, according to (Honig, 2004) irrelevant and constraining, leading to the limitation of the range of activities and creative responses to environmental changes, the students, thus, conclude that the plan is financially infeasible, or psychologically infeasible (Sarasvathy, 2011).

On the other hand, the participation in entrepreneurial events was negatively correlated with entrepreneurial intentions. Such result can be explained by the fact that in such events, role models are presented to the attendees, since the focus revolves around the entrepreneurial experience. Matter of fact, the literature, medias and social medias presented the entrepreneur only through success stories (Johnsen and Sørensen, 2017). Meeting real entrepreneurs and listening to their experiences gives students a more realistic view of the role of the entrepreneur, and takes the veil off the myth of the successful and rich entrepreneur.

2.3.2. Correlation results for entrepreneurial competencies and cognitive adaptability

The correlation matrix shows that, according to the table below, all the dimensions of cognitive adaptability are strongly and positively correlated, which reinforces the fact that the latter dimensions are representing the same variable. For entrepreneurial competencies, all the dimensions were correlated except for risk-taking as a threat with risk-taking as an opportunity

and training and skills, which is an expected result. But still, the dimensions perfectly represent the entrepreneurial competencies as a variable.

Table 57: Correlation results for entrepreneurial competencies and cognitive adaptability

Information seeking	1										
Innovativeness	0.643**	1									
Opportunity recognition	0.619**	0.635**	1								
Risk as a threat	0.149**	0.229**	0.169**	1							
Risk as an opportunity	0.636**	0.681**	0.595**	0.04	1						
Training and skills	0.598**	0.658**	0.646**	0.028	0.653**	1					
Goal orientation	0.526**	0.516**	0.545**	0.201**	0.492**	0.492**	1				
Metacognitive choice	0.602**	0.664**	0.591**	0.171**	0.530**	0.537**	0.679**	1			
Metacognitive monitoring	0.561**	0.579**	0.520**	0.306**	0.475**	0.474**	0.758**	0.720**	1		
Metacognitive knowledge	0.620**	0.646**	0.528**	0.160**	0.551**	0.581**	0.700**	0.774**	0.715**	1	
Metacognitive experience	0.620**	0.620**	0.568**	0.150**	0.531**	0.627**	0.727**	0.748**	0.700**	0.805**	1
	Information seeking	Innovativeness	Opportunity recognition	Risk as a threat	Risk as an opportunity	Training and skills	Goal orientation	Metacognitive choice	Metacognitive monitoring	Metacognitive knowledge	Metacognitive experience

As demonstrated in the third chapter of this dissertation, there is a positive relationship between the dimensions of entrepreneurial competencies and cognitive adaptability. Matter of fact, all the dimensions are moderately to strongly correlated. The correlation is significant at 0.05 and all the coefficients are positive. Since the two dimensions of risk-taking propensity were not presented in the construction of the model and emerged from the exploratory factory analysis, it is relevant to explain their relationship with the various dimensions of cognitive adaptability.

Risk-taking perceived as a threat and risk-taking perceived as an opportunity were modestly to strongly correlated to metacognitive dimensions. The highest correlation coefficient for risk-taking as a threat was attributed to metacognitive monitoring. In the same context, risk-taking as an opportunity was moderately correlated to metacognitive monitoring. Since the latter serves as a mechanism of self-regulation, it informs the students' perception of the interaction happening between the environments they act in and their motivations within and across cognitive efforts (Haynie and Shepherd, 2009). Thus, the more students perceive risk as a threat, the higher their levels of cognitive monitoring implementing their negative attitude towards risk-taking by receiving negative feedback from the environment

Moreover, the more students perceive risk as an opportunity, the higher their metacognitive monitoring, as having a positive attitude towards risk-taking implements their positive attitudes towards entrepreneurship by receiving positive feedback from the environment.

Besides, goal orientation was modestly correlated to perceiving risk as a threat and moderately correlated to perceiving risk as an opportunity. Since goal orientation is the interaction between the environment and personal motives, if the environment provides threats, the student's motives will be directed towards developing and pursuing alternative cognitive strategies based on the negative attitude towards entrepreneurship. But if the environment provides opportunities, the students' motives will be directed towards a positive attitude towards entrepreneurship. Thus, goal orientation conditions the students' motives in a reaction to a changing environment.

Metacognitive choice, on the other hand, was weakly correlated to perceiving risk as a threat and positively perceiving risk as an opportunity. Such results suggest that according to the nature of their perception, students will choose the right decision framework to act on. Thus, the more they perceive risk-taking as an opportunity the more they engage in the active process of selecting the proper decision frameworks to act on. Finally, metacognitive knowledge and metacognitive experience were weakly correlated to perceiving risk-taking as a threat and moderately correlated to risk-taking as an opportunity. Thus, the more students perceive risk-taking as an opportunity, the more they are capable to draw from past cognitive and affective experiences leading them to a better a better perception of appropriateness they have of a given cognitive problem or situation (Haynie et al., 2012). In the same context, risk-taking as an opportunity was moderately and positively correlated to metacognitive knowledge, thus, the more students perceive risk-taking as an opportunity, the more they effectively adapt their decision policies in response to feedback on dynamic tasks or situations (Haynie et al., 2012).

For both the latter cases, students with a negative attitude towards risk-taking, slightly base their cognitive enterprises on their perception of risk as a threat, but the impact remains limited as it was shown to be weak through the results of the correlation matrix. Although, it is possible to suggest, according to the results above, that the higher the levels of cognitive adaptability, the more students are capable to control their cognitive responses to a cognitive problem especially when it comes to novel or uncertain cognitive tasks.

All the above being said, it is possible to suggest that entrepreneurial competencies have a positive relationship with cognitive adaptability, and thus, the higher the levels of cognitive adaptability, the more students develop and make use of their entrepreneurial competencies.

2.2.3. Summary of the reliability and validity analysis

The measurement scales were found to be reliable for all variables except for the opportunity recognition competency which scored a value of 0.563 of Cronbach's alpha. Such value was considered as poor but acceptable according to the rule of thumb of George and Mallery (2003) and Nunnally (1967) for a research early stage. Most importantly opportunity recognition was kept among the dimensions of entrepreneurial competencies because of its importance in the entrepreneurial field, as it considered as a central competency to be an entrepreneur.

Proper factorability was granted with the obtention of a KMO index of 0.923 and the significance of the Bartlett test ($p < 0.001$). The EFA analysis confirmed the unidimensional nature of entrepreneurial intention. For the entrepreneurial competencies' dimensions, information seeking, innovativeness, opportunity recognition and training and skills were confirmed to unidimensional, while risk-taking propensity was divided in two factors according to the work of Nabi and Linan (2013), risk-taking as a threat and risk-taking as an opportunity. Finally, cognitive adaptability's dimensions, goal orientation, metacognitive choice and metacognitive monitoring were confirmed to unidimensional, while metacognitive knowledge and metacognitive experience were both divided into two different factors. Since there was no theoretical proof or support to such factor analysis results, the dimensions were kept as unidimensional and will be tested more in depth in the following analysis.

Results of the correlation matrix showed that for each variable, all dimensions were strongly and positively correlated, which reinforces the fact that they represent the same variable. For entrepreneurial competencies, all the dimensions were correlated except for risk-taking as a threat with risk-taking as an opportunity and training and skills, which is an expected result. But still, the dimensions perfectly represent the entrepreneurial competencies as a variable. Moreover, entrepreneurial intention was modestly to moderately correlated to entrepreneurial competencies and cognitive adaptability. Entrepreneurial social support, including family, friends and acquaintances, and entrepreneurial support structures were negatively associated with entrepreneurial intention, but the participation in entrepreneurial events was positively associated with the latter, which reflects the importance of successful entrepreneurial role models in entrepreneurship, as well as the impact of the perceived achievability of entrepreneurial actions on the desire to set up a firm. Finally, entrepreneurial competencies and cognitive adaptability were positively and moderately

associated, unless for risk-taking perceived as a threat which was weakly associated with the dimensions of cognitive adaptability.

The following section will be interested in testing the conceptual model, the proposed assumptions and the discussion of the results presenting the contributions and limits of the present research.

Section II: Validation of the conceptual model

After proceeding with preliminary analysis in testing the model, as to, identifying the population characteristics and providing associations between the variables, this section will be concerned with evaluating the two models (M1, M2). Such evaluation includes the assessment of both measurement models (relationship between the items and the variable) and structural models (relationship between variables). In other terms, evaluating the measurement models consists of an evaluation of the reliability, convergent validity and discriminant validity. The evaluation of the structural models consists of the assessment of the relationships between variables and thus, evaluating the proposed research hypotheses and the goodness of fit of the models. For the matter, it will consist of two paragraphs, the first concerns the model (M1) and thus evaluating the relationship between entrepreneurial competencies and entrepreneurial intentions, and the second, concerns the evaluation of the second model (M2) which integrates cognitive adaptability.

Hair et al. (2017, p. 131) argued that “model estimation delivers empirical measures of the relationships between the indicators and the constructs (measurement models), as well as between the constructs (structural model)”. They added that it enables to determine the adequacy between the theory and the data collected through the comparison between the measurements established by the theory and structural models with reality. For the matter, this section will be interested in evaluating both the measurement and the structural models. The figure down below provides an overview of the tests that will be performed in this section using the software SmartPLS 3.2.8.

Hair et al. (2017) argued that evaluating the measurement model is a response to measurement error sources, especially in social sciences. In fact, the authors posited that in order to improve accuracy, measurement scales often contain numerous items, however, errors may still occur due to various reasons, such as poorly worded question in the survey or misunderstanding of the scale. Although the reflective measurements model type has been widely used in social sciences for being based on classical test theory according to which, measures the manifestations of an underlying construct (Hair et al., 2017, p. 73), it was relevant to verify the nature of the measures.

To do so, it is important to verify, first, the nature of the measurement model by theoretical reasoning. Thus, if the measures represent the manifestations (reflective) or the causes (formative) of an underlying construct (Hair et al., 2017). For the context of this dissertation, the indicators are in fact manifestations of the constructs. In other terms, the items related to each construct, as to entrepreneurial intention, the dimensions of entrepreneurial competencies and the dimensions of cognitive adaptability, are presented as their manifestations and not their causes. As example,

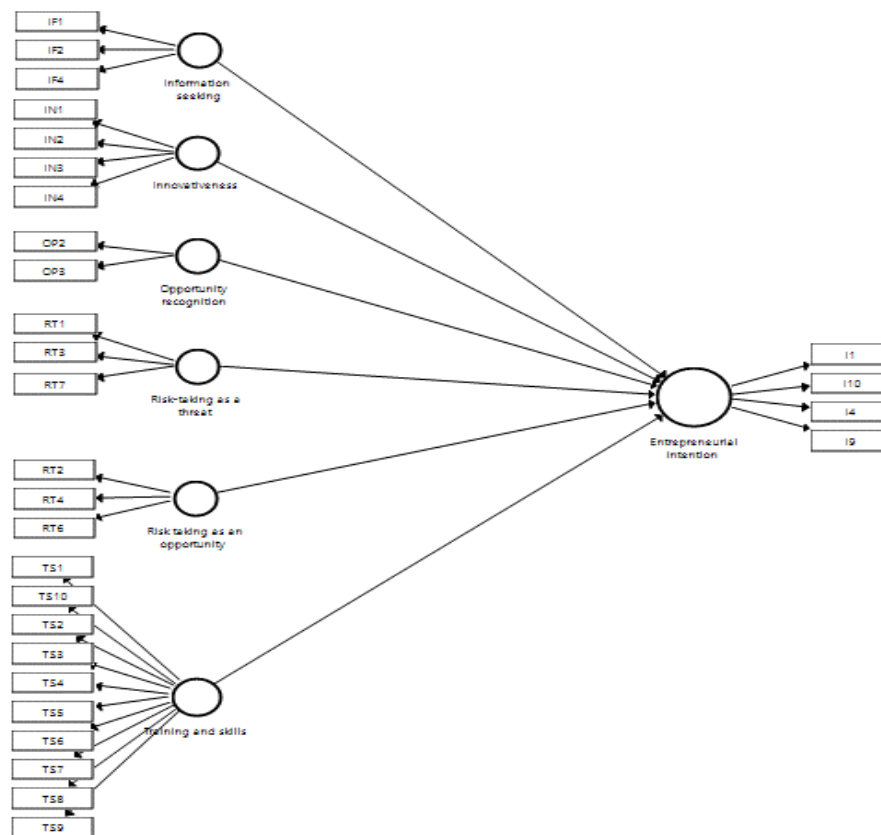
the item IF1 “I first gather a great deal of information before starting a new task or project” is a manifestation of information seeking dimension of entrepreneurial competencies. Another example is that the item I10 “I spend time learning about starting a firm” is a manifestation of entrepreneurial intention as learning about how to set a firm does not necessarily lead a student to develop entrepreneurial intentions. Thus, according to the theoretical reasoning, the measurement model is defined as reflective

Moreover, correlation between the items must be verified. In fact, highly correlated indicators are often reflective, while formative indicators do not necessarily correlate and are often not highly correlated (Hair et al., 2017, p. 280). The latter authors added that formative indicators score lower loadings when presented in a reflective measurement model. In the case of this dissertation, the indicators provided higher loadings in the case of a reflective measurement model. Besides, a correlation test was performed to understand if the measurement model is either reflective or formative. Correlation results showed that all the items measuring entrepreneurial intention, entrepreneurial competencies and cognitive adaptability were positively and significantly correlated. This informs that the model is reflective.

Concerning the structural models, cognitive adaptability was defined, by Haynie and Shepherd (2009) as the interaction between the metacognitive dimensions, for the matter, the latter dimensions form the variable. On the other hand, for the case of entrepreneurial competencies, the dimensions are pure manifestations of the construct, and do not form it. In other terms, if a student has a high propensity to risk, he is manifesting such entrepreneurial competency. Moreover, a student not developing one of the competencies, but developing the rest, does not mean that he or she does not hold entrepreneurial competencies. Thus, the structural model is, reflective-formative for cognitive adaptability and reflective-reflective for entrepreneurial competencies.

1. Evaluation of Model (M1)

Figure 30: Model M1 construction in SmartPLS



Building the model M1 in SmartPLS, the dimensions of entrepreneurial competencies were considered as latent variables, allowing by such a clear representation of their impact on entrepreneurial intention. The indicators of each dimensions of the entrepreneurial competencies as well as those measuring entrepreneurial intention were built as reflective indicators as explained previously.

1.1. Assessing the measurement model (M1)

Assessing the measurement model consists of verifying its internal consistency reliability and validity, as well as making sure that no discriminant validity issues are encountered.

1.1.1. Internal consistency reliability and validity

To be assessed, the internal consistency, reliability and validity of the reflective measurement model must be verified. “The specific measures include the composite reliability convergent validity, and discriminant validity” (Hair et al., 2017, p. 134). Such evaluation will eventually lead to a confirmatory factor analysis (CFA), verifying by such, the relationship between the factors obtained from EFA and the scale items and the reliability of the measurement scales (Brown, 2015). Internal consistency reliability and validity tests are concerned with the overall consistency

of the used measures. Internal consistency reliability is based on the value of Cronbach’s alpha, convergent validity is based on the values of composite reliability (CR) and the average variance extracted (AVE). According to Hair et al. (2017), Cronbach’s alpha is a conservative value, as it provides relatively low values, while composite reliability tends to provide high values. The rule of thumb provided by the latter authors is as follow:

* Composite reliability (CR) must be higher than 0.7 (0.6 to 0.7 in exploratory research is acceptable) considering Cronbach’s alpha as “the lower bound and composite reliability as the upper bound of internal consistency reliability” (Hair et al., 2017, p.137).

* Convergent validity: the AVE should be higher than 0.50.

* Outer loadings of the indicators must be higher than 0.70. Outer loadings ranging from 0.40 to 0.70 “should be considered for removal only if the deletion leads to an increase in composite reliability and AVE above the suggested threshold value” as social sciences researches often obtain loadings that are inferior to 0.7(Hair et al., 2017, p.137). Outer loadings that are inferior to 0.4 must be deleted. The table below provides the outputs of the PLS algorithm procedure, thus, values of Cronbach’s alpha, composite reliability, average variance extracted and the items to be removed.

Table 58: Results of the measurement model (M1)

	Loadings	α	rho_A	CR	AVE	Deleted items	α	CR	AVE	
Entrepreneurial intention	I1	0.858	0.706	0.773	0.813	0.525	0	-	-	-
	I10	0.696								
	I4	0.585								
	I9	0.733								
Information seeking	IF1	0.854	0.825	0.826	0.896	0.742	0	-	-	-
	IF2	0.840								
	IF4	0.889								
Innovativeness	INN1	0.690	0.751	0.763	0.840	0.569	0	-	-	-
	INN2	0.788								
	INN3	0.744								
	INN4	0.791								
Opportunity recognition	OP1	0.807	0.563	0.570	0.820	0.695	0	-	-	-
	OP2	0.859								
Risk as an opportunity	RT1	0.927	0.739	0.821	0.848	0.655	0	-	-	-
	RT4	0.733								

	RT6	0.038								
Risk-taking as a threat	RT1	0.897	0.776	0.070	0.645	0.388	RT5	0.778	0.870	0.692
	RT3	0.648								
	RT5	0.861								
	RT7	0.826								
Training and skills	TS1	0.752	0.898	0.914	0.916	0.524	0	-	-	-
	TS10	0.744								
	TS2	0.713								
	TS3	0.809								
	TS4	0.683								
	TS5	0.721								
	TS6	0.817								
	TS7	0.735								
	TS8	0.648								
	TS9	0.585								

The construct reliability and validity results of the PLS algorithm (factor weighting scheme) show that, Cronbach's alpha ranged from 0.706 to 0.898, except for the case of the opportunity recognition dimension, which scored a value of 0.563. Composite reliability was superior to 0.7 and the average variance extracted superior to 0.5 for all the items, except for the case of risk-taking as a threat (CR= 0.645, AVE= 0.388). Factor loadings were all superior to 0.4 unless for the case of the item RT5 which scored a factor loading of 0.038.

Since the measurement model is reflective, "all indicator items are caused by the same construct (i.e., they stem from the same domain)... in addition, individual items should be interchangeable, and any single item can generally be left out without changing the meaning of the construct, as long as the construct has sufficient reliability" (Hair et al., 2017, p. 73). Thus, the item RT5 was deleted, obtaining a higher and acceptable values of all the indicators (α =0.778, CR=0.870, AVE=0.692).

1.1.2. Discriminant validity test

Assessing discriminant validity consists in evaluating the extent to which the items differentiate among the constructs by verifying the degree to which a concept differs from other concepts. To do so, assessing the discriminant validity of the indicators consists of, first, verifying the Fornell-Larcker criterion, then, the cross loadings

Hair et al. (2017, p. 139) explained that “an indicator’s outer loading on the associated construct should be greater than any of its cross-loadings (i.e., its correlation) on other constructs”. Moreover, the construct should verify the Fornell-Larcker criterion, thus, the square root of the AVE of every construct should be higher than its highest correlation with any other construct (Hair et al., 2017).

According to the tables below, the Fornell-Larcker criterion, was used as a method to assess discriminant validity. In fact, the Fornell-Larcker criterion method consists of demonstrating that a given construct shares more variance with its indicators than with any other construct (Hair et al., 2017). no discrimination validity issues were identified, as each of the items scored high in their underlying constructs, fulfilling the condition of not scoring higher in other constructs.

Table 59: Fornell-Larcker criterion (M1)

	EI	IF	INN	OP	RTO	RTT	TS
Entrepreneurial intention (EI)	0.724						
Information seeking (IF)	0.504	0.861					
Innovativeness (INN)	0.464	0.658	0.754				
Opportunity recognition (OP)	0.442	0.631	0.644	0.834			
Risk as an opportunity (RTO)	0.550	0.668	0.704	0.608	0.809		
Risk as a threat (RTT)	-0.077	0.157	0.233	0.170	0.195	0.832	
Training and skills (TS)	0.578	0.638	0.689	0.663	0.676	0.071	0.724

Table 60: Values of the variables’ indicators cross loading (M1)

	Entrepreneurial intention	Information seeking	Innovativeness	Opportunity recognition	Risk as an opportunity	Risk as a threat	Training and skills
I1	0.858						
I10	0.696						
I4	0.585						
I9	0.733						
IF1		0.854					
IF2		0.840					
IF4		0.889					
IN1			0.690				
IN2			0.788				

IN3			0.744				
IN4			0.791				
OP2				0.807			
OP3				0.859			
RT1						0.927	
RT2					0.897		
RT3						0.733	
RT4					0.648		
RT6					0.861		
RT7						0.826	
TS1							0.752
TS10							0.744
TS2							0.713
TS3							0.809
TS4							0.683
TS5							0.721
TS6							0.817
TS7							0.735
TS8							0.648
TS9							0.585

The assessment of the measurement model (M1) was performed in two steps, thus verifying the internal consistency reliability, the convergent validity and the discriminant validity of the indicators. Such tests allow the verification that all indicators represent and measure the proper constructs and that there are no interferences between indicators and that the constructs are distinct and completely different from one another. From the above, all criteria were verified as Cronbach's alpha, composite reliability and the average variance extracted met the values fixed by the rule of thumb. Moreover, discriminant validity, through cross loadings and the Fornell-Larcker criterion, was verified proving that there were no issues with the indicators. Thus, the evaluation of the measurement model (M1) is accomplished, and the following subsection will be concerned with the evaluation of the structural model (M1).

1.2. Assessing the structural model (M1)

The assessment of the measurement model (M1) verified and confirmed the reliability and validity of the constructs' measures; thus, this phase will be interested in assessing the structural model results to verify and evaluate the predictive capability of the model as well as the relationships that

link the constructs. The expected outcomes of this phase would be to assess the relationship between entrepreneurial competencies and entrepreneurial intentions. Thus, the research hypothesis H1 and its sub-hypotheses will be tested through the verification of the existence and significance of relationships between the dimensions of entrepreneurial competencies and entrepreneurial intention (pValue), as well as the direction of such relationships (path coefficient). In the context of this dissertation, entrepreneurial competencies are the predictors, while entrepreneurial intention is the variable to be predicted. As the literature suggested (i.e. Al Mamun, 2016), the dimensions of entrepreneurial competencies will be considered as latent variables, allowing by such a clear evaluation of their impact on entrepreneurial intention.

A bootstrapping procedure was performed in the software SmartPLS 3.2.8 with 5000 subsamples as recommended by the software and by Hair et al. (2017).

1.2.1. Hypotheses testing

To be able to draw conclusions on whether accepting or rejecting the research hypothesis (H1), it is necessary to verify and confirm the following conditions:

* the T-value (T-statistics) should be superior to 1.96 as this dissertation retains 5% as the significant level. However, the rule of thumb provides critical values for the T-value of 1.65 for a significance level of 10%, 1.96 for a significance level of 5%, and 2.57 for a significance level of 1% (Hair et al., 2017).

* pValue should be inferior to 5% ($p < 0.05$) as pValue informs the significance of the relationship as it presents the possibility of error if the experiment is repeated.

* The path coefficient acts as a regression coefficient, and thus inform about the strength and the direction of the relationship. According to Hair et al. (2017, p. 206), “estimated path coefficients close to +1 represent strong positive relationships (and vice versa for negative values) that are usually statistically significant”. The table below, present the outputs of the bootstrapping procedure:

Table 61: Results of path models (Model M1)

Hypo.		Std. Beta	Sign	Std. error	T- Value	P- Value	Decision
H1a	Opportunity recognition -> Entrepreneurial intention	0.011	+	0.069	0.160	0.873	<i>Not supported</i>

H1b1	Risk as an opportunity -> Entrepreneurial intention	0.273	+	0.079	3.470	0.001**	<i>Supported**</i>
H1b2	Risk-taking as a threat -> Entrepreneurial intention	-0.177	-	0.083	2.121	0.034*	<i>Supported*</i>
H1c	Training and skills -> Entrepreneurial intention	0.304	+	0.073	4.134	0.000**	<i>Supported**</i>
H1d	Innovativeness -> Entrepreneurial intention	-0.002	-	0.077	0.025	0.980	<i>Not supported</i>
H1e	Information seeking -> Entrepreneurial intention	0.150	+	0.078	1.935	0.053	<i>Not supported</i>

According to the table above, only three entrepreneurial competencies have a relationship with entrepreneurial intention, while the remaining three are statistically insignificant (pValue >0.05).

In fact, training and skills seem to have a strong (0.304), positive and significant (pValue = 0.000) relationship with entrepreneurial intention. This suggests that the more students receive trainings and acquire entrepreneurship specific skills, the more they are likely to develop entrepreneurial intentions. This result concurs with the literature findings related to entrepreneurial education. In fact, as entrepreneurship education was subject to a wide theoretical debate, authors such as Reyes et al. (2018) and Mahmoud and Tounès (2015) argued that students who participate in entrepreneurship education programs, acquire a more positive perception towards the feasibility and desirability of starting a business, as well as a positive attitude towards entrepreneurship as a career to pursue. In regards to risk-taking propensity, risk-taking perceived as an opportunity was strongly (0.273), positively and significantly (pValue = 0.001) linked to entrepreneurial intentions, while risk-taking perceived as a threat was modestly, negatively (-0.177) and significantly (pValue = 0.034) linked to entrepreneurial intentions. In other terms, the more students perceive risk as an opportunity, the more they are likely to develop entrepreneurial intentions, and the more they perceive risk as a threat, the less they are likely to develop entrepreneurial intentions. Thus, the intensity of the entrepreneurial intention depends on the intensity and nature of risk perception. Such result might be explained by the various perceived and effective barriers to entrepreneurship, such as the fear of failure or the financial instability (Fedakova et al., 2018). Matter of fact, Nabi and Linan (2013) argued that risk perception shapes the students' entrepreneurial motives, and was shown to actively contribute in the formation of entrepreneurial intention. For the matter, entrepreneurship education should be oriented more towards leading students to hold a positive

perception of risk. In fact, Nabi et al. (2018, p. 465) argued that entrepreneurship education design could “examine how students evaluate risk and explore the possibility of students not only seeing risk as a negative threat but also risk as a positive opportunity”. Entrepreneurship educational programs should focus on nurturing the perception of risk as a positive opportunity and less as a negative threat.

Opportunity recognition, innovativeness and information seeking competencies are not associated with entrepreneurial intention in the context of our sample ($p\text{Value} > 0.05$). In other terms, for the case of the present sample, neither information seeking, nor opportunity recognition and innovativeness interfere with the development of their entrepreneurial intentions. The results suggest that in a context of Tunisian students in their third year, entrepreneurial intention is mainly conditioned by the perception of risk and the skills acquired. In other terms, neither the nature of the business opportunity or the students’ innovative behavior, nor the information they hold on a given business idea intervene in the development of their desire to become entrepreneur. However, holding the appropriate set of skills and perceiving risk as an opportunity positively intensifies such desire, while perceiving risk as a threat decreases such possibility.

Another reason for the absence such relationship might be the result of underdeveloped competencies. Matter, of fact, the university context does not offer educational contents centered on developing information seeking behaviors, on how to recognize opportunities or techniques to enable the adoption of products of innovation. According to the project conducted by the OECD in partnership with the Tunisian ministry of higher education and scientific research, although entrepreneurship courses were offered to students, “exposure to a number of more interactive and experiential teaching methods was less common, particularly those related to simulations and business plan competitions” (OECD, 2012, p. 23). The latter project showed that traditional teaching methods of entrepreneurship education were more used than interactive and new methods. In fact, students expressed more interest to the latter.

Moreover, while entrepreneurship education holds the objective of developing skills allowing students to identify innovative business opportunities (Mahmoudi and Tounès, 2015), thus, recognizing that there is a business opportunity and identifying it as innovative through the information they collected from the market and the surrounding business environment, in the context of this dissertation, entrepreneurship education does not seem to offer the right set of skills allowing such cognitive processes.

From the above, entrepreneurship educational policies should be more oriented towards developing and modernizing the pedagogical approaches in teaching entrepreneurship as well as focusing on more interactive content to obtain a higher participation, assimilation and interest from students. Moreover, there is a great need to focus on the perception of risk as a positive opportunity as it intensifies the levels of entrepreneurial intentions. Information seeking, innovativeness and opportunity recognition, seemingly not interfering with the development of entrepreneurial intentions, were long considered as core competency to become entrepreneurs. For the matter, proper acknowledgment of their importance from students, as well as universities and policy makers would help in increasing the rate of entrepreneurial intention within Tunisian students.

1.2.2. Assessing the model's (M1) fit and predictive power

To be able to evaluate the structural model's (M1) predictive power, various tests should be performed. The first test would consider the coefficient of determination R^2 which gives clear insights on the predictive capacity of the model. In other terms, it provides insights on the capacity of the independent variables of explaining the dependent variable.

The coefficient R^2 ranges from 0 to 1 and should be superior to 0.19. Besides, the higher the values of R^2 , the higher the levels of predictive accuracy (Hair et al., 2017). Hair et al. (2017, p. 209), with reference to (Hair et al., 2011; Henseler et al., 2009) provided a rule of thumb where, "R2 values of 0.75, 0.50, or 0.25 for endogenous latent variables can be respectively described as substantial, moderate, or weak". A more general rule of thumb used in social sciences suggested by Chin (1998) indicates that: $R^2 > 0.67$ is considered as high, $0.33 < R^2 < 0.67$ is considered as moderate, $0.19 < R^2 < 0.33$ is considered as weak and $R^2 < 0.19$ must be rejected.

Moreover, two further tests should be performed as to, the effect size (f^2) and the predictive relevance (Q^2). The f^2 coefficient explains the size of the effect of a given variable on the endogenous variable, while Stone-Geisser's Q^2 value is only concerned with endogenous variables (Hair et al., 2017). The rule of thumb for both values is as follows:

* Effect size: $f^2 > 0.02$, with $f^2 > 0.35$ as large, $0.15 < f^2 < 0.35$ as medium, $0.02 < f^2 < 0.15$ as small and $f^2 < 0.02$ as an indicator of no effect size.

* Predictive relevance: $Q^2 > 0$ suggest that the model has predictive relevance (Hair et al. 2017).

* The model goodness of fit: The index is the standardized root mean square residual should be lower than 0.1 (SRMR < 0.1) and the goodness of fit index should be closer to 1 GoF and should be superior to 0.1 with best fit values superior to 0.9.

To obtain values for R^2 and f^2 , it is necessary to run a PLS algorithm, while Q^2 is obtained through blindfolding procedure in SmartPLS. Results for R^2 , f^2 and Q^2 are presented in the tables below

Table 62: R square of the endogenous latent variables

	R Square	R Square Adjusted	Result
Entrepreneurial intention	0.419	0.408	<i>Moderate</i>

As shown in the table above, R^2 values fell into the moderate interval according to the rule of thumb. Almost 42% of the variance of entrepreneurial intention is explained by the dimensions of entrepreneurial competencies. The value of R^2 leads to consider that the model is relatively robust, as the R^2 was superior to 0.33.

Table 63: Effect size results

	Entrepreneurial intention	Description
Information seeking	0.017	<i>No effect size</i>
Innovativeness	0.000	<i>No effect size</i>
Opportunity recognition	0.000	<i>No effect size</i>
Risk as an opportunity	0.050	<i>Small effect size</i>
Risk-taking as a threat	0.049	<i>Small effect size</i>
Training and skills	0.061	<i>Small effect size</i>

According to the table above, it seems though that training and skills followed by risk taking propensity are the most important when it comes to the entrepreneurial intention of students. On the other hand, information seeking, innovativeness and opportunity recognition have little bearing on entrepreneurial intentions. This result suggests that, while almost 42% of the variance of entrepreneurial intention was explained through the model, such representation is drawn from risk-taking perception as a threat and as an opportunity, as well as training and skills. Matter of fact, while the relationship between entrepreneurial intention and information seeking, innovativeness and opportunity recognition was not statistically significant, its relationship with training and skills and perceiving risk-taking as an opportunity was positive, strong and significant, and strong, negative and significant when it comes to risk-taking perceived as a threat.

To assess the predictive relevance Q^2 , Hair et al. (2017) recommend using the cross-validated redundancy as a measure. Thus, the cross-validated redundancy approach will be applied to both

constructs and indicators. The relevance of examining the latter measure approach of the Stone-Geisser criterion Q^2 remains in the fact that it “builds on the path model estimates of both the structural model and the measurement model of data prediction” (Hair et al., 2017, p. 214). For the matter, a Blindfolding procedure through a re-sampling technique was performed and the model’s predictive validity and relevance was confirmed as shown by the results in the tables below.

For the indicators’ cross validation redundancy, all the indicators were taken into account and a Q^2 index was affected to each one. After mere verification, all the indexes obtained were superior to 0. The same result was obtained through the constructs’ cross validation redundancy, as the entrepreneurial intention scored a Q^2 superior to 0. The model of this research has, thus, a predictive validity and relevance.

Table 64: Model’s M1 constructs’ cross-validated redundancy (Stone-Geisser criterion Q^2)

Construct	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Entrepreneurial intention	1,256.000	1,014.121	0.193

Table 65: Model’s M1 indicators’ cross-validated redundancy (Stone-Geisser criterion Q^2)

<i>Indicators</i>	<i>SSO</i>	<i>SSE</i>	<i>$Q^2 (=1-SSE/SSO)$</i>
I1	314.000	202.417	0.355
I10	314.000	254.875	0.188
I4	314.000	284.481	0.094
I9	314.000	272.348	0.133

The SRMR index is the standardized root mean square residual calculation, informs about the standardized residuals between the observed and the hypothesized covariance matrices. A SRMR index inferior to 0.10 or to 0.08 indicates an acceptable fit (Hooper et al., 2008; Cangur and Ecran, 2015; Hair et al., 2017). In the case of this dissertation, SRMR index was equal to 0.08 which seems to be a relatively acceptable value of model fit.

Table 66: Goodness of fit index (GoF) Model (M1)

	<i>AVE</i>	<i>R²</i>
--	------------	----------------------

Entrepreneurial intention	0,525	0,419
Information seeking	0,742	
Innovativeness	0,569	
Opportunity recognition	0,695	
Risk as an opportunity	0,655	
Risk-taking as a threat	0,692	
Training and skills	0,524	
Average	0,64616667	0,419
AVE*R²		0,27074383
(GoF=$\sqrt{}$)		0,5203305

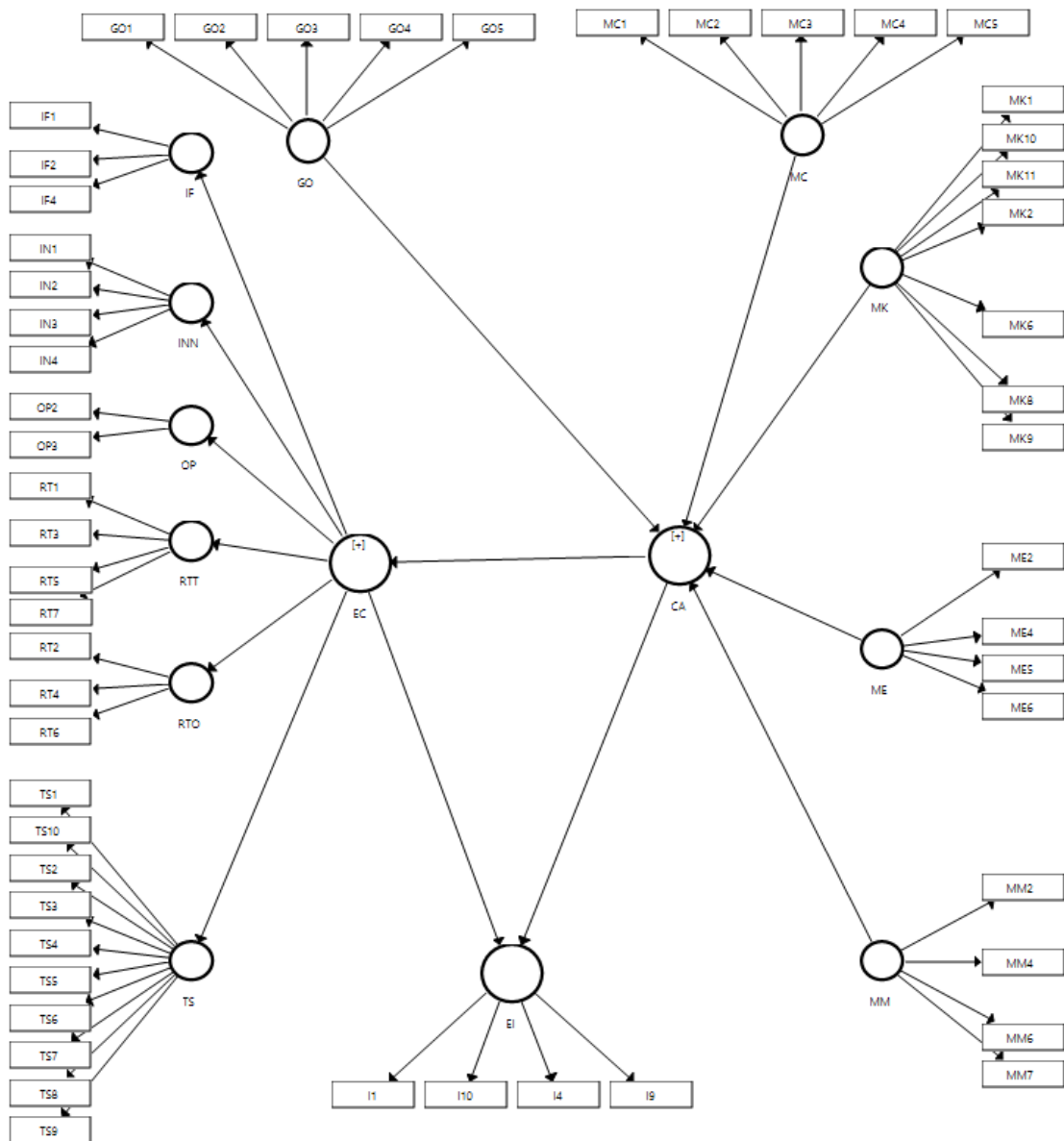
On the other hand, the goodness of fit index GoF was manually calculated and was equal to 0.52, which suggests a moderate fit as presented in the table above.

2. Evaluation of Model (M2)

After a full analysis of the primary Model (M1), results showed that only three of the competencies did have an effective effect on entrepreneurial intentions. In this sub-section, cognitive adaptability will be integrated in the model, with the aim to evaluate the role it plays in the relationship between entrepreneurial competencies and entrepreneurial intentions. Moreover, another expected outcome would be to explore the impact of cognitive adaptability on entrepreneurial intentions, as well as entrepreneurial competencies in a context of Tunisian undergraduate students in their third year.

The model (M2) was built on SmartPLS 3.2.8, considering entrepreneurial intention as the variable to be predict and entrepreneurial competencies and cognitive adaptability as the predictors. Moreover, the model was built as reflective for the entrepreneurial intention indicators, reflective-formative for the cognitive adaptability and reflective-reflective for entrepreneurial competencies. The figure shows the second model (M2).

Figure 31: Conceptual model using SmartPLS (Model M2)



2.1. Assessment of the measurement model (M2)

Running the PLS algorithm with factor weighting scheme factor loadings from all the indicators varied from 0.403 to 0.887. Since there were factor loadings that were inferior to 0.7, CR and AVE must be verified to decide which items should be deleted, as shown in the table below.

2.1.1. Internal consistency reliability and validity

The construct reliability and validity results of the PLS algorithm show that, Cronbach's alpha ranged from 0.739 to 0.898, except for the case of the opportunity recognition dimension, which scored a value of 0.563. Composite reliability was superior to 0.7 for all the items. On the other

hand, values of AVE were inferior to 0.5 for three metacognitive dimensions, that are metacognitive experience (0.397), metacognitive knowledge (0.418) and metacognitive monitoring (0.4). Items with low loadings will be deleted one by one until the obtention of an acceptable value of AVE (AVE > 0.5).

Table 67: Results of the measurement model (M2)

	Loadings		α	rho_ A	CR	AVE	Deleted items	α	CR	AVE
Goal orientation	GO1	0.695	0.808	0.812	0.867	0.567	0	-	-	-
	GO2	0.815								
	GO3	0.742								
	GO4	0.746								
	GO5	0.726								
Metacognitive choice	MC1	0.744	0.755	0.768	0.836	0.507	0	-	-	-
	MC2	0.583								
	MC3	0.721								
	MC4	0.779								
	MC5	0.717								
Metacognitive experience	ME1	0.624	0.780	0.794	0.838	0.397	4	0.733	0.896	0.556
	ME2	0.732								
	ME3	0.543								
	ME4	0.667								
	ME5	0.680								
	ME6	0.694								
	ME7	0.518								
	ME8	0.545								
Metacognitive knowledge	MK1	0.772	0.839	0.855	0.874	0.418	3	0.842	0.842	0.515
	MK2	0.622								
	MK4	0.452								
	MK5	0.642								
	MK6	0.666								
	MK7	0.403								
	MK8	0.740								
	MK9	0.734								
	MK10	0.675								
	MK11	0.659								
		MM1								

Metacognitive monitoring	MM2	0.642								
	MM3	0.596								
	MM4	0.742								
	MM5	0.533								
	MM6	0.628								
	MM7	0.603								
Information seeking	IF1	0.863	0.825	0.829	0.896	0.741	0	-	-	-
	IF2	0.833								
	IF4	0.887								
Innovativeness	INN1	0.741	0.751	0.756	0.842	0.573	0	-	-	-
	INN2	0.790								
	INN3	0.704								
	INN4	0.788								
Opportunity recognition	OP2	0.775	0.563	0.597	0.817	0.692	0	-	-	-
	OP3	0.885								
Risk as a threat	RT1	0.816	0.776	0.794	0.854	0.595	0	-	-	-
	RT3	0.675								
	RT5	0.767								
	RT7	0.820								
Risk as an opportunity	RT2	0.881	0.739	0.797	0.850	0.657	0	-	-	-
	RT4	0.655								
	RT6	0.875								
Training and skills	TS1	0.718	0.898	0.903	0.917	0.526	0	-	-	-
	TS2	0.746								
	TS3	0.707								
	TS4	0.817								
	TS5	0.685								
	TS6	0.730								
	TS7	0.827								
	TS8	0.753								
	TS9	0.634								
	TS10	0.605								

Since the measurement model is reflective for cognitive adaptability, “all indicator items are caused by the same construct (i.e., they stem from the same domain)... in addition, individual items should be interchangeable, and any single item can generally be left out without changing the meaning of the construct, as long as the construct has sufficient reliability” (Hair et al., 2017,

p. 73). For the metacognitive experience dimension, the items ME1, ME3, ME7 and ME8 were deleted. In the same context, the items MK4 MK5 MK7 were deleted from the metacognitive knowledge dimension and MM1, MM3 and MM5 were deleted from the metacognitive monitoring dimension to obtain an acceptable value of AVE (AVE >0.5).

2.1.2. Discriminant validity test (Model M2)

Discriminant validity was assessed for Model (M2) through two tests, cross-loadings and the Fornell-Larcker criterion as explained for Model (M1). Results are presented in the tables below.

Table 68: Values of the variables' indicators cross loading (M2)

	EI	GO	MC	ME	MK	MM	IF	INN	OP	RTT	RTO	TS
GO1		0.696										
GO2		0.815										
GO3		0.742										
GO4		0.746										
GO5		0.762										
I1	0.859											
I10	0.703											
I4	0.578											
I9	0.726											
IF1							0.863					
IF2							0.833					
IF4							0.887					
IN1								0.741				
IN2								0.790				
IN3								0.704				
IN4								0.788				
MC1			0.745									
MC2			0.582									
MC3			0.720									
MC4			0.780									
MC5			0.716									
ME2				0.799								
ME4				0.681								
ME5				0.740								
ME6				0.757								
MK1					0.781							
MK10					0.702							

MK11					0.695							
MK2					0.630							
MK6					0.693							
MK8					0.762							
MK9					0.747							
MK9					0.747							
MM2						0.727						
MM2						0.727						
MM4						0.769						
MM4						0.769						
MM6						0.697						
MM6						0.697						
MM7						0.691						
MM7						0.691						
OP2									0.775			
OP3									0.885			
RT1									0.816	0.161		
RT2										0.881		
RT3									0.674			
RT4										0.655		
RT5									0.768			
RT6										0.875		
RT7									0.819			
TS1											0.718	
TS10											0.746	
TS2											0.707	
TS3											0.817	
TS4											0.685	
TS5											0.730	
TS6											0.827	
TS7											0.753	
TS8											0.634	
TS9											0.605	

According to the table above, no discrimination validity issues were identified, as each of the items scored high in their underlying constructs, fulfilling the condition of not scoring higher in other constructs. Moreover, and as seen in the table below, the Fornell-Larcker criterion, as a second method to assess discriminant validity, was verified.

Table 69: Fornell-Larcker criterion (M2)

	EI	GO	IF	INN	MC	ME	MK	MM	OP	RTT	RTO	TS
EI	0.723											
GO	0.400	0.753										
IF	0.508	0.541	0.861									
INN	0.455	0.525	0.665	0.757								
MC	0.338	0.681	0.622	0.658	0.752							
ME	0.407	0.688	0.610	0.593	0.677	0.746						
MK	0.412	0.700	0.625	0.633	0.712	0.730	0.717					
MM	0.310	0.681	0.529	0.503	0.671	0.554	0.593	0.722				
OP	0.445	0.548	0.637	0.657	0.605	0.535	0.562	0.464	0.832			
RTT	-0.016	0.278	0.230	0.282	0.232	0.178	0.181	0.340	0.255	0.772		
RTO	0.546	0.513	0.669	0.706	0.543	0.503	0.554	0.483	0.611	0.287	0.811	
TS	0.561	0.502	0.631	0.675	0.543	0.613	0.587	0.415	0.671	0.119	0.660	0.725

The measurement model (M2) was assessed in two steps, through the internal consistency reliability, the convergent validity and the discriminant validity of the indicators. From the above, all criteria were verified as Cronbach's alpha, composite reliability and the average variance extracted met the values fixed by the rule of thumb. Moreover, discriminant validity, through cross loadings and the Fornell-Larcker criterion, was verified proving there were no issues with the indicators. Thus, the evaluation of the measurement model (M2) is accomplished, and the following subsection will be concerned with the evaluation of the structural model (M2).

2.2. Assessment of the structural model (M2)

The measurement model (M2) verified and confirmed the conditions of reliability and validity of the constructs' measures. For the matter, the predictive capability of the structural model (M2) as well as the relationships that link the constructs will be tested in this sub-section. The research hypotheses will be evaluated by verifying the existence and significance of relationships between the variables (pValue), as well as the direction of such relationships (path coefficient).

In the context of this dissertation, entrepreneurial competencies are the predictors, while entrepreneurial intention is the variable to be predicted. Cognitive adaptability on the other hand, will be tested for possible moderation of the impact of entrepreneurial competencies on entrepreneurial intentions.

A bootstrapping procedure was performed in SmartPLS 3.2.8 with 5000 sub-samples as recommended. The principal hypotheses to be tested are presented in the table below:

Table 70: Principal hypotheses (Model M2)

Cause	Effect	Hypothesis
Entrepreneurial competencies	Entrepreneurial intention	H1: Entrepreneurial competencies have a positive impact on entrepreneurial intentions.
Cognitive adaptability	Entrepreneurial intention	H2: Cognitive adaptability has a positive impact on the entrepreneurial intention.
Cognitive adaptability	Entrepreneurial competencies	H3: Cognitive adaptability has a positive impact on entrepreneurial competencies.
Cognitive adaptability	Impact of entrepreneurial competencies on entrepreneurial intention	H4: A higher level of cognitive adaptability leads to a greater impact of entrepreneurial competencies on entrepreneurial intentions.

2.2.1. Research hypotheses testing

The results are presented in the table below. It is relevant to recall that, for a relationship to be confirmed between two variables, the following conditions should be verified:

- * the T-value (T-statistics) should be superior to 1.96 as this dissertation retains 5% as the significant level.
- * pValue should be inferior to 5% ($p < 0.05$).
- * The path coefficient act as a regression coefficient, and thus inform about the strength and the sign of the relationship. It must be higher than 0.1.

Thus, testing the statistical significance was performed through a bootstrapping procedure. Evaluating the values of T-value, pValue and the size and sign of the path coefficients allows to draw conclusions on whether accepting or rejecting the research hypotheses. The table below provides the results and interpretations of the hypotheses testing procedure.

Table 71: Results of path models (Model M2)

Hypo	Relationship	Std beta	Sign	Std. error	T- Value	P- Value	Decision
H1	Entrepreneurial Competencies => Entrepreneurial Intention	0.597	+	0.086	6.849	0.000	<i>Supported**</i>
H2	Cognitive Adaptability => Entrepreneurial Intention	-0.002	-	0.096	0.026	0.979	<i>Not supported</i>

H3	Cognitive Adaptability => Entrepreneurial Competencies	0.750	+	0.045	16.627	0.000	<i>Supported**</i>
H4	Moderator => Entrepreneurial intention	0.063	+	0.026	2.395	0.017	<i>Supported*</i>

(p** <0 .01, p* <0.05)

The table above provides insights on the relationships between entrepreneurial intention, entrepreneurial competencies and cognitive adaptability. The impact of entrepreneurial competencies on entrepreneurial intention was supported and concluded as strong (0.597), positive and significant (pValue = 0.000). The results are aligned with those obtained through Model (M1) testing, which further confirms the positive effect of entrepreneurial competencies on entrepreneurial intention. Correlation results also supported such relationship as the dimensions of entrepreneurial competencies were positively, significantly and modestly to moderately associated with entrepreneurial intentions. For the matter, and taking account of the importance of entrepreneurship in the actual economic environment in Tunisia, education policies should be oriented towards the development of such competencies to guarantee, firstly, an increase of the desire to become entrepreneurs within students since, the relationship between entrepreneurial competencies on entrepreneurial intention is reinforced through education (Koe, 2016). Secondly, such competencies were proved to guarantee the future performance (Man et al., 2002; Sanchèz et al., 2013; Wickramaratne et al., 2014; Hashim at al., 2019), competitiveness (Man et al., 2008) and the sustainability of the firm (Baum, et al. 2001; Phelar and Sharplay, 2011; Ustav and Venesaar, 2018). For the matter, H1: Entrepreneurial competencies have a positive impact on entrepreneurial intentions, is accepted.

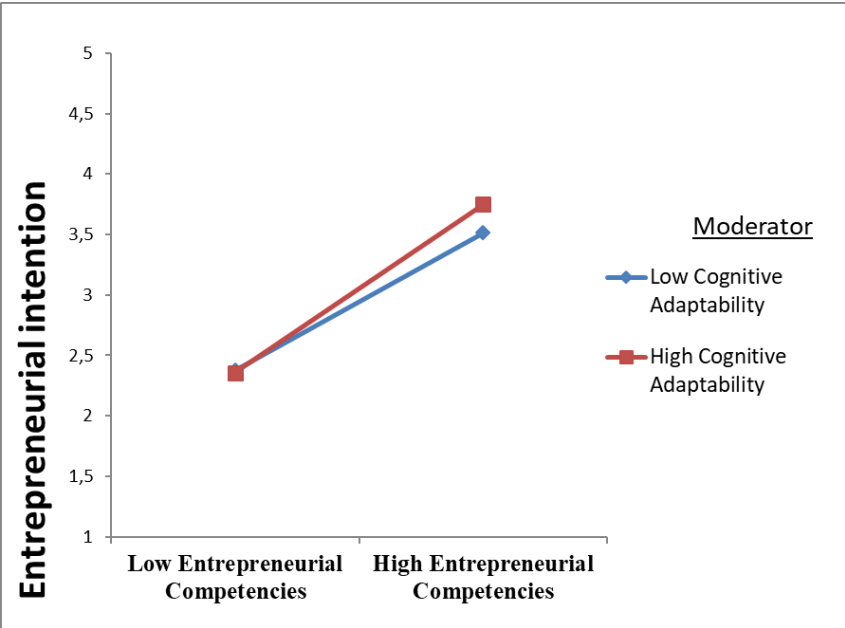
Besides, results show that the relationship between cognitive adaptability and entrepreneurial intention is not supported as the pValue exceeded 5%. Such results seem to contradict the literature. Although the metacognitive dimensions seem to be positively associated with the entrepreneurial intention through correlation tests, the reason for not obtaining a relationship between the two variables may be caused by the fact that for Tunisian students, cognitive adaptability does not interfere with the development of entrepreneurial intentions. Another reason could be that not all the metacognitive dimensions have an influence over the entrepreneurial intention as previous work of Urban (2012) and Botha and Bignotti (2017). For instance, H2: Cognitive adaptability has a positive impact on the entrepreneurial intention is rejected.

On the other hand, results show that there is a strong (0.750) positive and significant (pValue = 0.000) relationship between cognitive adaptability and entrepreneurial competencies. Although the

literature did not provide clear insights on such link, correlation coefficients demonstrated a positive, significant and modest to moderate association between the latter variables. Such outputs lead to conclude that, the more students are cognitively adaptive, the more they are likely to develop entrepreneurial competencies. This leads to suggest the integration of educational programs within Tunisian universities that allow students to develop their cognitive adaptability, and thus to obtain a higher metacognitive awareness, guaranteeing by such, a proper development of their entrepreneurial competencies. Thus, H3: Cognitive adaptability has a positive impact on entrepreneurial competencies is accepted.

Considering the moderating role of cognitive adaptability, preliminary results show that the moderating effect is confirmed and is significant (pValue = 0.017, T-value = 2.395), but such results are not sufficient to draw conclusions. For the matter, a statistical tool on excel provided by Aiken and West (1991), Dawson (2014) and Dawson and Richter (2006) allows to provide answers on the direction of such moderating effect. It is relevant to recall that, for cognitive adaptability to be a moderator, two conditions must be fulfilled as, the relationship between the moderator and the independent variable should be significant and the moderator should exert an influence on the strength or direction of the relationship between the independent variable and the dependent variable. For instance, the table above provided a confirmation to the first condition, as the moderator effect and the entrepreneurial intention have a significant relationship at the level of 5%.

Figure 32: Calculation output for moderation



As shown in the figure above, cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and entrepreneurial intention. Statistically, since the relationship between cognitive adaptability and entrepreneurial intention was not supported, while the relationship of the former with entrepreneurial competencies was confirmed, cognitive adaptability is considered as a pure moderator, since it is not associated with the dependent variable, while interacting with the independent variable.

Consequently, the higher the level of cognitive adaptability within students, the higher the positive impact of entrepreneurial competencies on entrepreneurial intentions. Such results lead to insist on the necessity to integrate cognitive adaptability developing educational programs within universities, as, not only it helps students develop entrepreneurial competencies, it also helps them use these competencies towards pursuing an entrepreneurial career. Thus, H4: a higher level of cognitive adaptability leads to a greater impact of entrepreneurial competencies on entrepreneurial intentions is accepted.

Further results were provided through the Bootstrapping procedure. In fact, Through the Total Effect report, insights were given about the relationship of the metacognitive dimensions with entrepreneurial intention and entrepreneurial competencies. The tables below present all the outputs of the report.

Table 72: Relationship between the metacognitive dimensions and entrepreneurial intention (Total effects: Model M2)

	Std. Beta	T-values	P-Values
Goal orientation -> cognitive adaptability -> entrepreneurial intention	0.014	0.602	0.548
Metacognitive choice -> cognitive adaptability -> entrepreneurial intention	0.012	0.603	0.547
Metacognitive experience -> cognitive adaptability -> entrepreneurial intention	0.011	0.599	0.549
Metacognitive knowledge -> cognitive adaptability -> entrepreneurial intention	0.019	0.605	0.546
Metacognitive monitoring -> cognitive adaptability -> entrepreneurial intention	0.009	0.598	0.550
Goal orientation -> cognitive adaptability -> entrepreneurial intention	0.014	0.602	0.548

(p** <0 .001, p* <0.05)

From the above, all the relationships between the metacognitive dimensions and entrepreneurial intention are weak (Path coefficient < 0.1) and statistically insignificant (pValue >0.05). These outputs go in line with the hypothesis H2 being rejected. In fact, neither cognitive adaptability nor its dimensions seem to have a direct effect on entrepreneurial intention, although the correlation matrix provided moderate, positive and significant coefficients between the metacognitive dimensions and entrepreneurial intention. It is, nonetheless, important to recall that previous studies made by Urban (2012) and Botha and Bignotti (2017) in a Southern African context, provided few associations between cognitive adaptability and entrepreneurial intention. In fact, Urban (2012) found out that the knowledge metacognitive dimension has a positive impact on entrepreneurial intentions, while Botha and Bignotti (2017) found that three dimensions only do have an impact, namely, goal orientation, metacognitive choice and metacognitive experience. In the case of this dissertation, none of the metacognitive dimensions were proved to have an effect.

However, indirect effect outputs showed that the metacognitive dimensions would have an impact on entrepreneurial intention in the presence of entrepreneurial competencies. Matter of fact, the relationships are significant (pValue = 0.000) and path coefficients are superior to 0.1 except for metacognitive monitoring which scored a path coefficient of 0.084. The results suggest that the more entrepreneurial competencies are developed the stronger the impact of cognitive adaptability on entrepreneurial intentions, but in the absence of entrepreneurial competencies, cognitive adaptability does not interfere with the development of entrepreneurial intentions. As shown in the table below, the impact of cognitive adaptability on entrepreneurial intention through entrepreneurial competencies is found to be strong (0.475), positive and significant (pValue= 0.000).

Table 73: Relationship between the metacognitive dimensions and entrepreneurial intention (Specific indirect effects: Model M2)

Goal orientation -> entrepreneurial competencies -> entrepreneurial intention	0.130	7.307	0.000**
Metacognitive choice -> entrepreneurial competencies -> entrepreneurial intention	0.117	7.092	0.000**
Metacognitive experience -> entrepreneurial competencies -> entrepreneurial intention	0.105	7.178	0.000**
Metacognitive knowledge -> entrepreneurial competencies -> entrepreneurial intention	0.176	7.004	0.000**
Metacognitive monitoring -> entrepreneurial competencies -> entrepreneurial intention	0.084	6.752	0.000**
Cognitive adaptability -> entrepreneurial competencies -> entrepreneurial intention	0.475	5.517	0.000**

Thus, entrepreneurial competencies play a crucial role, both in the development of entrepreneurial intention, and the support of the effect of cognitive adaptability on the latter. For the matter, educational policy makers as well as universities should take into account the importance of such interrelation through focusing on developing entrepreneurial competencies, but also providing activities and favorable contexts to develop students' cognitive awareness, guaranteeing by such, the encouragement of students to pursue an entrepreneurial career, as well as providing them with the right set of skills and cognitive strategies to insure performance of their entrepreneurial actions.

Table 74: Effect of cognitive adaptability on entrepreneurial competencies (Total effect: Model M2)

	Std. beta	T-values	P-Values
Cognitive adaptability -> information seeking	0.614	12.315	0.000**
Cognitive adaptability -> innovativeness	0.641	13.621	0.000**
Cognitive adaptability -> opportunity recognition	0.600	12.943	0.000**
Cognitive adaptability -> risk as a threat	0.231	3.465	0.001**
Cognitive adaptability -> risk as an opportunity	0.626	13.509	0.000**
Cognitive adaptability -> training and skills	0.682	15.442	0.000**

Cognitive adaptability appears to have a strong, positive and significant (pValue = 0.000) effect on the set of entrepreneurial competencies. In fact, path coefficients are superior to 0.6 for all the competencies, except for the case of risk-taking as a threat which is still positive and significant but scored 0.231. Thus, developing cognitive adaptability within students allows them to develop information seeking behaviors, become more innovative and able to recognize business opportunities on the market. Moreover, higher levels of cognitive adaptability allow a better acquisition of skills, but also a realistic and clear perception of risk.

According to the results and with reference to Haynie et al. (2010), cognitive adaptability enables in students the ability to engage metacognitive processes and thus perform effectively in a changing environment or novel context. Thus, the more students are cognitively adaptive the more they are likely to put to use the knowledge they acquired, have control over their own learning process and adequately use the skills they dispose of according to the context. For the matter, cognitively adaptive students are more likely to develop and use entrepreneurial competencies in response to the demands of the environment, either learning or business environments. Moreover, students who are aware of their own knowledge and skills are more likely to know what information to seek (Mamun et al., 2016) and what competencies to acquire according to the

demanding context. For the matter, a great interest should be directed towards increasing the levels of cognitive adaptability within students.

Table 75: Effect of goal orientation on entrepreneurial competencies

	Std. beta	T-values	P-Values
Goal orientation -> entrepreneurial competencies	0.184	14.409	0.000**
Goal orientation -> information seeking	0.150	12.740	0.000**
Goal orientation -> innovativeness	0.157	13.485	0.000**
Goal orientation -> opportunity recognition	0.147	12.192	0.000**
Goal orientation -> risk as a threat	0.057	3.385	0.001**
Goal orientation -> risk as an opportunity	0.153	13.288	0.000**
Goal orientation -> training and skills	0.167	14.659	0.000**

Goal orientation has a positive (0.184) and significant (pValue = 0.000) on entrepreneurial competencies. Matter of fact, path coefficients were superior to 0.1 for all the competencies except for risk perceived as a threat (0.057), still the relationship is significant at the level of 1%.

Since goal orientation is considered as the interaction between the individual and the surrounding environment and the assignment of meaning to it producing by such cognitive strategies (Haynie and Shepherd, 2009). Considering the importance of the context through goal orientation, it produces and is produced by the student's motives. Thus, the sense that students give to the context and their own evaluation of how favorable it is, condition their cognitive strategies. Such cognitive strategies could be applied both in a learning and an entrepreneurial context, thus, they could be oriented towards developing the right set of competencies that responds better to the students' motives, or using such competencies in the formulation of cognitive strategies to attain the goals they have set.

Table 76: Effect of metacognitive choice on entrepreneurial competencies

	Std. beta	T-values	P-Values
Metacognitive choice -> entrepreneurial competencies	0.166	13.069	0.000**
Metacognitive choice -> information seeking	0.136	10.748	0.000**
Metacognitive choice -> innovativeness	0.142	11.456	0.000**
Metacognitive choice -> opportunity recognition	0.133	11.720	0.000**
Metacognitive choice -> risk as a threat	0.051	3.773	0.000**
Metacognitive choice -> risk as an opportunity	0.139	11.583	0.000**
Metacognitive choice -> training and skills	0.151	12.265	0.000**

In the same context, metacognitive choice, has a positive and significant (pValue = 0.000) effect on entrepreneurial competencies and the path coefficients were all superior to 0.1 except for risk as a threat which scored 0.051. Metacognitive choice is the active selection process of a specific decision framework that is more appropriate to the entrepreneur's goals. In other terms, students who are aware of their selection processes are more likely to develop entrepreneurial competencies. Moreover, beliefs, considered as cognitions, shape and inform the attitudes towards a given behavior, that drive the development of the intent to perform it and thus, to act on it (Urban, 2012; Valliere, 2015). Besides, competencies involve a set of skills, attitudes and knowledge (Inyang, 2009). Thus, depending on their motivations, students would develop beliefs regarding themselves and their context, ultimately leading them to rely on their competencies and perform behaviors such as information seeking behaviors and innovative behaviors. Metacognitive choice appears, thus, to be a crucial component in developing and putting to use entrepreneurial competencies.

Table 77: Effect of metacognitive experience on entrepreneurial competencies

	Std. beta	T-values	P-Values
Metacognitive experience -> entrepreneurial competencies	0.148	13.332	0.000**
Metacognitive experience -> information seeking	0.121	11.410	0.000**
Metacognitive experience -> innovativeness	0.126	11.908	0.000**
Metacognitive experience -> opportunity recognition	0.118	12.175	0.000**
Metacognitive experience -> risk as a threat	0.046	3.674	0.000**
Metacognitive experience -> risk as an opportunity	0.123	12.066	0.000**
Metacognitive experience -> training and skills	0.134	12.807	0.000**

Metacognitive experience has a positive (0.148) and significant (pValue = 0.000) effect on entrepreneurial competencies as all the path coefficients were superior to 0.1 except for risk as a threat. Flavell (1979) argued that metacognitive experience is related to the individual's beliefs and feelings about his or her cognitive actions such as understanding a communicated information or speculating over how likely he or she is to progress in a given enterprise, thus, metacognitive experience is tightly linked to entrepreneurial competencies as it allows students to assess their beliefs and feelings about the use and development of such competencies.

Table 78: Effect of metacognitive knowledge on entrepreneurial competencies

	Std. beta	T-values	P-Values
Metacognitive knowledge -> entrepreneurial competencies	0.249	12.841	0.000**
Metacognitive knowledge -> information seeking	0.204	10.740	0.000**

Metacognitive knowledge -> innovativeness	0.213	11.553	0.000**
Metacognitive knowledge -> opportunity recognition	0.199	11.847	0.000**
Metacognitive knowledge -> risk as a threat	0.077	3.737	0.000**
Metacognitive knowledge -> risk as an opportunity	0.208	11.499	0.000**
Metacognitive knowledge -> training and skills	0.227	12.043	0.000**

Metacognitive knowledge has a positive (0.249) and significant (pValue = 0.000) effect on entrepreneurial competencies. Almost all path coefficients were equal or superior to 0.2 except for the case of risk as a threat which scored 0.077. Metacognitive knowledge is related to how individuals perceive themselves, others and their environment. Taking into account the knowledge of self, it includes the individual's awareness of his or her own strengths and weaknesses, for the matter, metacognitive knowledge helps the students in assessing what competencies they acquired and what they should develop and improve.

The importance of metacognitive experience and metacognitive knowledge in this context is drawn from the fact that cognitive adaptability refers to the ability to draw on metacognitive knowledge and metacognitive experience in the aim of selecting, a framework offering a higher appropriateness and adequacy to the goals from the various decision frameworks enabling the sense making of a changed reality (Haynie and Shepherd, 2009). Thus, higher levels of metacognitive knowledge and experience, other than guaranteeing high levels of cognitive adaptability, allow students to constitute an internal set of information regarding themselves, and their surroundings and use it as a basis to develop decision frameworks ultimately leading them to achieve their goals.

Table 79: Effect of metacognitive monitoring on entrepreneurial competencies

	Std. beta	T-values	P-Values
Metacognitive monitoring -> entrepreneurial competencies	0.119	9.995	0.000**
Metacognitive monitoring -> information seeking	0.097	9.037	0.000**
Metacognitive monitoring -> innovativeness	0.101	9.629	0.000**
Metacognitive monitoring -> opportunity recognition	0.095	8.936	0.000**
Metacognitive monitoring -> risk as a threat	0.037	3.090	0.002**
Metacognitive monitoring -> risk as an opportunity	0.099	9.393	0.000**
Metacognitive monitoring -> training and skills	0.108	10.141	0.000**

Metacognitive monitoring has a positive (0.119) and significant (pValue = 0.000) effect on entrepreneurial competencies, path coefficients were higher than 0.1 only for innovativeness and

training and skills. Metacognitive monitoring is mainly focused on performance, and enables individuals to evaluate and reassess their metacognitive knowledge and experience. Thus, act on their strengths and weaknesses in adequacy with their motives. Metacognitive monitoring, in a learning context, allows students to evaluate their knowledge of themselves and their surroundings in a way to align their cognitive strategies with their goals. For the fact that monitoring represents a guarantee for entrepreneurial performance and success (Botha and Bignotti, 2017), it is considered as a crucial component both in learning and enterprising contexts.

2.2.2. Assessing the model's (M2) fit and predictive power

To be able to evaluate the structural model's predictive power, various tests should be performed. The first test would consider the coefficient of determination R^2 which gives clear insights on the predictive capacity of the model. In other terms, it provides insights on the capacity of the independent variables of explaining the dependent variable. The coefficient R^2 ranges from 0 to 1 and should be superior to 0.19. Besides, the higher the values of R^2 , the higher the levels of predictive accuracy (Hair et al., 2017). Hair et al. (2017, p. 209), with reference to (Hair et al., 2011; Henseler et al., 2009) provided a rule of thumb where, “ R^2 values of 0.75, 0.50, or 0.25 for endogenous latent variables can be respectively described as substantial, moderate, or weak”. A more general rule of thumb used in social sciences suggested by Chin (1998) indicates that: $R^2 > 0.67$ is considered as high, $0.33 < R^2 < 0.67$ is considered as moderate, $0.19 < R^2 < 0.33$ is considered as weak and $R^2 < 0.19$ must be rejected.

Moreover, two further tests should be performed as to, the effect size (f^2) and the predictive relevance (Q^2). The f^2 coefficient explains the size of the effect of a given variable on the endogenous variable, while Stone-Geisser's Q^2 value is only concerned with endogenous variables (Hair et al., 2017). The rule of thumb for both values is as follows:

* Effect size: $f^2 > 0.02$, with $f^2 > 0.35$ as large, $0.15 < f^2 < 0.35$ as medium, $0.02 < f^2 < 0.15$ as small and $f^2 < 0.02$ as an indicator of no effect size.

* Predictive relevance: $Q^2 > 0$ suggest that the model has predictive relevance (Hair et al. 2017).

To obtain values for R^2 and f^2 , it is necessary to run a PLS algorithm, while Q^2 is obtained through blindfolding procedure in SmartPLS. Results for R^2 , f^2 and Q^2 are presented in the tables below

* The model goodness of fit: The index is the standardized root mean square residual should be lower than 0.1 (SRMR < 0.1) and the goodness of fit index should be closer to 1 GoF and should be superior to 0.1 with best fit values superior to 0.9.

Table 80: R square of the endogenous latent variables (M2)

	R Square	R Square Adjusted	Result
Entrepreneurial intention	0.358	0.352	<i>Moderate</i>

As shown in the table above, R^2 values fell into the moderate interval according to the rule of thumb. Almost 36% of the variance of entrepreneurial intention is explained entrepreneurial competencies and cognitive adaptability. The value of R^2 leads to consider that the model is somewhat robust, as the R^2 was superior to 0.33.

Table 81: Effect size results (M2)

	Entrepreneurial competencies	Entrepreneurial intention
Cognitive adaptability	1.288	<i>0.002</i>
Entrepreneurial competencies		0.255
Moderating effect 1		<i>0.018</i>

According to the table above, entrepreneurial competencies have a medium effect size on the entrepreneurial intention ($f^2 > 0.15$), cognitive adaptability on the other hand has no effect size on the entrepreneurial intention ($f^2 < 0.002$). This result suggests that, while 0.36% of the variance of entrepreneurial intention was explained through the model, such representation is drawn from entrepreneurial competencies and not cognitive adaptability. On the other hand, cognitive adaptability had a relatively large effect size on entrepreneurial competencies. Finally, the moderator effect has no effect size ($f^2 < 0.02$). The aforementioned results support the assumption that the conceptual model holds an acceptable predictive power, thus, entrepreneurial competencies do, in fact, have a significant impact on entrepreneurial intentions, and cognitive adaptability has a significant impact on entrepreneurial competencies.

To assess the predictive relevance Q^2 , Hair et al. (2017) recommend using the cross-validated redundancy as a measure. Thus, the cross-validated redundancy approach will be applied to both constructs and indicators. The relevance of examining the latter measure approach of the Stone-Geisser criterion Q^2 remains in the fact that it “builds on the path model estimates of both the structural model and the measurement model of data prediction” (Hair et al., 2017, p. 214). For the matter, a Blindfolding procedure through a re-sampling technique was performed and the model’s predictive validity and relevance was confirmed as shown by the results in the tables below.

For the indicators' cross validation redundancy, all the indicators were taken into account and a Q² index was affected to each one. After mere verification, all the indexes obtained were superior to 0. The same result was obtained through the constructs' cross validation redundancy, as all the constructs scored a Q² superior to 0.

The model of this research has, thus, a predictive validity and relevance. The final tests to be performed are concerned with the goodness of fit of the model.

Table 82: Construct Cross validation redundancy (Stone-Geisser criterion Q²) (M2)

	Q ² (=1-SSE/SSO)
Cognitive adaptability	0.329
Entrepreneurial competencies	0.319
Entrepreneurial intention	0.243
Goal orientation	0.350
Information seeking	0.444
Innovativeness	0.299
Metacognitive choice	0.274
Metacognitive experience	0.271
Metacognitive knowledge	0.352
Metacognitive monitoring	0.227
Opportunity recognition	0.145
Risk as a threat	0.328
Risk as an opportunity	0.337
Training and skills	0.407

Table 83: Indicators Cross validation redundancy (Stone-Geisser criterion Q²) (M2)

Indic.	Q ² (=1-SSE/SSO)	Indic.	Q ² (=1-SSE/SSO)	Indic.	Q ² (=1-SSE/SSO)	Indic.	Q ² (=1-SSE/SSO)
GO1	0.280	MC1	0.295	MK8	0.418	RT7	0.042
GO1	0.287	MC1	0.405	MK8	0.384	RT7	0.409
GO2	0.438	MC2	0.159	MK9	0.398	TS1	0.382
GO2	0.419	MC2	0.178	MK9	0.338	TS1	0.442
GO3	0.341	MC3	0.294	MM2	0.250	TS10	0.413
GO3	0.328	MC3	0.308	MM2	0.245	TS10	0.451
GO4	0.337	MC4	0.342	MM4	0.314	TS2	0.385
GO4	0.355	MC4	0.433	MM4	0.264	TS2	0.321
GO5	0.353	MC5	0.281	MM6	0.250	TS3	0.549

GO5	0.397	MC5	0.295	MM6	0.186	TS3	0.495
I1	0.315	ME2	0.329	MM7	0.222	TS4	0.357
I10	0.164	ME2	0.401	MM7	0.212	TS4	0.343
I4	0.167	ME4	0.210	OP2	0.139	TS5	0.423
I9	0.325	ME4	0.240	OP2	0.238	TS5	0.336
IF1	0.418	ME5	0.241	OP3	0.151	TS6	0.568
IF1	0.472	ME5	0.368	OP3	0.480	TS6	0.450
IF2	0.409	ME6	0.305	RT1	0.023	TS7	0.446
IF2	0.348	ME6	0.287	RT1	0.464	TS7	0.323
IF4	0.505	MK1	0.427	RT2	0.398	TS8	0.286
IF4	0.405	MK1	0.479	RT2	0.518	TS8	0.237
IN1	0.295	MK10	0.329	RT3	0.028	TS9	0.264
IN1	0.300	MK10	0.351	RT3	0.220	TS9	0.260
IN2	0.341	MK11	0.322	RT4	0.199		
IN2	0.385	MK11	0.354	RT4	0.156		
IN3	0.238	MK2	0.258	RT5	0.064		
IN3	0.298	MK2	0.227	RT5	0.220		
IN4	0.323	MK6	0.315	RT6	0.415		
IN4	0.421	MK6	0.344	RT6	0.458		

The SRMR index is the standardized root mean square residual calculation, informs about the standardized residuals between the observed and the hypothesized covariance matrices. A SRMR index inferior to 0.10 or to 0.80 indicates an acceptable fit (Hooper et al., 2008; Cangur and Ecran, 2015; Hair et al., 2017). In the case of this dissertation, SRMR index was equal to 0.09 which seems to be a relatively acceptable value of model fit.

Table 84: Goodness of fit index (GoF) Model (M2)

	AVE	R Square
Cognitive adaptability	0.397	
Entrepreneurial competencies	0,382	0,561
Entrepreneurial intention	0,523	0,358
Goal orientation	0,567	0,762
Information seeking	0,741	0,67
Innovativeness	0,573	0,729
Metacognitive choice	0,507	0,775
Metacognitive experience	0,556	0,712

Metacognitive knowledge	0,515	0,821
Metacognitive monitoring	0,521	0,615
Opportunity recognition	0,692	0,639
Risk as a threat	0,595	0,095
Risk as an opportunity	0,657	0,696
Training and skills	0,526	0,827
Average value	0,553714286	0,635384615
Average AVE* Average R²		0,351821538
(GoF=$\sqrt{\quad}$)		0,593145461

On the other hand, the goodness of fit index GoF was manually calculated and was equal to 0.59, which suggests a moderate fit.

Both measurement models M1 and M2 were assessed and were found to be lacking any discrimination issues, and verified their internal consistency reliability and validity. Moreover, both structural models were assessed, they both verified acceptable good fit indexes and were confirmed to hold an acceptable predictive relevance. On the other hand, hypotheses testing landed, first, the confirmation of the positive relationship between entrepreneurial competencies and entrepreneurial intention. Secondly, cognitive adaptability was found to have a positive effect on entrepreneurial competencies, and not having any effect on entrepreneurial intention. Last but not least, the moderating role of cognitive adaptability was confirmed as to, cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and entrepreneurial intention. Finally, the statistical study landed an unexpected output, which suggests the mediating role of entrepreneurial competencies in the relationship between cognitive adaptability and entrepreneurial intention.

Conclusion

This first section of the fifth chapter was a response to a need to define and describe the sample of the study, thus, the software IBM SPSS Statistics was used as an efficient tool to obtain distribution frequencies, descriptive analysis, as well as reliability and validity analysis.

While the majority of the results confirmed the theoretical assumptions, others did bring out the importance of the context in obtaining differentiated results. In fact, while the literature supported the assumption that parental role modeling pushes students to pursue entrepreneurial careers, our sample presented a completely different image, where students with entrepreneurial knowledge (in the terms of Linan 2004) were less likely to develop entrepreneurial intentions, while the presence of successful role models that are out of the acquaintances network through entrepreneurial events had a positive association with entrepreneurial intention.

The results emphasized also the importance of perceiving risk as an opportunity compared to perceiving risk as a threat, since the former was positively associated with entrepreneurial intention and cognitive adaptability. Thus, students who perceive risk as an opportunity are more likely to have both high cognitive awareness and desire to be entrepreneurs.

This second section of the present chapter focused on assessing two models responding to the principal research sections, thus, testing the relationship between entrepreneurial competencies and entrepreneurial intention, and the moderating role of cognitive adaptability in the latter relationship. Results showed that the entrepreneurial intention of Tunisian students is conditioned by their perception of risk and their training and skills, and cognitive adaptability was found to be a pure moderator. Such results will be discussed and interpreted in the following and final chapter of the present thesis.

Chapter VI:
Results' discussion and research
contributions

Introduction

After performing the various statistical analyses, this chapter comes as a closer for the present dissertation. In fact, it will be interested in discussing the research results, provide the theoretical and practical contributions as well as the limitations of the present research. Finally, recommendations for future researches will be presented.

The first section will be interested in presenting the various research hypotheses and providing a mix and match between the research results and the literature review provided in the three first chapters. It will focus on the relationship between the variables and sub-variables allowing by such the possibility to make conclusions regarding the obtained results.

The research hypotheses presented a meeting point between entrepreneurship and metacognitive theories as shown in the literature review in the three first chapters. The levels of significance through the various statistical tests, presented in the previous chapter, allowed the acceptance or rejection of the proposed assumptions.

The second section will be focused on the practical contributions of the present research, the theoretical implications, the limitations and will present suggestions for future researches.

Section I: Hypotheses testing

The present section discusses the research hypotheses proposed by the present research. Matter of fact, after performing the various statistical analyses and testing the hypotheses, and taking into account the epistemological position of the present dissertation, results should be discussed through a return to the theoretical assumptions. Nonetheless, the proper context of the research must be taken into consideration when interpreting the results.

1. The relationship between entrepreneurial competencies and entrepreneurial intention

Performing the factor analysis, the risk-taking propensity component of entrepreneurial competencies was split into two factors as to, risk as a threat and risk as an opportunity in accordance with the work of Nabi and Linan (2013). For the matter, the hypothesis H1b related to the impact of risk-taking propensity on entrepreneurial intention was modified and presented in two hypotheses H1b(a) and H1b(b) including the two perceptions of risk as shown in the table below.

The hypothesis related to risk as a threat assumed a negative impact of such negative perception on the entrepreneurial intention. Matter of fact, the literature focused on the importance of risk tolerance in assessing the differences between entrepreneurs and non-entrepreneurs (Macko and Tyszka, 2009; Nabi and Linan, 2013; Popescu et al., 2016). It is, thus, possible to assume that a negative perception of risk, based on the fear of failure has a negative impact on the entrepreneurial intention of students. On the other hand, a positive perception of risk, based an opportunity to pursue and which should not be missed, had a positive impact on the entrepreneurial intention of students.

Three competencies were found to have a significant effect on the entrepreneurial intention within Tunisian students. Matter of fact, both risk perceptions as well as training and skills were confirmed to have an impact, while opportunity recognition, innovativeness and information seeking did not seem to affect the entrepreneurial intention.

While findings from Al Mamun et al. (2016), showed that the entrepreneurial intention within Malaysian students is mainly influenced by opportunity recognition, training and skills, innovativeness and information seeking, and was not affected by risk-taking, the present study, considering a population of Tunisian university students, showed that the development of entrepreneurial intention is mainly conditioned by the students' perception of risk and the skills they acquired through education and trainings.

Table 85: Impact of entrepreneurial competencies on the entrepreneurial intention

Hypothesis		Result
H1	Entrepreneurial competencies have a positive impact on the entrepreneurial intention.	Accepted
H1a	Opportunity recognition competencies have a positive impact on the entrepreneurial intention.	Rejected
H1b(a)	Risk perceived as a threat has a negative impact on the entrepreneurial intention.	Accepted
H1b(b)	Risk perceived as an opportunity has a positive impact on the entrepreneurial intention.	Accepted
H1c	Training and skills have a positive impact on the entrepreneurial intention.	Accepted
H1d	Innovativeness has a positive impact on the entrepreneurial intention.	Rejected
H1e	Information seeking competencies have a positive impact on the entrepreneurial intention.	Rejected

Considering risk-taking propensity, both factors had a significant impact on the entrepreneurial intention. It is relevant to recall that risk-taking propensity was a convergence point for researches studying entrepreneurial competencies and personality traits in the entrepreneurial field (Arafah, 2016). Risk-taking was also presented as a key trait differentiating entrepreneurs from non-entrepreneurs (Popescu et al., 2016). Macko and Tyszka (2009) added that entrepreneurs were always perceived as more prone to risk than non-entrepreneurs and that there is a kind of general agreement in the literature postulating that risk bearing is an essential prerequisite to become an entrepreneur. Thus, the more students are willing to take risks, the more they likely to develop entrepreneurial intentions, and thus more likely to become entrepreneurs.

Moreover, taking into account the two emergent factors of risk-taking propensity, risk perceived as an opportunity and risk perceived as a threat, Nabi and Linan (2013) contradicted the previous views presented in the literature by arguing that entrepreneurs do not necessarily have higher levels of risk propensity, but have different perceptions of the inherent risk of launching a business venture. In their words, the psychology and perception of risk is an important factor to determine the entrepreneurial intention, new venture creation as well as understanding the entrepreneurial behaviors and cognitions (Nabi and Linan, 2013). This shows that individual differences based on risk-taking, are more dependent on their perception of risks more than actual propensity to take risk.

In this context, Tunisian students perceiving risk as an opportunity, thus, refusing to miss potential opportunities of gain, are more likely to develop entrepreneurial intentions, as demonstrated by Simon et al. (2000) who argued that the lower of level of perceived risk, the stronger the entrepreneurial intention. while students perceiving risk as a threat, thus, focusing on the

entrepreneurial inherent loss and fear of failing, are less likely to develop entrepreneurial intentions. It is, for the matter, crucial to orient students towards considering the opportunities that pursuing an entrepreneurial career offers to them by the means of entrepreneurship education. Since students with higher levels of fear of failure are more likely to have higher perception of risk as a threat (Nefzi, 2018), entrepreneurship education should be focused on decreasing students' fear of failure and their perceived uncertainty and uncontrollability of new business venture creation. To do so, interactive courses and effective interaction with entrepreneurs should be provided in entrepreneurship education programs to offer students a more realistic view on new venture creation in terms of inherent risks and potential opportunities on the market.

The aforementioned explanation is tightly related to the training and skills component. As the latter factor had a strong and positive effect on entrepreneurial intention. In fact, personal skill perceptions have a direct impact on the development of entrepreneurial intentions (Linan, 2008), thus, the more students acquire entrepreneurship related skills through trainings and the more they perceive such skills useful for them, the more they are likely to consider launching a new business venture. In fact, training in entrepreneurship allows students to become familiar and more aware of the local business community challenges as well as providing them with knowledge related to starting a new business and about modernizing and developing existing companies. Moreover, students pursuing entrepreneurship training are provided with the required exposure to entrepreneurial activities and are, thus, more likely to acquire knowledge about the market functioning and trends as well as being able to identify opportunities and understand how a business venture works. Thus, for Tunisian students, acquiring knowledge and skills related to entrepreneurship is a key determinant of the desire and the intention to launch a new business venture.

Nonetheless, and with reference to Oosterbeek et al. (2010), entrepreneurship training should provide students with a realistic view on the entrepreneurial activity but should be oriented towards encouraging them to pursue such activities and not towards resignation. In other terms, training should be based on a positive perception of the entrepreneurial riskiness, on reducing the uncertainty and uncontrollability of entrepreneurial activities. To do so, the courses offered to students without any prior experience in entrepreneurship should go through a process of learning starting with basic entrepreneurial knowledge allowing them to understand the role that entrepreneurs should play within and enterprising and social context as well as understanding how does a business function. The roles being understood, they go through an application of the concepts they learned as they exercise them in simulation activities then finish with participating

in a project, as it can be their own entrepreneurial idea or within teamwork. In the same context, team cooperation is a crucial factor in developing entrepreneurship propensity (Li and Wu, 2019). To summarize, the formulation and development of the entrepreneurial intention within students is dependent on their perception of risk and their entrepreneurship related skills and trainings, for the matter, education policy makers and universities should take consideration of these factors and use them as a base to formulate an educational strategy which is appropriate to the Tunisian context.

2. The relationship between cognitive adaptability and entrepreneurial intention

The hypotheses related to the relationship between cognitive adaptability were all rejected after performing the various statistical tests as seen in the table below.

Table 86: Impact of cognitive adaptability on the entrepreneurial intention

Hypothesis		Result
H2	Cognitive adaptability has a positive impact on the entrepreneurial intention.	Rejected
H2a	Goal orientation has a positive impact on the entrepreneurial intention.	Rejected
H2b	Metacognitive knowledge has a positive impact on the entrepreneurial intention.	Rejected
H2c	Metacognitive experience has a positive impact on the entrepreneurial intention.	Rejected
H2d	Metacognitive choice has a positive impact on the entrepreneurial intention.	Rejected
H2e	Metacognitive monitoring has a positive impact on the entrepreneurial intention.	Rejected

Limited research findings were provided in the literature about the relationship between cognitive adaptability and the entrepreneurial intention. Matter of fact, Botha and Bignotti (2017) explained that such relationship is still considered as under-researched. Few studies were made on the subject, as most of the published works related to cognitive adaptability in the entrepreneurial context are by Haynie and collaborators (2005, 2009, 2010, 2012), and those related to the relationship between cognitive adaptability and entrepreneurial intention are by Urban (2012) and Botha and Bignotti (2017).

This specific niche of entrepreneurship, as mentioned above, is relatively young. Still, the consideration of the role of cognitive adaptability in the entrepreneurial context seems to be extremely relevant, as studies advanced by Haynie and collaborators argued that it is a key competency that an entrepreneur should develop to guarantee performance and proper adaptive abilities taking into account the uncertainty of the entrepreneurial environment.

Urban (2012) and Botha and Bignotti (2017) both advanced studies linking cognitive adaptability with entrepreneurial intention in a context of post-graduate and undergraduate students in South-

Africa. Their work considered the metacognitive dimensions as latent variables to uncover the specific metacognitive dimensions that do have an impact on the development of entrepreneurial intentions.

While Botha and Bignotti (2017), working in a Southern-African context found that three dimensions only do have an impact, namely, goal orientation, metacognitive choice and metacognitive experience, Urban (2012) found out that only the knowledge metacognitive dimension has a positive impact on entrepreneurial intentions. In the Tunisian Northern African context, none of the metacognitive dimensions have a direct effect on entrepreneurial intention. Recalling that cognitive adaptability is the ability to adapt decision policies according to the environment's feedback, the cognitive adaptive abilities of Tunisian students, as showed in the results, do not direct them towards the development of their desire to launch a new business venture.

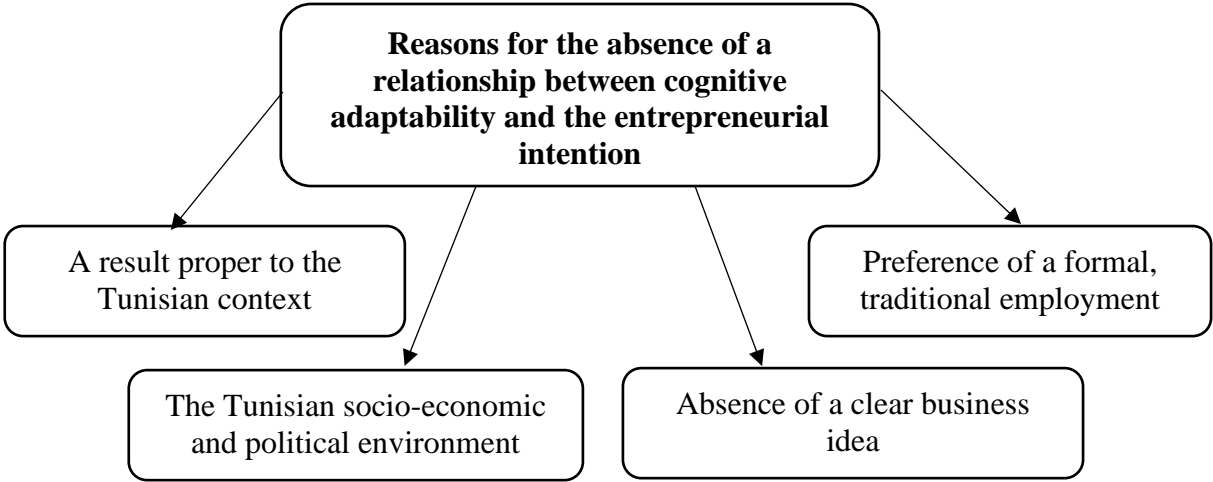
The variation on the level of the obtained results is mainly dependent on the context of investigation, although, South-Africa and Tunisia are both considered as developing countries, cultural and institutional differences may intervene in the development of both metacognitive abilities and the formation of entrepreneurial intentions. In fact, the absence of relationship between cognitive adaptability and entrepreneurial intention may be a result of the preference of a traditional and formal employment careers. In fact, Botha and Bignotti (2017) argued that individuals in developing countries are more prone to re-evaluate the choice of being self-employed and be more oriented towards formal employment as a response to survivalist motives.

In the same context, the Tunisian public sector has more than 690091 employees from which 25.95% are within the youth category with an age inferior to 35 years old. Being predisposed to prefer a formal employment career, individuals responded to the incapacity of the public sector to absorb a continuously increasing unemployment rate of 15.3% (Tunisian national institute of statistics, 2019) by searching for employment in the private sector presenting an evolution of employment from 996 988 in 2015 to 1 060 709 employees in 2017.

Moreover, the post-revolutionary socio-economical environment and the relatively instable political environment, caused a drastic drop in the rates of investments and savings according to the World Bank's report of 2018. The general business environment seems relatively unattractive and such results may be explained by the fact that cognitive adaptability does not have a direct influence on the entrepreneurial intentions of students as their proper evaluation of the environment and their risk aversion may lead them to prefer a more traditional professional career.

Another reason for the absence of the relationship between cognitive adaptability and the students' entrepreneurial intentions may be due to the development of the general vision of an entrepreneurial career in the absence of a concrete support either from the student's or the institutions' part. In other terms, the students may develop an inner desire to pursue an entrepreneurial career in the future, but may not develop a project idea or did not receive the proper support from institutions to develop their vision into an entrepreneurial intention. This can explain the positive assessment of the entrepreneurial intention by the students of the sample, the positive association between cognitive adaptability and entrepreneurial intention, but the absence of a direct impact between both constructs. The fact of desiring an entrepreneurial career without having a general or concrete business idea does not orient students towards formulating strategies or developing decision frameworks, for the matter, the intention remains as an inner individual desire. In this context, and as suggested through the SALEEM project (2018), students who have not developed their business idea should be a target population in the sensibilization campaigns provided by the Tunisian entrepreneurial support structures. The activities proposed in sensibilization campaigns are focused on developing and concretizing a proper business project.

Figure 33: Summary of the absence of a relationship between cognitive adaptability and the entrepreneurial intention



3. The relationship between cognitive adaptability and entrepreneurial competencies

Processing the sub-hypotheses of the impact of cognitive adaptability on entrepreneurial competencies, a reasoning based on the literature provided insights on the direction of the relationship between both perceptions of risk and cognitive adaptability. It is relevant to recall that risk perception, as presented by Hamid et al. (2013, p. 4), is defined as the “individual’s assessment of the inherent risk in a given situational problem” which is “ based on one’s probabilistic

estimation of the degree of uncertainty, controllability, and confidence in a problematic situation”. They added that the perception of risk is a product of cognitive biases arising from the individual’s ways of thinking.

In an attempt to explain such difference in the perception of risk, Simon et al. (2000) argued that individuals can perceive the riskiness of the same situation differently, as some will perceive it as very risky while other will not. With reference to Duman (2018, p.156), metacognitive awareness “critically affects decision-making in uncertain and risky situations like choosing to be an entrepreneur”, thus, the higher the metacognitive awareness of students, the higher their tendency to take risk. Thus, the perception of risk depends on the individuals’ metacognitive awareness.

Moreover, Shepherd et al. (2015) argued that a greater perception of risk is a product of the affective state including moods and emotions such as fear, hope, anger and happiness. The latter authors added that individuals who think about risk as an affordable loss are more likely to pursue an entrepreneurial career. Duman (2018) with reference to Mitchell et al. (2015) argued that students with metacognitive thinking enable their own entrepreneurship consciousness to reflect themselves, facilitating by such the process of understanding and control. Since perceiving risk as a threat is a product of fear of failure due to uncertainty and uncontrollability. The more students are metacognitively aware the less they perceive situations as uncertain and uncontrollable, and thus, the less they perceive risk as a threat. Recalling that cognitive adaptability is a bridge to metacognitive awareness and is the aggregate of the metacognitive dimensions Haynie and Shepherd, 2009), the higher the level of cognitive adaptability the more students have a positive perception of risk. The lower the level of cognitive adaptability, the more students perceive risk as a threat. Thus:

H3d(a): Cognitive adaptability has a negative impact on risk as a threat.

H3d(b): Cognitive adaptability has a positive impact on innovativeness.

Table 87: Impact of cognitive adaptability on the entrepreneurial competencies

Hypothesis		Result
H3	Cognitive adaptability has a positive impact on entrepreneurial competencies.	Accepted
H3a	Cognitive adaptability has a positive impact on information seeking.	Accepted
H3b	Cognitive adaptability has a negative impact on training and skills.	Accepted
H3c	Cognitive adaptability has a positive impact on innovativeness.	Accepted
H3d(a)	Cognitive adaptability has a negative impact on risk as a threat.	Rejected
H3d(b)	Cognitive adaptability has a positive impact on risk as an opportunity.	Accepted
H3e	Cognitive adaptability has a positive impact on opportunity recognition.	Accepted

The hypotheses test showed that cognitive adaptability has a positive impact on entrepreneurial competencies as a set, as well as on the various competencies presented in this dissertation. For the matter, the hypothesis related to the positive impact of cognitive adaptability on entrepreneurial competencies (H3) is accepted, and the various sub-hypotheses related to each competency were accepted, except for the hypothesis related to the negative impact of cognitive adaptability on risk as a threat. Thus, while all the hypotheses are accepted, H3d(a) was rejected.

Although not much insights were presented in the literature on the impact of cognitive adaptability on entrepreneurial competencies, explaining such link results in applying cognitive adaptability and metacognitive awareness in a learning context.

In fact, Ramocki (2007) explained that everything a person knows, have experienced and plans to incorporate in future thinking involves metacognition. The author continued to quote that, “the critical point to realize is that our metacognition is totally responsible for the entirety of our thought processes” either consciously or unconsciously and “the better this metacognitive process is understood, the more powerful our thinking becomes” (Ramocki, 2007, p. 19). In the same context, Sanchez et al. (2012) claimed that metacognition serves as an indicator of meta-competencies, which they defined as a prerequisite for developing specific capacities such as intuition, judgment and acumen that competencies require, but also that metacompetencies are characterized by self-management and self-awareness and involve behavioral, cognitive and affective aspects allowing effective behaviors in different situations. Moreover, Haynie and Shepherd (2009, p. 695) defined cognitive adaptability as the “ability to effectively and appropriately change decision policies (i.e., to learn) given feedback (inputs) from the environment context in which cognitive processing is embedded”. In their terms, students with higher levels of cognitive adaptability are more likely to effectively and appropriately control their learning processes in order to acquire knowledge and competencies given inputs from the context. Thus, according to their goals, and the context in which they act, students are able to identify the appropriate knowledge and competencies to develop, how to develop them, and how developing them helps them in realizing their pre-fixed objectives and goals.

* *Cognitive adaptability and information seeking:*

In regards to the hypothesis related to the positive impact of cognitive adaptability on information seeking, students with high levels of cognitive adaptability are more likely to develop information seeking behaviors. In fact, Haynie and Shepherd (2009, p. 708) argued that “cognitive adaptability represents an individual difference variable that may help explain the assimilation of new

information into new knowledge”. Moreover, information assimilation, organization, translation and collection are crucial when it comes to all the metacognitive dimensions forming the dynamic that is cognitive adaptability.

Matter of fact, Kim and Lee (2018) added that students with metacognitive functions are more likely to intentionally and actively retrieve and store information., adding that metacognitive knowledge is related to giving sense to new information and translating them to the individual’s own words and examples, metacognitive experience is related to organizing information according to its importance according to the context and according to the needs of the individual in that context, monitoring is based on the feedback that the individual receives from the environment serving as a regulatory mechanism through evaluation of new information. Information seeking is, thus, embedded in the cognitive adaptability process. According the Al Mamun et al. (2016), students with high metacognitive awareness of their knowledge are more likely to develop consciousness about the information they need and the information they need to seek in accordance to the demands of the context.

* *Cognitive adaptability and training and skills:*

In regards to the hypothesis related to the positive impact of cognitive adaptability on training and skills, cognitive adaptability appears to have a positive effect on training and skills within Tunisian students. Matter of fact, Schraw and Moshman (1995, p. 352) explained that, “good learners appear to have more knowledge about their own memory and are more likely than poor learners to use what they do know”. Thus, students with high metacognitive awareness are able to use the knowledge they acquired in real situations, transforming it in effective skills. Moreover, Haynie et al. (2010, p. 222) explained that cognitive adaptability, through its knowledge dimensions, refers to “perceptions about oneself, and about others, in terms of competencies, weaknesses, and also about how people think”. It is thus, an evaluation process that the students perform to evaluate what competencies they acquired and what competencies they need to acquire according to the context they are acting in. Such evaluation allows students to identify the set of competencies that respond better to their goals, and to a higher control of a given situation (i.e. problems to solve). For the matter, students with higher cognitive adaptability are more likely to be open to training and to acquire skills. Moreover, Devika and Singh (2019, p. 136) provided insights on the importance of metacognitive awareness as they quoted that “metacognitive awareness, an advanced understanding and execution of skills, helps learners not only acquire knowledge of their own cognitive processes but also manage learning activities”. Thus, cognitive adaptability, being a bridge to metacognitive awareness (Haynie and Shepherd, 2009), is a key competency allowing

students to control, direct and orient their learning process according to their needs and goals on one hand, and give them the ability to effectively acquire knowledge of their own cognitive processes.

**Cognitive adaptability and innovativeness:*

Considering the hypothesis related to the positive impact of cognitive adaptability on innovativeness, Kim and Lee (2018, p. 2) argued that “metacognition can be an influential factor in entrepreneurial spirit as well as innovative behavior, and entrepreneurship can play an important link in the relationship between metacognition and innovative behavior”. In their terms, recognizing problems, adopting new ideas and generating solutions are the origin of the innovative behavior, thus, students who are aware of the problems present in the learning context, who are able to use the information they have available to generate new ideas providing by such new solutions, and thus, are cognitively adaptive, are more likely to adopt innovative behaviors. Kim and Lee (2018) added that since metacognition plays a crucial proactive role, it leads to more innovative behaviors. Thus, the more students are cognitively adaptive the more they are likely to develop innovative behaviors.

** Cognitive adaptability and opportunity recognition:*

The hypothesis related to the positive impact of cognitive adaptability and opportunity recognition was accepted. The results show that the more students are cognitively adaptive the more they are likely to recognize business opportunities on the market. In fact, Haynie et al. (2010) suggested that metacognitive awareness may facilitate the process of opportunity recognition given a dynamic and uncertain environment as metacognitive mechanisms play a facilitator role for the transfer of knowledge from a given domain to another. For Cox and Castrogiovanni (2016), metacognitive processes have an impact on cognitive processes, thus, metacognition is expected to affect the process of opportunity recognition. Moreover, entrepreneurial cognitions were defined by Mitchell et al. (2002, p. 97) as “the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth”. In their terms and according to the context of the dissertation, entrepreneurial cognitions describe how students reconstruct unconnected information through simplifying mental models in order to identify and invent new services and products and gather the resources to launch and grow a business venture (Mitchell et al. 2002). Recalling that according to Haynie et al. (2010), entrepreneurs showing a higher metacognitive awareness are more likely to consciously control their cognitions in order to “draw knowledge and experiences to the metacognitive level and apply those resources toward the formulation of a metacognitive strategy” (Haynie et al., 2010, p. 222),

students with high levels of cognitive adaptability are more likely to recognize business opportunities than less cognitively adaptive students.

* *Cognitive adaptability and risk perception:*

In regards to the relationship between cognitive adaptability and risk-taking propensity factors, the hypothesis regarding the positive impact of cognitive adaptability on risk as an opportunity was accepted while the hypothesis regarding the negative impact of cognitive adaptability on risk as a threat was rejected. The results suppose that cognitive adaptability has a positive impact on both perceptions of risk, as it can increase the positive and negative perception of risk. To explain such results, two axes can be taken into account, first, explaining risk perception in terms of cognitive adaptability as a process, and secondly, explaining risk perception in terms of cognitive biases.

First, it is relevant to recall that risk perception is defined as the “individual’s assessment of the inherent risk in a given situational problem, based on one’s probabilistic estimation of the degree of uncertainty, controllability, and confidence in a problematic situation” (Hamid et al., 2013, p.4). Since cognitive adaptability was defined as “the ability to effectively and appropriately change decision policies (i.e., to learn) given feedback (inputs) from the environmental context in which cognitive processing is embedded” (Haynie and Shepherd, 2009, p. 695), it allows the evaluation of risk that is inherent from the environment. In other terms, students will give sense to the environment according to their goals and the environment’s characteristics will shape the student’s goals, in terms of goal orientation. Thus, a negative feedback from the environment will lead to considering a decision framework based on the fear of failure, and thus, on perceiving risk as a threat. In the same context, given a positive feedback from the environment, the decision frameworks will be directed towards not wanting to miss the perceived opportunity and thus, perceive risk as an opportunity.

Moreover, Schwarz (2013) argued that considering risk perception, stimulus is crucial. In fact, he quoted with reference to Zajonc (1968) that “if a stimulus is familiar and elicits no negative memories, it presumably hasn’t hurt us in the past” (Schwarz, 2013, p. 19). Such explanation is tightly related to metacognitive knowledge and metacognitive experience. In fact, metacognitive knowledge is mostly related to the knowledge of self, others, tasks and strategies while metacognitive experience enables the individual to provide a better interpretation of his or her social world and is defined as a set of affective past events that are drawn from cognitive activities, it channels resources such as emotions, intuition, and memories can be employed throughout the process of a specific task sense making (Haynie et al., 2012). Moreover, and according to the latter authors, these two dimensions allow the individual to control his or her cognitive response to a

cognitive problem and are even more crucial when the cognitive task is either novel or uncertain provided that metacognitive awareness is heightened. Thus, affective past events drawn from cognitive activities and the knowledge of the students' own strengths and weaknesses allow them, facing a stimulus from the environment, to give it a meaning according to which they will adopt a given attitude either positive or negative. Moreover, and taking into account the various association between the students' social network and their perception of risk, and recalling the importance of the knowledge of others and the environment in terms of decision frameworks generation, the belief about how other persons think as well as the knowledge that individuals are likely to make mistakes in their thinking (Haynie and Shepherd, 2009) appears to be crucial. In fact, in the context of the present dissertation, knowing an entrepreneur, having an entrepreneur within parents, family or community is negatively associated with perceiving risk as an opportunity, while having an entrepreneur within parents is positively associated with perceiving risk as a threat. Such negative association can be explained through the mental representation that a student has of the figure of the entrepreneur, as well as his or her knowledge of his own capabilities, and how others think and are representing such figure. Such representation may directly impact the student's perception of the inherent risk of pursuing an entrepreneurial career, since, taking account of the negative impact of knowing entrepreneurs, it will be conditioning his goal orientation in terms of the interaction between the environment and his or her motives, as well as his decision frameworks, which will be based on emotions, memories and previous cognitive experience.

In regards to explaining risk perception through cognitive biases, Yan (2012) provided hints on the determinants of risk perception, arguing that cognitive biases act directly on the way individuals evaluate such risk. The author argued that overconfidence, belief in the law of small numbers, illusion of control directly and planning fallacy impact the individual's risk perception. While Simon et al. (2000) argued that when considering the individual's risk perception in a context of new venture creation, the cognitive biases that intervene are the first three ones cited by Yan (2012) without taking into account the planning fallacy bias.

Duman (2018), on the other hand, insisted on the fact that the latter biases were proved to be controlled through metacognitive awareness. Nonetheless, such impact of metacognitive awareness can impact risk perception in both directions. For example, a metacognitively aware student will take consciousness and act on reducing his over-confidence bias and thus make account of his real strengths and weaknesses according to a given context, this acquisition of a realistic view of the task can lead him to either judge that he is capable to pertain the given task, or to take consciousness of the fact that such task requires way more resources than those he has

in hand. He will, thus, in the first case, consider the inherent risk of proceeding to perform the task as acceptable (either high or low), thus, perceive it as an opportunity he should not miss, or, as in the second case, consider the task as uncertain or uncontrollable, thus, the inherent risk of performing it as a threat (either high or low) based on his fear of failure. For the matter, the more students are cognitively adaptive, the more they are capable to acquire a more realistic perception of risk according to their risk tolerance, their strengths and weaknesses and the various factors and agents provided from the environment.

Thus, cognitively adaptive individuals are more likely to apply what they know and have control over their own learning process and the skills to use according to the context. For the matter, cognitively adaptive individuals are more likely to develop and use entrepreneurial competencies in response to a given context or a decision-making situation. In this context, the more the students' metacognitive abilities are developed, the more they are likely to develop entrepreneurial competencies. Moreover, and given the importance of cognitive adaptability in the development of entrepreneurial competencies, authors starting from Flavell (1979) to Haynie et al. (2012) and more recent research outcomes pointed out the possibility of teaching and developing metacognition. In fact, Haynie et al. (2010) argued that entrepreneurship courses are an essential activity for training students' metacognitive abilities.

From all the above, the role of cognitive adaptability in a learning context appears to be crucial, for the matter, educational policy makers should consider such role in entrepreneurship education allowing by such, the development of entrepreneurial competencies and the development of entrepreneurial intentions within students.

4. The moderating role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intention

The results showed that cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and the entrepreneurial intention of Tunisian students. Since there is no statistically significant relationship between cognitive adaptability and entrepreneurial intention, and a significant relationship between cognitive adaptability and entrepreneurial competencies, cognitive adaptability is statistically considered as a pure moderator.

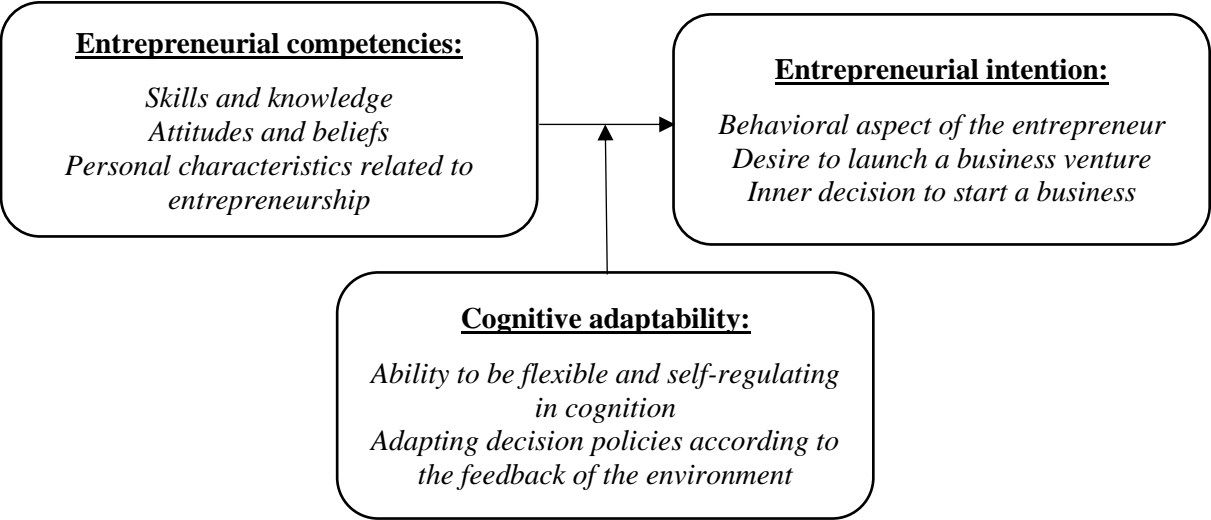
Thus, the hypothesis assuming that the higher the levels of cognitive adaptability within Tunisian students, the greater the impact of entrepreneurial competencies on their entrepreneurial intention.

Table 88: The moderating role of cognitive adaptability

H4	A higher level of cognitive adaptability leads to a greater impact of entrepreneurial competencies on entrepreneurial intentions.	Accepted
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The literature did not provide any insight on the moderating role of cognitive adaptability in the relationship between entrepreneurial competencies and intention, as most studies took either the relationship between cognitive adaptability and entrepreneurial intentions (Urban, 2012; Botha and Bignotti, 2017) which is still considered as under-researched (Botha and Bignotti, 2017), or the relationship between entrepreneurial competencies and entrepreneurial intentions (Linan, 2004, 2007; Fayolle et al., 2006, 2008; Zhang 2013; Dehghanpour, 2013; Al Mamun et al., 2016, Shima et al., 2019) which received great interest by academics as it was contextualized in entrepreneurship education and entrepreneurship training programs. Still, the impact of cognitive adaptability on entrepreneurial competencies and the moderating role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intention did not spark the interest of researchers. To provide arguments to support such assumption and result, it is necessary to follow an alignment of the foundations of cognitive adaptability from an entrepreneurial context to a learning context, which is the general context of this dissertation.

Figure 34: Explaining the moderating role of cognitive adaptability



Through the figure above, it appears clear that the three variables are a set of attributes and mechanisms that are proper to the individual. In fact, entrepreneurial intentions represent the behavioral aspect of the entrepreneur. It translates the desire to pursue an entrepreneurial action and internal decision to launch a new business venture in the future. Entrepreneurial competencies are, on the other hand, a set of personal attributes tightly linked to the individual’s capacity to attain performance through the skills and knowledge he or she gained and the personal characteristics he or she has and are essential to start a business (Wu, 2009).

Finally, cognitive adaptability can be defined as the ability to make decisions while facing an uncertain environment characterized by limited resources (i.e. information, time, funding, etc...) and a future that is unknown (Haynie and Shepherd, 2009).

The three concepts are internal and specific to the individual's dimension and provide answers on the level of individual differences. The impact that entrepreneurial competencies exert on the development of the entrepreneurial intention of students is contextualized through entrepreneurship education, as for students, resources are limited, competencies are provided through entrepreneurship education and training in the context of the present dissertation, and the entrepreneurial environment is characterized by uncertainty and instability in a context of a post-revolutionary socio-economic and political environment.

Contextualizing the moderating role of cognitive adaptability, consists of contextualizing the impact of entrepreneurial competencies on entrepreneurial intentions in the Tunisian context, and taking into account the obtained results suggesting that higher levels of cognitive adaptability strengthen the latter impact.

Basing the assumptions on the fact that various authors in the literature suggested that the more entrepreneurial competencies are developed, the more students are likely to develop entrepreneurial intentions (Sanchèz, 2011). Other authors such as Peng et al. (2012) suggested that the role that competencies play in the development and formulation of entrepreneurial intentions is a predictive role. In other terms, entrepreneurial intentions are predicted by the acquired competencies and are developed through a longitudinal process and can eventually manifest in an entrepreneurial action after a period of time depending on the individual and the context surrounding the emergence of such intentions.

Moreover, the cognitive entrepreneurial skills are essential for any individual to become an entrepreneur, they consist of understanding what it is to be an entrepreneur, as it is the first step to start with. Such awareness is offered through entrepreneurship education, as the first objective is to inform and orient students towards considering entrepreneurship as a possible professional career. Through this process of reflection, the individual prepares himself and gains awareness of the environment where he or she will act, the opportunities that are available in the market and the possible threats he or she should avoid (Tsakiridou and Stergiou, 2014).

In fact, metacognition is a result of a high-level awareness in the learning process by planning learning, using appropriate skills, and choosing strategies for problem solving (Kim and Lee,

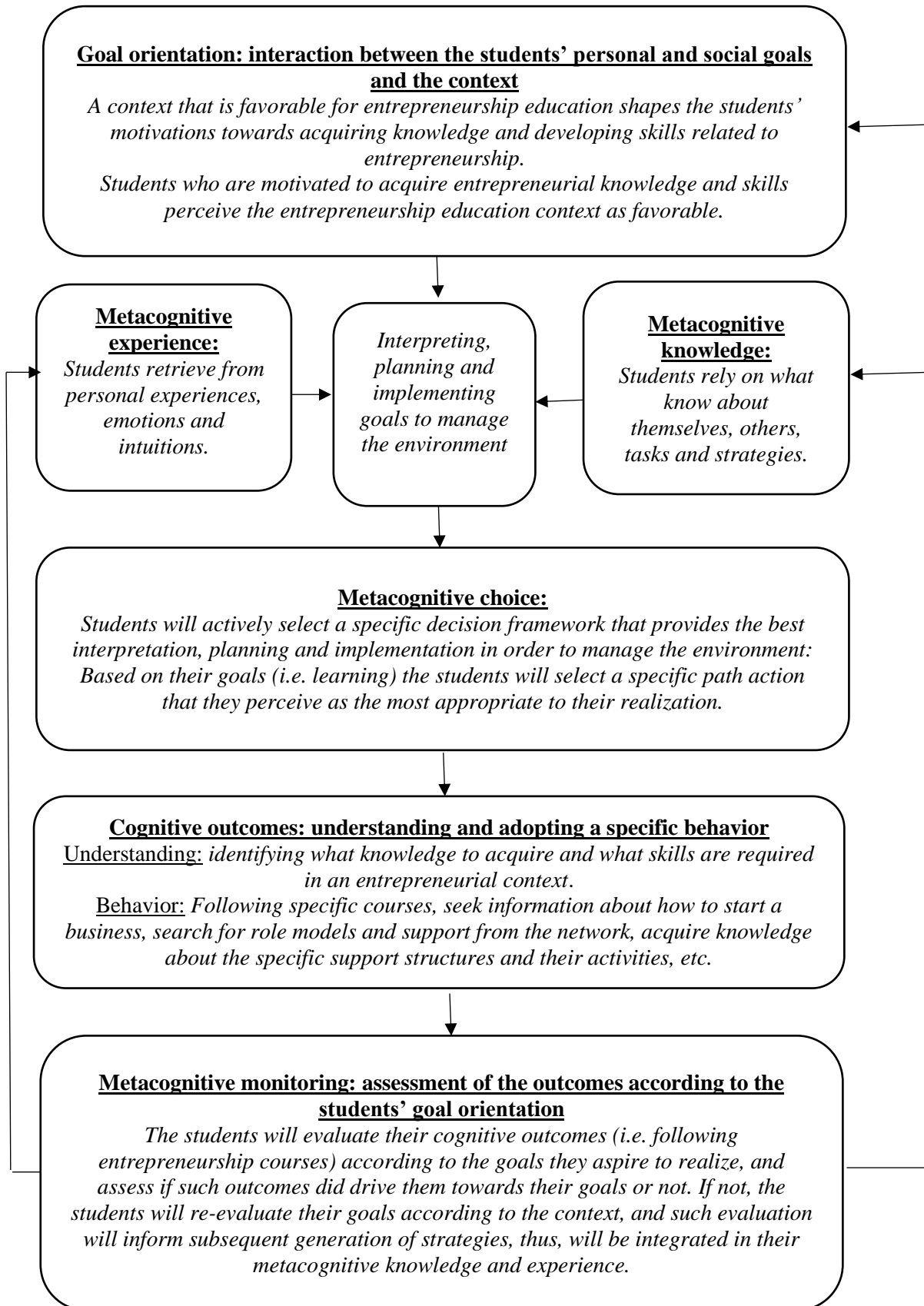
2018). Thus, metacognition is related to both present and future thinking and potential actions, but it is also concerned with regulating learning processes as well as being responsible for the selection of the appropriate knowledge and skills to respond to a specific situation or to solve a given problem.

This being said, taking the entrepreneurial intention of a given student, it is the decision to start a business venture in the future, such decision is considered as cognitive. On a metacognitive level, the interest is put on the higher-order cognitive process that resulted in the student framing the desire to launch a business venture effectually, and thus why and how such inner decision was included in a set of alternative responses according to the student (Haynie et al., 2010, p.220). Taking into account the absence of a relationship between cognitive adaptability and entrepreneurial intentions, and the strong positive relationship between cognitive adaptability and entrepreneurial competencies, the inner decision to start a business venture, will be considered as a result of an adaptive cognition process in a context of entrepreneurship education.

In fact, and in an attempt to provide a clear representation of the role that cognitive adaptability plays in the relationship between entrepreneurial competencies and entrepreneurial intentions, the processual representation of cognitive adaptability by Haynie and Shepherd (2009) was applied to the context of this dissertation. In other terms, the model “*Cognitive adaptability a metacognitive model*” will be applied to a student’s functioning when provided by entrepreneurial competencies and how such process interferes with the student’s intention to launch a new business venture.

The figure below was adopted from the model elaborated by Haynie and Shepherd (2009) describing the processual nature of cognitive adaptability. Applying such model in a context of entrepreneurship education provides insights on the various steps that cognitive adaptive students would go through, acquiring knowledge and skills related to entrepreneurship and how such a process offers more likability to develop entrepreneurial intentions.

Figure 35: A processual view of cognitive adaptability in an entrepreneurship education context



Following Haynie and Shepherd (2009), a cognitively adaptive student would enter the context of entrepreneurship education with an interaction between his or her personal and social motivations and the context. In other terms, a favorable context of entrepreneurship education would shape the motivations of the student in terms of being motivated to learn and acquire knowledge and skills related to entrepreneurship that are offered by the educative context. On the other hand, a student motivated to learn about and for entrepreneurship would perceive the entrepreneurship education context as favorable and appropriate for attaining his goals. In the case of an unfavorable context, the student's motivations will be directed either to acquire knowledge outside of the university context, or directed towards alternative goals emerging from personal and social characteristics.

In a second phase, the student retrieves from his or her metacognitive knowledge and experience in order to interpret, plan and implement goals in order to manage the changing environment. In other terms, the student will retrieve from his or her past experiences, rely on his or her emotions and intuitions, as well as his or her perceived strengths and weaknesses and his or her knowledges of others, the tasks to accomplish and the various past cognitive strategies to set goals. Such procedure will allow the student to identify various decision frameworks that could lead to the realization of such goals, learning and acquiring knowledge and skills related to entrepreneurship in the context of the present dissertation. For example, if the student aspires to develop information seeking competencies, the decision framework he or she will choose from will be directed towards the various ways, or actions paths that provide him or her with such outcome.

In other terms, the student, thinking about how to develop such competencies, will search for the support he or she can get either from his entrepreneurial and social network, the entrepreneurship courses offered by universities, entrepreneurial support structures and other strategies that he or she considers as a path action to achieve the goal of developing information seeking competencies.

The third phase, the student will actively select a specific decision framework that provides the best interpretation, planning and implementation in order to manage the context based on his or her goals, acquiring knowledge and skills related to entrepreneurship in this context. Practically, the student selects a specific cognitive strategy, thus, selects a specific path action that he or she perceives as the most appropriate to the prefixed goals, thus, identifies and adopts the proper behavior. Following the example of acquiring information seeking competencies, the student will choose a specialized course in the techniques of information seeking with the objective of identifying and recognizing potential gain opportunities on the market.

The fourth phase, is an evaluation before, during and after the execution of the cognitive strategy. In other terms, the student evaluates the action of following courses, a pre-task evaluation consists of assessing his or her strengths and weaknesses in relation with the content and objectives of the courses and thus becomes aware of the learning needs he or she has. An ongoing evaluation during the performance of the task, thus following the provided course, provides answers about how such performance leads to the realization of the goal. Finally, a post-task evaluation to compare the expected outcomes with the effective outcomes of the task performance. If the goals are not completely attained, the student will re-evaluate his or her own goals according to the context (i.e. if such context offers the proper tools to perform the task), will evaluate his or her cognitive strategies, his or her strengths and weaknesses and thus will construct and formulate new decision framework that, according to the student, would be more performant in the context where he or she are performing the tasks.

Through such process, students are more aware of the characteristics of the context, aware of their strengths and weaknesses as well as how the performance of given cognitive tasks participates actively in the realizations of their goals. Moreover, and in response to an entrepreneurial environment that is uncertain and unstable and “as the content of managerial and entrepreneurial knowledge continues to become obsolete at an ever-increasing rate due to advances in technology, communications, and a changing marketplace” (Haynie et al., 2010, p.225), metacognitive functioning improves the ability and capacity of students to perform and function effectively in such a dynamic environment.

Recalling that the results showed that entrepreneurial competencies have a positive impact on entrepreneurial competencies and that various authors in the literature argued that the more competencies are developed the more students are likely to develop entrepreneurial intentions, the presence of high level of cognitive adaptability offer more strength to such impact. In fact, acquire competencies in a cognitive adaptive context provides a dynamic that offer the continuous evaluation and re-evaluation of such competencies according to the environment, thus, the cognitive decision to start a business venture is not taken by accident, but is a result of the assessment of feedback both from the environment and the individual himself.

More specific to the results obtained in the Tunisian context suggest that in the case of Tunisian students, the entrepreneurial intention is a product of their perception of risk, either and opportunity or a threat, and the training and skills they received and acquired. Although cognitive adaptability has a positive impact on all the suggested entrepreneurial competencies, the focus will

be oriented towards the aforementioned competencies. In other terms, the higher the levels of cognitive adaptability within students, the more they are likely to assess the inherent risk of an entrepreneurial action and the more they are likely to attend trainings and develop entrepreneurial skills. For the matter, the higher the level of cognitive adaptability the more the development of entrepreneurial competencies has a positive impact on entrepreneurial intentions within Tunisian students.

5. The indirect effect of cognitive adaptability on entrepreneurial intentions through the development of entrepreneurial competencies

Through the second phase of the statistical analysis, an unexpected result related to the relationship between the three variables in question emerged. It is important to explain that such a result was provided by the total effect and the specific indirect effects reports of the bootstrapping procedure in SmartPLS 2.3.8, in an attempt of uncovering all the relationships presented in the tested model as recommended by Hair et al. (2017). Such reports provided the following results:

Table 89: the indirect effect of cognitive adaptability

Hypothesis	Result
Cognitive adaptability -> entrepreneurial competencies -> entrepreneurial intention	Supported
Goal orientation -> entrepreneurial competencies -> entrepreneurial intention	Supported
Metacognitive choice -> entrepreneurial competencies -> entrepreneurial intention	Supported
Metacognitive experience -> entrepreneurial competencies -> entrepreneurial intention	Supported
Metacognitive knowledge -> entrepreneurial competencies -> entrepreneurial intention	Supported
Metacognitive monitoring -> entrepreneurial competencies -> entrepreneurial intention	Supported

In fact, it appeared that in the case of Tunisian students, cognitive adaptability does not have a direct impact on entrepreneurial intention, but an indirect effect through entrepreneurial competencies. Through the various entrepreneurial competencies, cognitive adaptability appears to have a strong and positive effect on entrepreneurial intention. Moreover, four of the cognitive dimensions have a positive indirect effect on entrepreneurial intention which are, goal orientation, metacognitive knowledge, metacognitive experience and metacognitive choice, while metacognitive monitoring did not appear to have a considerable effect (path coefficient < 0.1).

Such unexpected result provides further insights on the important role that cognitive adaptability plays in the entrepreneurial context, as advanced by Haynie and Shepherd (2009) who considered it as a key competency for entrepreneurial success and performance, and in the context of

entrepreneurship education as advanced by the results of the present dissertation. Thus, not only does cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and entrepreneurial intentions, it also indirectly and positively influences entrepreneurial intentions via entrepreneurial competencies.

The aforementioned result sheds the light on the importance of cognitive adaptability in an entrepreneurship education context, especially in the Tunisian context. In fact, it shows that in order to obtain higher levels of entrepreneurial intention within students, as well as a higher rate of entrepreneurial activities within young citizens, cognitive adaptability should be taken into account by policy makers from the government to universities' administrations as a crucial route to meet the expectations of the governmental projects aiming to encourage entrepreneurship in Tunisia.

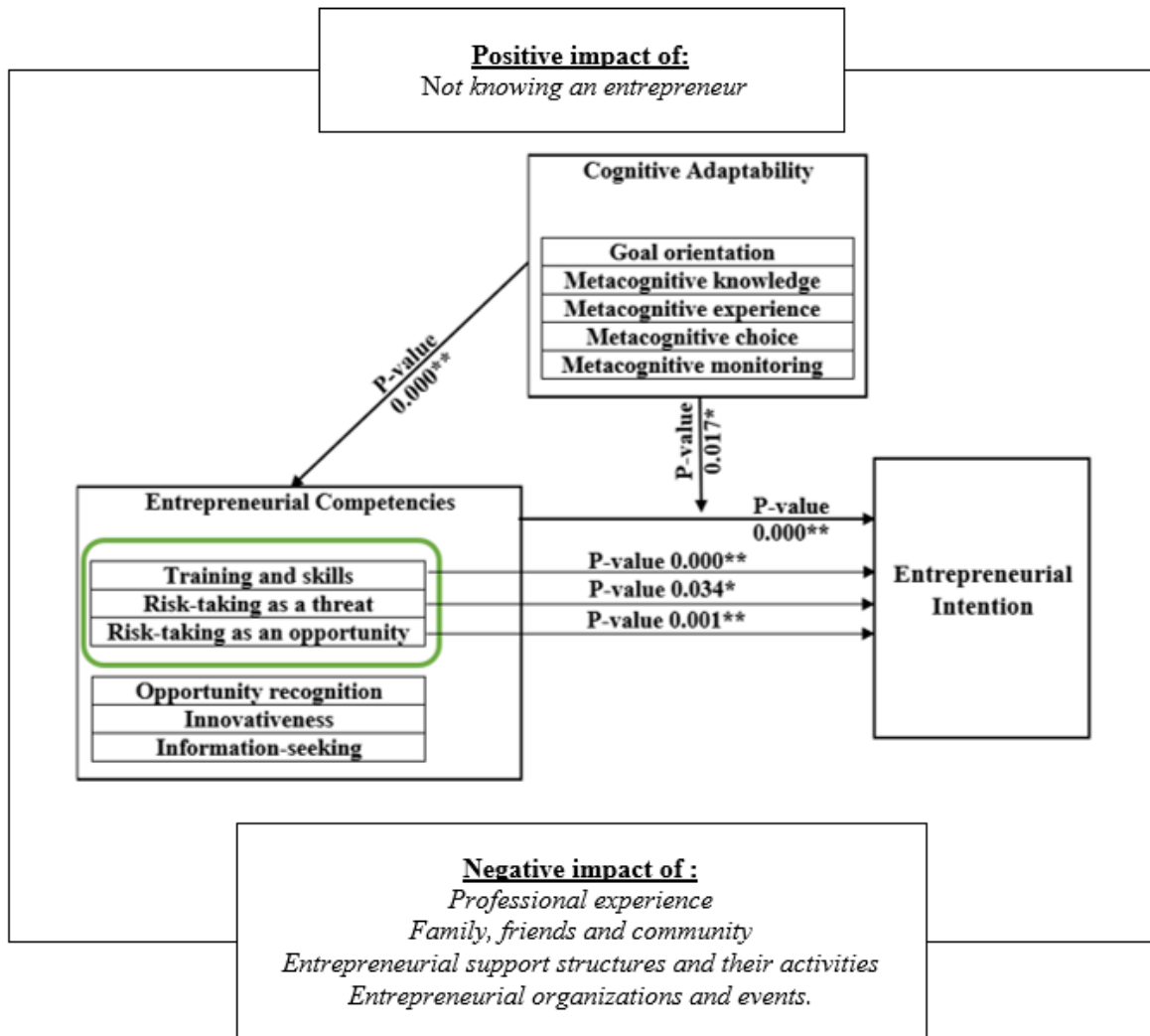
Section II: Research contributions: integrating the theoretical model in the general Tunisian context

After presenting the interaction between entrepreneurial intention, entrepreneurial competencies and cognitive adaptability, there is a crucial need to integrate such interaction in the Tunisian context. In other terms, after unraveling the internal dynamics and providing arguments related to the positive impact that entrepreneurial competencies have on entrepreneurial intentions, the positive impact of cognitive adaptability on entrepreneurial competencies and its moderating role in the aforementioned relationship, it is important to integrate the environmental factors that are strongly associated (either positively or negatively), thus take into account the external dynamic that influence the internal dynamic between the variables.

The environmental factors do negatively influence the interaction between entrepreneurial intention, entrepreneurial competencies and cognitive adaptability. Although the literature provided large contributions on the positive influence of participating in entrepreneurship courses and events, as well as a positive influence of the entrepreneurial social network on the development of entrepreneurial intentions and entrepreneurial competencies, the Tunisian context provided contradictory outcomes to such assumptions.

In fact, having entrepreneurs within the family, friends or communities is negatively associated with entrepreneurial intention, entrepreneurial competencies and cognitive adaptability. Although authors such as Linan (2004), Malbena (2014) and Amouri et al. (2016) argued that the presence of an entrepreneurial role model positively influences the desire to become an entrepreneur, offers prior exposure to the entrepreneurial activity, thus offers a possibility of acquiring knowledge and skills related to entrepreneurship, students in the Tunisian context are negatively influenced by such environmental factors. Such negative influence may be caused by the fact that students are exposed to a negative and subjective view of entrepreneurship instead of acquiring a realistic view showing the real advantages and inconveniences of such career. In fact, the constitution of the aforementioned negative subjective view is a direct product of the actual socio-economical and political environment, and the perception of instability and uncertainty caused by the repercussions of the Tunisian revolutionary journey since 2010 - 2011. In reality, the Tunisian general context, especially from a political perspective, after the revolution cannot be disconnected from the people's perception of investment as the highly volatile political environment (Matta et al., 2016) did in fact directly impact national and foreign investments and increased risk aversion.

Figure 36: external and internal dynamics



*. significant at 0.05, **. significant at 0.01.

Moreover, entrepreneurship education activities, out of the university context, are supposed to encourage students to choose entrepreneurship as a potential professional career according to the literature, as they express the personal effort the students to know more about entrepreneurship. Nonetheless, in the case of Tunisian students, such structures and activities are negatively associated with their intentions and competencies. Such negative influence may be due to three different reasons; first, the lack of communication between support structures and students. In fact, few students know that there are structures specialized in entrepreneurship support physically built within universities in Tunisia, and even less, the activities that they offer for students with business ideas as more than 63% of the sample affirmed not knowing such structures. A second reason may

be the fact that such support structures suffer from the weight of bureaucratic procedures, as it takes a relatively long period of time to attend trainings and prepare the business project without obtaining a clear positive response on its effective deployment or the possibility to obtain funding. Finally, the training offered by the support structures do not seem to respond to the students' needs. In fact, and according to the research performed by Gheryaani and Boujelbène (2015) on the performance of Tunisian support structures, there are three types of deficiencies that compromise the evolution of Tunisian entrepreneurs which are related to hosting and infrastructures, support and assistance and networking services. The authors added that the entrepreneurs expressed that the structures did not respond to their needs of funding support, the development of domain specific competencies, the ongoing monitoring especially during the incubation phase and for longer periods of project hosting.

Although the results seem unexpected, they are tightly related to the Tunisian context and its characteristics. In fact, such outcomes emphasize more the need for revising the services that university and support structures offer to students in terms of entrepreneurship promotion. In the context of the present dissertation, it is possible to suggest that, taking into account the negative effect of the environmental factors, universities, helped with the entrepreneurship support structures can play a crucial role in fulfilling the gap between the governmental and institutional efforts and the effective rate of entrepreneurial initiatives within university students.

Such efforts may be employed towards the development of cognitive adaptability of students as recommended by Botha and Bignotti (2017). In fact, the authors quoted that it is valuable to put efforts towards understanding the mechanisms that foster the entrepreneurial intention above and over the solutions that are already implemented especially in developing countries, such as Tunisia, where there is a low entrepreneurial activity. They added that focusing on cognitive adaptability can potentially be considered as a route for increasing the levels of entrepreneurial intentions within students.

The aforementioned suggestions are at the core of the present research, as the results showed that cognitive adaptability has a strong positive impact on entrepreneurial competencies and strengthens their positive relationship with the entrepreneurial intention of Tunisian students. For the matter, two strategies related to entrepreneurship training programs within universities were formulated and proposed as possible solutions for the low rate of entrepreneurial initiatives within students.

1. Practical implications

Before presenting the practical contributions of the present research, it is important to understand the general entrepreneurial environment in Tunisia. According to Zali et al. (2018, p.92), the majority of Tunisians become entrepreneurs to ensure a stable income supporting the assumption that Tunisian entrepreneurs are necessity-driven and not opportunity-driven.

In regards to the Tunisian institutional support, the authors argued that Tunisian entrepreneurs fail to maintain an enterprise more than 2 years due to problems related to entrepreneurship culture, lack of start-up stage support and deficiencies of the funding and legal system concentrated on banks with no possibility of alternatives such as crowdfunding. According to the Global Entrepreneurship Index (GEI) report of 2018, there is a general consensus between individuals from developing countries about holding the required skills to start a business, although such skills are principally acquired through either workplace trials or simple business activities (Ács et al. 2018, p.16). The authors pointed out the importance of education, thus formal education and training, in providing individuals with entrepreneurial skills allowing them to perform in an entrepreneurial context, especially when they are in developing countries.

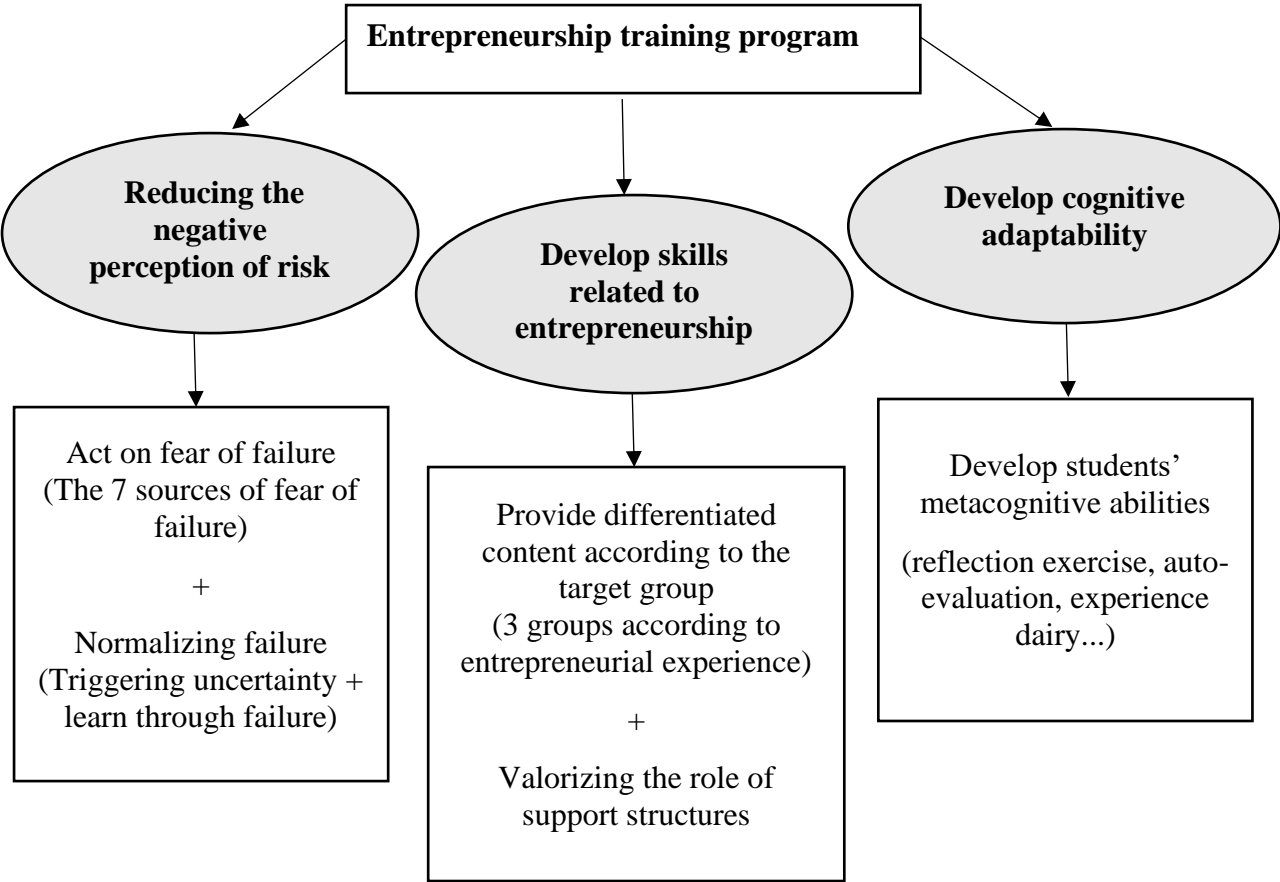
For Zali et al. (2018, p.104), “universities should become more entrepreneurial by developing programs to support inventors to take their ideas to market”. In such context, the role of university is crucial when it comes to promoting entrepreneurship within Tunisian students, although it cannot intervene with the restricted environmental factors, those that are specific to the students, such as family, friends and social networks, it can have an impact on the general environmental factors, such as improving the communication with entrepreneurial support structures, offer courses that meet the students’ needs and aspirations, provide clear ideas on entrepreneurship as an alternative career and prepare students to face the actual funding and legal system.

Although various solutions have been implemented in order to promote entrepreneurship within university students, they presented various deficiencies that reduce their performance. It is important to take into account that in most cases in the Tunisian context, universities offer courses related to entrepreneurship, most of all on entrepreneurial culture. Moreover, the government focused on the proximity of support structures to universities as they are physically built in the same space, nonetheless, such physical proximity was not valued.

In the same context, Gheryaani and Boujelbène (2015) argued that since the Tunisian entrepreneurs are necessity driven, there is an urgent need to review the actual services and procedures offered to accompany entrepreneurs taking into account the mutually changing

entrepreneurial environment. For the matter, three potential guidelines were formulated to increase the performance of entrepreneurship education programs. The first one takes into account the factors that influence the development of the entrepreneurial intention of students, the second strategy emphasizes the importance taking into account the specific needs of the students and the third one is related to the development of metacognitive abilities within the context entrepreneurship education.

Figure 37: Objectives of the entrepreneurship training program



1.1. An entrepreneurship education training program centered on nurturing the positive perception of risk within students

The results show that the entrepreneurial intention of Tunisian students is conditioned by their negative or positive perceptions of risk and their trainings and skills. Although no direct impact of entrepreneurial competencies such as opportunity recognition, information-seeking and innovativeness was confirmed, their development is necessary for an effective entrepreneurial functioning as demonstrated by the literature and explained in the previous chapters.

Still, the development of the latter competencies cannot lead on its own to the emergence of the desire to launch a new business venture by the students, but must be accompanied by a positive perception of risk and an appropriate set of trainings and skills. Such positive perception of risk, should distance students from the negative and subjective view they have of entrepreneurship and bring them closer to what entrepreneurship really is, either theoretically or practically. In other terms, the latter competencies should be developed in a context offering a positive perception of the entrepreneurial action inherent risk, as well as the risks that an individual should make to become an entrepreneur and manage his or her own company.

** Objectives:*

It is important to recall that the negative perception of risk is a result of fear of failure (Nefzi, 2018) which considered as a perceived barrier to entrepreneurship along with financial instability (Fedakova et al., 2018). In their systematic review of the empirical literature, Cacciotti and Hayton (2014) tried to connect fear of failure to entrepreneurship and found that fear of failure was associated to and presented in terms of risk aversion and defined it as a “temporary cognitive and emotional reaction towards environmental stimuli that are apprehended as threats in achievement contexts” (Cacciotti and Hayton, 2014, p.37).

For the matter, entrepreneurship education training program should be oriented more towards leading students to hold a positive perception of risk. In this context, Nabi et al. (2018, p. 465) argued that entrepreneurship education design could “examine how students evaluate risk and explore the possibility of students not only seeing risk as a negative threat but also risk as a positive opportunity”. The objective of entrepreneurship educational programs should be directed towards focusing on nurturing the perception of risk as a positive opportunity and less as a negative threat through reducing the perceived uncertainty and uncontrollability of creating a new business venture. The importance of managing and reducing students’ fear of failure is in the fact that the latter predisposes students to prefer certainty over uncertainty and is directly associated with the perception of the risk related to starting a business and may stop students from engaging in entrepreneurial actions (Cacciotti and Hayton, 2014).

** How to reduce the negative perception of risk?*

The objectives are made on the assumptions that, the entrepreneur is portrayed as an individual who is willing to accept the risk and failure associated with entrepreneurship (Antoncic et al., 2018) and that risk perception can actually be taught (Nabi and Linan ,2013).

In fact, Nabi and Linan (2013) suggested that universities should consider the teachability of risk perception in entrepreneurship education and its impact on the students' motivations and perception of the entrepreneurial action. In the same context, they added that educators should be focused on the effective impact of the educational interventions and evaluate if such interventions allow a deep understanding of the students' perception of risk, their motivations and their intentions to launch a business venture in the future through providing the students with a deep understanding of the advantages of the entrepreneurial career and focusing on the potential personal, financial and social gains that they could obtain through entrepreneurship. Moreover, the latter gain should be explained on the personal, societal and general environmental levels, emphasizing the personal advantages such as wealth and great consideration from society, the possibility to improve the community through providing job opportunities for others, and the impact that it has on the general context, as it is a taking part from the country's economy.

On the other hand, and in response to the negative association of knowing entrepreneurs on the intention to start a business, Shepherd and Patzelt (2017) suggested that, students who experience or observe directly or indirectly business failure and its negative effects on the entrepreneurs are less attracted to consider entrepreneurship as a career as "they view business failure as a highly prominent possible outcome of entrepreneurial action" (Shepherd and Patzelt, 2017, p.74). Nonetheless, experiencing an entrepreneur "bouncing back" after failure, as the latter authors quoted, "can serve as excellent role models of how to face failure, deal with it, recover, learn, and ultimately move forward" as well as, helping students decrease their fear of failure and develop a positive attitude towards failure. In this context, failing serves as a lesson on how to survive failure and use it as a basis for future actions. Moreover, as the current Tunisian context characterized by a relative economic recession, the students' perception of risk in such context can be relatively high, for the matter, they should take awareness of the good conditions that a recessionary economic environment can offer, such as new opportunities from the change that companies are living, and that the greatest companies in the world emerged in recessionary economic environment (Nabi and Linan, 2013).

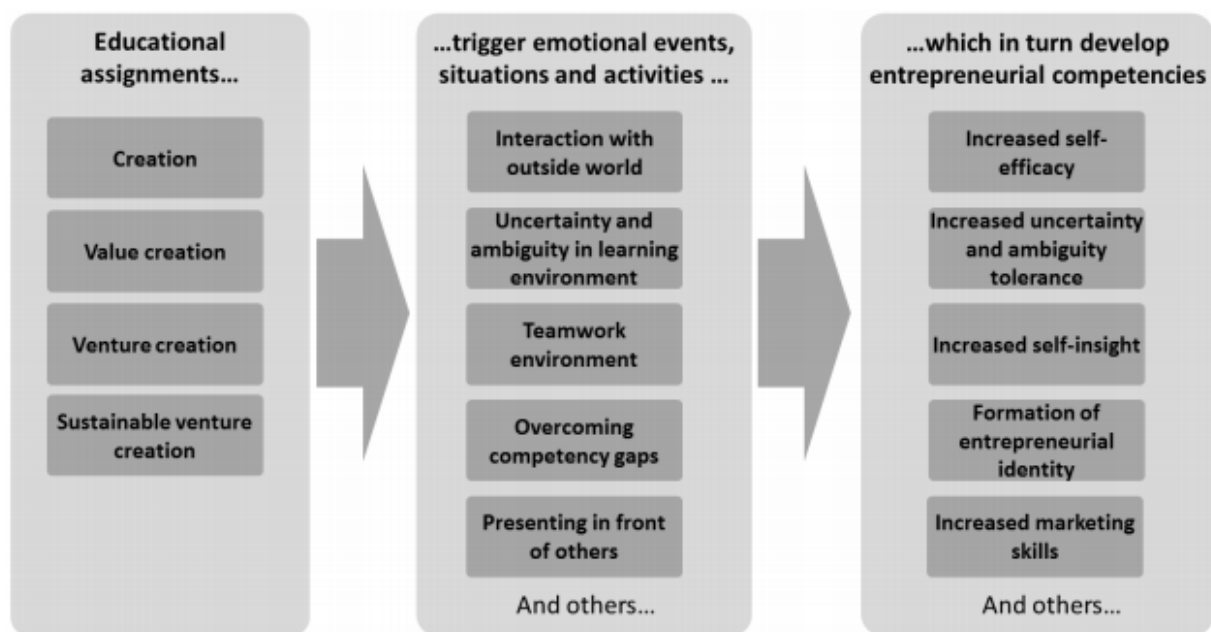
** What method should be used?*

In response to the question "*how to do entrepreneurial education?*", Lackeus (2015, p.25) suggested that learning by doing is the best fit method to trigger the development of entrepreneurial competencies within students in a context of entrepreneurship education. According to the latter author, learning by doing can be done through assignment that tend to create innovative value for

external stakeholders through problems or opportunities that students identify and take full responsibility for.

Matter of fact, such assignments are based on triggered uncertainty and uncontrollability within the course context. Students would find themselves facing a problem and with high levels of confusion and ambiguity and a personal full responsibility facing a problematic situation, taken from reality and in need of a solution. Lackeus (2015, p.26) argued that “such assignments lead to repeated interactions with the outside world [...] should be regarded as a positive outcome and a source of deep learning”. Team working, a sufficient time and advices related to value creation management lead the students to manage uncertainty, to establish fruitful relationships with stakeholders and with the members of the team and to increase their creative abilities and peer learning opportunities (Lackeus, 2015).

Figure 38: A model of entrepreneurial education and its outcomes.



(Source: Lackeus, 2015)

According to the figure above, the process of putting students in a real entrepreneurial situation and intentionally triggering feeling of uncertainty and ambiguity would lead them to overcome fear of failure by going through its proper process. Besides, it gives them the possibility to build on teamworking with the aim of a collective learning process. In the same context, Li and Wu, (2019) team cooperation is a crucial factor in developing entrepreneurship propensity, and they found that team cooperation moderates the relationship between entrepreneurship education and entrepreneurial intentions of students.

Another method to reduce the negative perception of risk is to act on the seven sources of fear of failure as defined by Cacciotti et al. (2016). The authors based their work on the assumptions that fear of failure in entrepreneurship is defined as the perceived risk of the latter, and that reducing such perceptions increases the individual's possibility to become entrepreneur. They suggested five sources that are: financial security, personal ability, social esteem, venture's ability to execute and opportunity costs. The table below provides a presentation of the five sources, their definition and how to act on them.

Table 90: The sources of fear of failure related to entrepreneurship

Source of fear of failure		Description According to Cacciotti et al. (2016)	How to reduce it?
Internal Cognitive Evaluations	Personal Ability	Tension between the need to execute specific tasks and the student's level of competence. ⇒ <i>Self-oriented fear of failure = a threat to self-esteem.</i>	Develop entrepreneurial competencies as they guarantee future entrepreneurial performance.
	Potential of the Idea	Fearful thoughts over the validity, potential or future market of the core idea on which the venture is based. ⇒ <i>Opportunity source of fear of failure.</i>	Provide assistance from both university and support structures to value the idea and its potential. (<i>Business modeling, simulation...</i>)
	Social Esteem	Fear of disappointing or losing investors, business partners, customers, family, and employees. ⇒ <i>The image of the entrepreneur in the social environment</i>	Acceptance of failure and considering it as an opportunity to learn.
	Opportunity Costs	Concerns over opportunity costs related to the time or money required to develop the venture. ⇒ <i>losing work-life balance, and not having enough time to spend with family, friends, and loved ones.</i>	Provide assistance and monitoring related the venture's management. Importance of time management.
External Situated Social Cues	Financial Security	Fear of potential insolvency due to the uncertain nature of entrepreneurship. ⇒ <i>Personal survival.</i>	Provide information about the legal and financing system. Advantages of the financing system offered to young entrepreneurs (<i>BTS, etc..</i>)

	Ability to Finance a Venture	Intersection of financial worries and concerns over personal ability, related to the probability to obtain financial capital to start and sustain a venture. ⇒ <i>Venture survival.</i>	
	Venture's Ability to Execute	Concerns over the venture's capacity to execute the variety of entrepreneurial tasks. ⇒ <i>Anxieties and fears around specific activities that the venture must undertake.</i>	Need for continuous monitoring and assistance. Importance of entrepreneurship support structures in the first years of the venture's life.

1.2. An entrepreneurship education training program centered on the students' specific needs

A starting point would be reducing to the negative association between the entrepreneurial intentions of students with entrepreneurship support structures and organizations as well as entrepreneurial events and seminars. Such negative association may be the result of the structures deficient communication strategies, and the absence of a serious valorization of the physical and educational proximity of such structures to universities. Moreover, the educative offer provided by both universities and support structures does not meet the specific needs of students.

* *Objectives:*

The offer that the university provides should take into account the diversity between students in terms of entrepreneurial knowledge and skills, their entrepreneurial experiences and their fears in relation with entrepreneurship. For the matter, the content offered should be diversified and responding to the various needs in a context based more workshops and free interactions and less on lecture courses. Following the example of Zeng and Honig (2016, p.46), the authors suggested that "entrepreneurship students should not be treated as a homogeneous group as they have different levels of startup experience and different educational needs". Through this quote, they brought to light the heterogeneity that exists within learning groups. This absence of homogeneity suggests that the content to be taught as well as the teaching methods should be differentiated according to the characteristics of the course attendants.

As the participants presents different needs that need to be met through the entrepreneurship courses, the response should not be standardized and offered as a package without paying attention to the level in which the participants are. Honig (2017, p.460) argued that “without a doubt, entrepreneurship education is a very vague and poorly measured or defined process, where heterogeneity represents a central and rarely examined problem”.

In the terms of Zeng and Honig (2016), there are three target populations for entrepreneurship training programs; students with no prior entrepreneurial experience, students with previous start-up experience and students currently running a business. Differentiating students according to their levels of entrepreneurial experience helps understanding the needs they expect to meet in terms of entrepreneurial knowledge and skills, and the potential objectives they aspire to realize.

** How to respond to the specific needs of students?*

For the content of the training programs, each group, according to their levels of entrepreneurial experience, will receive a personalized content that fits best the expectations of students and the knowledge and skills they want and need to acquire according to their entrepreneurial stages. Although there should be a great interest and focus on the practical aspect of entrepreneurship, it is necessary, nonetheless, to provide lectures on entrepreneurship theories and its relevance to the current economical context, but also its advantages for the younger population facing high rates of unemployment and the incapacity of the public sector to absorb it. Moreover, since a high rate of students affirmed to have the intention to launch a business venture in the future, and since results showed that there was no relationship between cognitive adaptability and the entrepreneurial intention, there is an urgent need to respond and orient students who expressed their desire to become entrepreneurs without having a business idea.

For students with no prior education, which in many cases represent the greater population, they should receive a training program focused on introducing them to entrepreneurship. Zeng and Honig (2016) suggest that simulation could represent the best way to run activities through games that are computer games in class. They defined the simulation game as a “dynamic model of the real entrepreneurial process in which a balances number of decision variables require strategic integration” (Zeng and Honig, 2016, p.17). Such simulations are presented as an innovative pedagogic tool and provide students with an easier and clearer understanding of the entrepreneurial process as well as it helps them to develop problem-solving skills. The aim of such pedagogical tool is to provide students with a better consideration of entrepreneurial failure as well as teaching them how to function and work within a team in a business environment and context

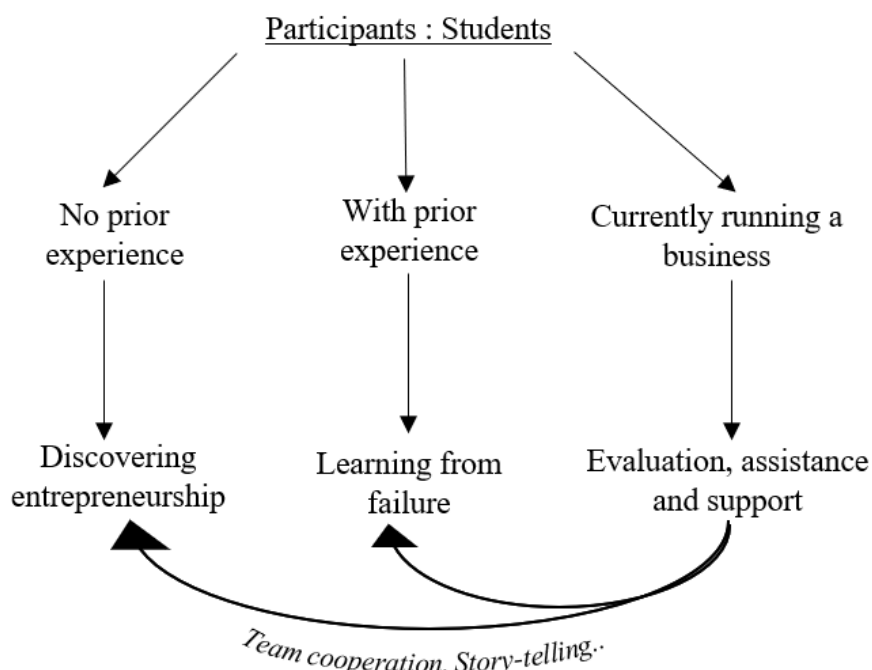
similar to a real company context. Through the different activities, the participants acquire the ability to deal with situations possibly accruing in real entrepreneurial context and such ability offers them a higher perceived controllability over entrepreneurial situations.

Thus, courses offered to students without any prior experience in entrepreneurship should go through a process of learning starting with basic entrepreneurial knowledge allowing them to understand the role that entrepreneurs should play within an enterprising and social context as well as understanding how a business functions. The roles being understood, they go through an application of the concepts they learned as they exercise them in simulation activities then finish with participating in a project, as it can be their own entrepreneurial idea or within teamwork.

For students with prior entrepreneurial experience, it is necessary to focus on helping them understand what made such experience come to an end, the various errors, deficiencies and what competencies could help them higher their potential to launch a successful business venture. This can be done through valorizing their prior experience and focusing on learning from failure, and this can be done through a more practical approach to entrepreneurship and less through lectures. Any prior experience gained from entrepreneurial activities should be taken into account when it comes to the content to be taught to students (Zeng and Honig, 2016). As experience can be positive or negative, students are asked to reflect upon it and become able to differentiate between the natures of the experiences. This differentiation activity allows the participants to classify their experiences and understand what should be discarded and what should be kept. With reference to Kolb (2014), the reflection process is considered vital as it allows transforming experience into knowledge, learn from past events and more importantly learn from previous failures. This specific program provides students with the opportunity to reflect upon experience, learn from them, as well as acquiring new knowledge and skills to finish up with benefiting from available guidance.

Finally, for students currently running a business venture, universities should be able to provide them with the appropriate assistance and support as well as promoting and valorizing their cooperation with entrepreneurial support structures to benefit from their activities and services, such as networking, incubation and hosting. This type of program, considered as *continuing education for entrepreneurs* in the terms of Linan (2004), should contain three main components that are in mutual interaction and presented in a spiral that are; problem-based learning, supplementary skills and knowledge learning and experience sharing (Zeng and Honig, 2016).

Figure 39: Participants and objectives



Although the groups are theoretically separated, their interaction is crucial for a proper functioning. Presenting students who are running businesses or had a prior experience in entrepreneurship to students with no prior experience can help them relate to a figure that is not distant from them, such as the case of success stories where successful entrepreneurs seem to be too good to be true. A student coworking with an alike student who was able to launch his or her own business venture gives him or her the desire to take the same path, but also allows them to rationalize and simplify the entrepreneurial career. In simpler terms, students will adopt a positive attitude based on the affirmation “*If they can do it, I can do it*”. Such procedure allows students to let go of considering the entrepreneur as a mythical creature that is special and extremely rich, an image that was worshiped by the media and various studies. As Johnsen and Sørensen (2017) explained, the entrepreneur has been too much valued to a point that the literature praised the individual and allowed the emergence of the “*fantasy of the heroic entrepreneur*”. For the matter, they suggested a critical vision towards the emergence of the individual entrepreneur, as the literature, medias and social medias presented the entrepreneur only through success stories.

1.3. An entrepreneurship education training program oriented towards the development of the students’ metacognitive abilities

The results show that cognitive adaptability has a strong, positive and significant impact on entrepreneurial competencies and strengthens the positive relationship between entrepreneurial competencies and the entrepreneurial intention of Tunisian students. Since cognitive adaptability,

defined as the aggregate of the five metacognitive dimensions, describes the metacognitive functioning (Haynie and Shepherd, 2009), developing the latter and increasing the students' levels of cognitive adaptability allows them to allow have a greater control over their learning processes.

** Objectives:*

As Haynie and Shepherd (2009), Botha, and Bignotti (2017) explained; metacognitive awareness, and thus cognitive adaptability, is teachable and can be developed through educational programs. Flavell (1979), father of metacognition, argued that the development of metacognition begins from childhood and is enhanced through education and schooling. Haynie et al. (2010, p.226) added that, metacognition “represents a dynamic process, rather than a static trait [...] and it can be developed through training”.

The relevance of integrating metacognitive training within the classroom and especially in a context of entrepreneurship education is based on the fact that apart from providing students with the ability to function effectively in a dynamic environment, it is a response the mutual change and development of entrepreneurial knowledge as it becomes obsolete due to technological, marketplace and communication advances (Haynie et al. 2010). Moreover, insights on teaching metacognition showed that it allows students to have a stable learning and improve their performance (Bort-Mir, 2015).

** Why should Tunisian students learn metacognition?*

In an entrepreneurship education program context, students with greater metacognitive awareness are more likely to develop specific capacities such as intuition, judgment and acumen that competencies require where meta-competencies are characterized by self-management and self-awareness and involve behavioral, cognitive and affective aspects allowing effective behaviors in different situations (Sanchez et al. 2012). Moreover, facing an environment as uncertain as the entrepreneurial one, metacognitively aware students are more likely to enhance their quality of attention as well as sensemaking the process of failure (Shepherd and Patzelt, 2018).

The latter authors quoted that “individuals with greater metacognitive awareness are most likely to reflect on the current situation in light of their recent failure to develop a plausible story that informs and motivates entrepreneurial action” (Shepherd and Patzelt, 2018, p.86).

Another reason for teaching metacognition is that students are not able to evaluate the utility and effective use of the skills and knowledge they acquired from university courses and programs until they are in a situation where they need to practice what they learnt many years after graduations

(Honig, 2017). Metacognition allow students to evaluate their own learning and skills and to have a clear vision of what they know and do not know, as well as what they need to know and develop according to the goals (i.e. future career) they want to realize.

One of the calls for the presence of metacognition in the classroom started by Blakey and Spence (1990), who argued that developing metacognition in an educational context could be done through various strategies. The strategies they suggested are tightly associated with entrepreneurial competencies. In fact, they explained that the primary activity to exercise with students, always in the aim of developing metacognition, is to teach them to identify what they know and what they do not know. In other terms, students should be able to make conscious decisions about their knowledge, through verifying, clarifying and expanding or replacing knowledge with a more accurate one. In these terms, it is relevant to recall information-seeking competencies.

Moreover, and with reference to Ling et al. (2011), Duman (2018) explained that metacognitive awareness is highly developed in students who have a tendency to take risk. This suggests that, the more the individual is attracted to risks, the more likely he is to have a developed metacognitive awareness. Since metacognitive awareness is defined as a bridge to cognitive adaptability (Haynie and Shepherd, 2009), an individual who has a tendency to take risks is more likely to be cognitively adaptive. This is tightly related to the development and formulation of entrepreneurial intentions as the intention to become entrepreneur in a context of Tunisian students is conditioned by their perception of risk.

Duman (2018) argued that entrepreneur students have higher levels of metacognitive awareness than other students adding that entrepreneurial learning has a positive impact on the students' metacognitive skills and allows them to increase their likability to realize the goal of becoming entrepreneurs.

Besides, increasing the levels of metacognitive awareness, and more precisely, metacognitive knowledge offers a solution for the negative impact that the general environment has on the entrepreneurial intention of Tunisian students, especially their entrepreneurial knowledge in terms of social networks. Matter of fact, Haynie and Shepherd (2009) argued that students with high levels of metacognitive knowledge are more likely to have knowledge of know how others think and that they can make mistakes in their thinking. Thus, it gives the students the possibility to question how people around them perceive their context, and to be conscious of the possibility that such perception is subjective and can be biased, not representing reality.

** How to teach metacognition?*

Duman (2018) explained that various activities during courses can be planned to improve metacognitive abilities and support entrepreneurial knowledge and skills. Various suggestions were presented by recent studies such as Devika and Singh (2019) who argued that to teach metacognition is to impart knowledge about metacognition, to instruct students about the various tasks they need to accomplish, to train them to judge their own, and others performance and involving them into sharing information and work as a team, improving by such metacognition in real classroom situations.

The authors quoted that “the classroom learning allows real-world application between learned material and how well students apply this knowledge in the given situation, the traits learning factories are trying to foster in the engineering students” (Devika and Singh, 2019, p.140). Listening skills and practical exposure through oral presentations improve the students understanding, acquisition of knowledge and its application to solve problems, allowing them to perform a learning that is self-directed and action-oriented learning and is in the best applicable way (Devika and Singh, 2019).

Cunningham et al. (2018) on the other hand, suggested that teaching for and about metacognition should take into account various modules, starting from defining metacognition and explaining its relevance to the educative context, to integrating metacognition within the classroom activities through knowledge of cognition, evaluation, planning, monitoring and control. The table below provides the suggestions of Cunningham et al. (2018) for teaching with metacognition.

Table 91: Teaching with metacognition according to Cunningham et al. (2018)

	Module	Content
I	What is metacognition and why should I care? (Overview)	Introduce students to the metacognition framework and argues for importance of metacognitive knowledge and regulation
II	Knowing about Thinking (Knowledge of Cognition)	Focus on metacognitive knowledge of self, tasks and strategies
III	Reflecting on Our Thinking (Evaluation)	Introduce students to the idea of assessing a learning experience to determine what worked and what did not
IV	Planning for Our Thinking (Planning)	Introduces students to the idea of focusing on tasks that are part of big project and part of important goals rather than tasks that are distractions

V	Optimizing Our Thinking (Monitoring & Control)	Introduces students to monitoring and controlling their learning during a learning experience, operationalized through Kolb's experiential learning cycle.
VI	Thinking Back and Thinking Ahead (Summary & Extension)	Serves as a summary that asks students to reflect on topics from the prior weeks and think about how they can apply what they have learned going forward

Through their suggestions, Cunningham et al. (2018) presented, first of all, a processual way of teaching metacognition, as students should start by understanding what is metacognition and why they are learning it. Then, students will be asked to assess their learning according to bigger projects and goals and evaluate what they learned according to what they aspire to do in the future.

2. Theoretical and methodological implications

The present dissertation proposed to explore what competencies have an impact on the entrepreneurial intention of Tunisian students and the role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intentions in an effort to provide further theoretical and empirical insights on such matter.

In fact, the principal objective was to fill the theoretical gaps present in the literature regarding the general context of promoting entrepreneurship within university students. In fact, while various researchers provided great explanations related to the determinants of entrepreneurial intentions, most of them related to entrepreneurial competencies, the majority of the studies are characterized by a specific context related to developed economies, and few took into account the crucial role of cognitive adaptability, and metacognition in general in an entrepreneurship learning context. Moreover, the combination of the three variables did not receive much interest from the literature and was not subject to testing in a context of an emerging economy, such as the Tunisian context, taking into account its specificities in terms of culture, economy, especially that it is a post-revolutionary context.

Moreover, it was performed in the Tunisian context and came as a response to two central questions; “what influence do entrepreneurial competencies have on the entrepreneurial intention of Tunisian students?” and “does a higher level of cognitive adaptability lead to a greater impact of entrepreneurial competencies on the entrepreneurial intention of Tunisian students?”, providing by such a new body of knowledge related to the entrepreneurial intention in the Tunisian context. Matter of fact, such questions were based on theoretical assumptions and answering them offer an

enrichment to the literature related to entrepreneurship and cognitive adaptability, as well as insights on the reality of the Tunisian context.

2.1. Theoretical implications

A new theoretical model was constructed based on the combination of the impact of entrepreneurial competencies on the entrepreneurial intention of students and the moderating role of cognitive adaptability, as well as taking into account the possible relationships between the set of variables. Such links provide further explanation on the dynamics between the variables and the integration of cognitive adaptability as a moderating variable gave a greater explanation potency to the model and provided further insights to the literature.

Based on the assumption that it is difficult to predict if the entrepreneurial behavior is going to occur in the future, and that cognitive adaptability was considered as a key factor for entrepreneurial success, a conceptual model was constructed, tested and validated and the research findings supported its capacity to explain the dynamics between the variables and how they are relevant in a context of entrepreneurship education as a response to the difficulty related to effectively predicting. The choice of cognitive adaptability as a moderator was based on the fact that it offers a more specific context to study the entrepreneurial mindset and its importance in contemporary entrepreneurial contexts, characterized by rapid, substantial, and discontinuous change (Haynie et al. 2012).

The four assumed relationship between the variables, as presented in the model, were tested and the results provided responses where some are in line with the literature and others were more related to the context.

Considering the relationship between entrepreneurial competencies and the entrepreneurial intention of students, the literature insisted on the fact that such relationship is strong and positive. Nonetheless, while theoretical insights emphasized the importance of competencies such as opportunity recognition (Filion, 1997; Venkataraman, 2000; Al Mamun et al., 2016; Cox, 2016), information seeking (Fayolle and Verstraete, 2005; Al Mamun et al., 2016; Vignesh and Vetrivel, 2017) and innovativeness (Hamidi et al., 2008; Koe, 2016; Kim and Lee, 2018) our results showed that such variables do not have an impact on the entrepreneurial intention in the Tunisian context, since the entrepreneurial intention of Tunisian students is conditioned by their perception of risk (either positive or negative) and their training and skills.

The assumption that there is a positive relationship between cognitive adaptability and the entrepreneurial intention was provided by the works of Urban (2012) and Botha and Bignotti (2017) as an enrichment of the work of Haynie and collaborators (2009, 2010, 2012). Our results showed, on the other hand, that cognitive adaptability does not have any sort of impact on the entrepreneurial intention of Tunisian students, and neither did the metacognitive dimensions. In fact, such relationship is still considered as under-researched (Botha and Bignotti, 2017) and the latter authors presented considerable insights in the literature available on the relationship between cognitive adaptability and entrepreneurial intention. In fact, there is limited evidence that confirms such relationship except the contribution of Urban (2012) who found only one cognitive adaptability dimension that supported it (Botha and Bignotti, 2017) which is metacognitive knowledge. In their turn, Botha and Bignotti (2017) argued that there is evidence that cognitive adaptability has an impact on the development of intentions, they found that goal orientation; metacognitive choice and metacognitive experience are confirmed to have a positive relationship with entrepreneurial intentions. The absence of relationship between cognitive adaptability and entrepreneurial intention may be a result of the preference of a traditional and formal employment careers. In fact, Botha and Bignotti (2017) argued that individuals in developing countries are more prone to re-evaluate the choice of being self-employed and be more oriented towards formal employment as a response to survivalist motives.

In regards to the positive relationship between cognitive adaptability and entrepreneurial competencies, the literature did offer a clear response, our assumption was mainly based on the theoretical assumption that the entrepreneur's ability to be alert to the environment's risks and his interpretation of the environmental opportunities, his ability to gather various external as well as internal resources for the advantage of the firm and his ability to plan for the long-term success of the firm he constituted are determined as key factors and determinants of performance. Such factors involve planning, monitoring and evaluation, which are at the core metacognitive functioning. From the above, the more cognitively adaptive the individual is, the more he is likely to develop, and successfully apply the acquired entrepreneurial competencies according to the requirements of the context.

In fact, our results showed that cognitive adaptability has a strong, positive and significant impact on the entrepreneurial competencies of Tunisian students, same result was presented for the metacognitive dimensions. Such insights are a response to the absence of theoretical interpretations on such relationship. Our results are thus, a starting point showing the relevance of developing cognitive adaptability within students in a context of entrepreneurial competencies

acquisition. While Haynie provided proofs on the importance of cognitive adaptability in the entrepreneurial context since 2005, and how it is considered as a key resource for future entrepreneurial performance, the present dissertation showed that cognitive adaptability can be a key resource in a context of entrepreneurship education programs.

A second contribution is related to the importance of the integration of the moderating role of cognitive adaptability in the relationship between entrepreneurial competencies and entrepreneurial intention. Although no theoretical insights were provided by the literature on the moderating role of cognitive adaptability in the relationship between competencies and intentions, our assumptions were based on the fact that metacognition was considered as the result of high-level awareness in the learning process by planning learning, using appropriate skills, and choosing strategies for problem solving (Kim and Lee, 2018), recalling that cognitive adaptability is the aggregate of the five metacognitive dimensions (Haynie and Shepherd, 2009). Thus, metacognition is related to both present and future thinking and potential actions, but it is also concerned with regulating learning processes as well as being responsible for the selection of the appropriate skills to respond to a specific situation or to solve a given problem. Moreover, Ramocki (2007) explained that everything a person knows, have experienced and plan to incorporate in future thinking, involves metacognition. In fact, metacognition is important in every aspect of life and studying contexts, as it involves self-reflection on the individual's current position, potential actions and strategies, future goals and results (Fadel et al., 2015). In the same context, metacognition is a result of high-level awareness in the learning process by planning learning, using appropriate skills, and choosing strategies for problem solving (Kim and Lee, 2018). Thus, metacognition is related to both present and future thinking and potential actions, but it is also regulating the individual's learning process as well as being responsible for the selection of the appropriate skills to respond a specific situation or to solve a given problem.

Based on the aforementioned arguments, the assumption was tested and landed a positive result, where cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and the entrepreneurial intention of Tunisian students, and plays the role of pure moderator. Such result adds to the literature the importance of cognitive adaptability in the context of teaching for and about entrepreneurship as it helps develop entrepreneurial competencies and leads to a greater impact of the latter on the students' desire to become entrepreneurs.

Thus, it should be taking a great part when designing entrepreneurship education programs, and students should be able to effectively function in dynamic environments, and able to identify the appropriate knowledge and skills they acquired and need to acquire in relation to the goals they

have set for themselves and the professional career they aspire to start. The importance of such result remains in its impact on the efficiency of entrepreneurship education programs, as well as filling the gap between the institutional and governmental expectations and outcomes when it comes to efforts towards promoting entrepreneurship initiatives within young Tunisian students.

A third contribution was related to the negative impact of the environmental factors on the development of the desire to become entrepreneur within Tunisian students. In fact, while the literature suggested that role models and prior exposure to entrepreneurship are of a strong influence on the positive perception of the entrepreneurial career, decrease the fear of failure related to entrepreneurship and lead individuals to be more likely to develop entrepreneurial intentions (Linan, 2004; Ahmad et al., 2010; Malbena, 2014; Al Mamun et al., 2016; Amouri et al., 2016).

Empirical evidence showed that role models have a negative impact on the development of the entrepreneurial intention of Tunisian students, although it is contradictory to the arguments provided by the literature, it showed the importance of the view that roles models vehiculate to young students. Matter of fact, and taking into account the actual Tunisian context, role models such as models, friends and community vehiculate a subjective negative view of entrepreneurship as a career, on the other hand, students who do not know any entrepreneur are more prone to develop entrepreneurial intentions.

Moreover, empirical evidence showed that there is a negative association between the entrepreneurial intention and entrepreneurial competencies of Tunisian students and events, structures and organizations related to entrepreneurship while it was showed to have a positive impact on both variables. This is also related to the view that entrepreneurs vehiculate to young students, it also shows the importance of communication when it comes to support structures since few students know support structures and their activities. Appropriate communication strategies should be developed to improve the activity of support structures, being in line with the valorization of their proximity to the university and their collaborations.

A fourth contribution is related to the presentation of three principal guidelines for a higher efficacy of entrepreneurship education programs in Tunisian universities. These guidelines are based on the empirical findings and examples of suggestions from the literature on how entrepreneurship should be taught. In fact, three empirical evidences are, thus, to be taken into consideration when designing entrepreneurship educations programs in the Tunisian context:

- Promoting entrepreneurship within Tunisian students and nurturing their desire of becoming

entrepreneurs, thus developing entrepreneurial intention, is conditioned by their perception of risk, where students with a positive perception of the risk related to becoming entrepreneur are more likely to become entrepreneurs as they consider it as an opportunity they should not miss. On the other hand, students who perceive risk as a threat are less likely to consider the possibility to become entrepreneurs as they are guided by the fear of failure.

- Students who acquired skills related to entrepreneurship are more likely to consider entrepreneurship as a future career, still, there is an urgent need to provide them with a training program that responds best to their specific needs, as well as their entrepreneurial experience, as well as working on the collaboration between universities and entrepreneurship support structures and valorizing the physical proximity and the added value that it can offer to students.
- Cognitive adaptability plays a major role in developing entrepreneurial competencies and strengthens the positive relationship between entrepreneurial competencies and entrepreneurial intentions. Integrating cognitive adaptability when designing entrepreneurship education may increase the efficiency of the present methods used to promote entrepreneurship within students.

A training program taking into account such pillars may land positive consequences such as improving the students' perception of entrepreneurship as a career and providing them with the appropriate knowledge and skills, guaranteeing future entrepreneurial performance and reducing by such important barriers to entrepreneurship such as the fear of failure.

In fact, and as suggested by Fayolle (2013, p.98), entrepreneurship education should be conceived as a "factory designed to produce (future) entrepreneurs capable of thinking, acting and making decisions in a wide range of situations and contexts". Such capacities can be obtained as a result of developing the students' metacognitive abilities, making them cognitively adaptive in their learning, and when facing changing environments.

2.2. Methodological implications

To be able to respond to the research problem, data was collected from Tunisian students in the final semester of their third year of university studies expecting to obtain their diploma in few months through a questionnaire constructed on measurement scales provided by the literature and through two methods; face-to-paper and an online. Questionnaires that are badly filled or missed responses were eliminated and data was coded.

Measurement scales: The measurement scales were adopted from the literature based on their reliability. All measurements were found to be reliable for all variables except for the opportunity recognition competency which scored a value of 0.563 of Cronbach's alpha. Such value was considered as poor but acceptable according to the rule of thumb of George and Mallery (2003) and Nunnally (1967) for a research early stage. Most importantly opportunity recognition was kept among the dimensions of entrepreneurial competencies because of its importance in the entrepreneurial field, as it considered as a central competency to be an entrepreneur.

All the scales used to assess the conceptual model were presented in the fifth chapter, where the entrepreneurial intention, considered to be the dependent variable was operationalized through a ten items scale provided by Thompson (2009). Moreover, cognitive adaptability was operationalized through the MAC scale composed of thirty-six measuring the five metacognitive dimensions as for goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice and metacognitive monitoring. Finally, entrepreneurial competencies were operationalized through a thirty-one items' scale, where opportunity recognition was measured by a three items' scale used by Ozgen and Baron (2007) and Wang et al. (2013), risk-taking propensity was measured through a scale of seven items proposed by Nabi and Linan (2013), training and skills were measured by a scale of eleven items provided by Ho et al. (2018), innovativeness was measured by a scale of a four items developed by Bolton and Lane (2012) and adopted by Koe (2016), finally, information seeking was measured by a scale of five items provided by Vignesh and Vetrivel (2017).

Data analysis: Data analysis was performed in two phases, the first one was performed via the software IBM SPSS Statistics 22 and the second one was performed via the software SmartPLS 2.3.8. The two software programs were used to allow the performance of factor analysis, to test the hypothesis and assess the validity of the model.

Via the software IBM SPSS Statistics proper factorability was verified and granted with the obtention of a KMO index of 0.923 and the significance of the Bartlett test ($p < 0.001$). The EFA analysis confirmed the unidimensional nature of entrepreneurial intention. For the entrepreneurial competencies' dimensions, information seeking, innovativeness, opportunity recognition and training and skills were confirmed to unidimensional, while risk-taking propensity was divided in two factors according to the work of Nabi and Linan (2013), risk-taking as a threat and risk-taking as an opportunity. Finally, cognitive adaptability's dimensions, goal orientation, metacognitive choice and metacognitive monitoring were confirmed to unidimensional, while metacognitive

knowledge and metacognitive experience were both divided into two different factors. Since there was no theoretical proof or support to such factor analysis results, the dimensions were kept as unidimensional and will be tested more in depth in the following analysis.

The second software SmartPLS 2.3.8 was used to test the conceptual model in two phases by constructing two models M1 and M2 to respond to the principal research sections, thus, testing the relationship between entrepreneurial competencies and entrepreneurial intention, and the moderating role of cognitive adaptability in the latter relationship. Both measurement models M1 and M2 were assessed and were found to be lacking any discrimination issues, and verified their internal consistency reliability and validity. Moreover, both structural models were assessed, they both verified acceptable good fit indexes and were confirmed to hold an acceptable predictive relevance.

On the other hand, hypotheses testing landed, first, the confirmation of the positive relationship between entrepreneurial competencies and entrepreneurial intention. Secondly, the positive effect of cognitive adaptability on entrepreneurial competencies, and the absence of a relationship of cognitive adaptability on the entrepreneurial intention. Last but not least, the moderating role of cognitive adaptability was confirmed as to, cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and entrepreneurial intention.

Finally, the statistical study landed an unexpected output, which suggests the mediating role of entrepreneurial competencies in the relationship between cognitive adaptability and entrepreneurial intention.

Conclusion

The sixth chapter came as a closer for the present dissertation as it presented a mix and match between the results that are obtained and are proper to the Tunisian context and the literature related to the combination of the variables.

Matter of fact, the impact of entrepreneurial competencies on the entrepreneurial intention has been widely studied by the literature, although various authors showed the importance of innovativeness, opportunity recognition and information seeking, results showed that for the Tunisian context, the entrepreneurial intention of students is a product of their perception of risk, as the more a student perceives risk as an opportunity he or she should not miss, the more he or she is likely to develop entrepreneurial intentions. Moreover, the results go in line with the literature supporting the positive effect of training and skills on the development of entrepreneurial intentions within students, as prior exposure to knowledge for and about entrepreneurship helps students consider entrepreneurship as a potential future career. In fact, such exposure is one of the premises of entrepreneurship education.

On the other hand, while authors such as Urban (2012) and Botha and Bignotti (2017) found that at least one metacognitive dimension has an impact on the entrepreneurial intention of students, the Tunisian context provided contrary results. The reason for the absence of a relationship between cognitive adaptability and the entrepreneurial intention of students, is that the actual socio-economic environment leads students to re-evaluate their career choices into a more formal and traditional employment than launching a business venture.

Finally, prior exposure to entrepreneurial activities, in terms of having an entrepreneur within family members, friends or the community and having entrepreneur role models, has a negative impact on the dynamics between entrepreneurial competencies, entrepreneurial intentions and cognitive adaptability. Although the literature showed that role models and prior exposure are a crucial factor of a positive influence on the development of entrepreneurial intentions as well as the acquisition and development of entrepreneurial competencies (Linan, 2004; Ahmad et al., 2010; Malbena, 2014; Al Mamun et al., 2016; Amouri et al., 2016).

Through the aforementioned results, three pillars were defined as crucial guidelines when designing an entrepreneurship education program. The first axe is related to nurturing a positive perception of risk within students, the second is related to responding to the specific educational needs of students according to their experience and finally, the third axe is related to the necessity

to develop metacognitive abilities within students to provide them with a stable learning and a higher performance.

The research has of course limitations as every scientific work, that are related to the sample size, the geographical limitations, and the absence of gender comparison. For future researches, responding to the limitations can be a first path to follow. Moreover, it would be relevant to test the theoretical model in different contexts, as in a developed country to note the differences on the determinants of entrepreneurial intentions.

General conclusion

The present dissertation took as an objective to explore the impact of entrepreneurial competencies on the entrepreneurial intention of Tunisian students, taking into account their levels of cognitive adaptability. The positive impact of entrepreneurial competencies as a whole on the entrepreneurial intention was confirmed, as advanced by the literature. However, the competencies that did confirm their significant and strong effect were perceiving risk as an opportunity, perceiving risk as a threat and training and skills. In fact, the entrepreneurial intention of Tunisian students is, firstly, a product of their perception of risk, as a student who perceives the entrepreneurial inherent risk as a threat to avoid, based on the fear of failure, will be less likely to develop entrepreneurial intentions, on the other hand, a student who perceives risk as an opportunity he or she should not miss is more likely to develop entrepreneurial intentions. Moreover, the more skills are acquired the more students are likely to develop entrepreneurial intentions, taking into account the negative impact of the environmental factors, the university context is crucial for providing the appropriate set of skills and the training that responds better to the students' educational needs.

Contradictory to the literature prior exposure to entrepreneurship, either through entrepreneurship knowledge in terms of social network, or through entrepreneurship events and organizations is negatively associated with entrepreneurial intentions, entrepreneurial competencies and cognitive adaptability. Moreover, while role models were found to have a major impact on the development of the entrepreneurial intention (Ahmad et al. 2010; Al Mamun et al., 2016), the results showed that role models in the Tunisian context, perform a negative impact. Such negative association is a product of the current socio-economic environment and the volatility of the political environment (Matta et al., 2016). Responding to the calls of Urban (2012) and Botha and Bignotti (2017) to explore the relationship between cognitive adaptability and the entrepreneurial intention, which they considered to be under researched, our research showed that there is no relationship between cognitive adaptability and the entrepreneurial intention of Tunisian students, and we suggested that the reasons behind such absence could be due to the preference of a more formal and traditional employment, the absence of a clear business idea to be processed with the presence of the desire of becoming an entrepreneur or the re-evaluation of the potential career alternatives in the light of the current socio-economic environment (Botha and Bignotti, 2017).

Besides, and to fill the gap in the literature related to the impact of cognitive adaptability on the entrepreneurial competencies of undergraduate students, the assumptions were confirmed as

cognitive adaptability seems to have a strong and positive impact on the entrepreneurial competencies on Tunisian students, showing by such the importance of developing their metacognitive abilities. In fact, students with developed metacognitive abilities are more likely to have a more stable learning and a higher performance in learning contexts (Mort-Bir, 2015).

An important result of the present research concerns the moderating role of cognitive adaptability, as it strengthens the positive relationship between entrepreneurial competencies and the entrepreneurial intention of Tunisian students. Cognitive adaptability was in fact found to be a pure moderator, as it interacts with entrepreneurial competencies and does not have any impact on the entrepreneurial intention of students. Such result supposes that cognitive adaptability is a crucial resource, on one hand, for the students to have an efficient learning and to the institutions to have recommendations as to what is important in entrepreneurship education.

The results provided and the theoretical implications led to various practical implications regarding entrepreneurship education. We suggested three important pillars to take into consideration when designing entrepreneurship education programs. The first pillar is related to nurturing the positive perception of risk within Tunisian students, by providing a realistic view of the entrepreneurial career and countering the negative effect of the environmental factors. The second pillar is related to focusing on the specific educational needs of the students to provide a more differentiated and efficient learning, still taking into account the importance of the interaction between the various target groups. Last but not least, it is very important to develop the metacognitive abilities of the students to offer them a more stable learning and the capacity to change decision policies in changing environments either in learning contexts or in entrepreneurial activities. Finally, it is crucial to valorize the role of entrepreneurship support structures and their physical proximity to universities as a clear effort from the government to encourage entrepreneurship initiatives within young Tunisian students. In fact, the government and the institutions can play a crucial role in promoting entrepreneurship in a more effective manner, by facilitating funding acquisition, reducing the burden of unnecessary bureaucratic measures and guiding educational institutions towards a more effective entrepreneurship education program.

All the above being said, the present dissertation responded to the research problem through answering the two research questions, as to, risk perception and training and skills, defined as entrepreneurial competencies, have an impact on the entrepreneurial intention of Tunisian students and cognitive adaptability strengthens the positive relationship between entrepreneurial competencies and the entrepreneurial intention of Tunisian students.

While the present research successfully provided answers and demonstrated that the entrepreneurial intention of Tunisian students is conditioned by their perceptions of risk and their skills, that cognitive adaptability strengthens the impact of entrepreneurial competencies on the entrepreneurial intention as well as verifying the robustness of the theoretical model through the various statistical analyses, various limitations are to be presented.

The sample size: although a sample of 314 gave the possibility to effectively perform the various statistical analyses in SmartPLS, a larger sample could provide further possibilities and more accuracy in the inferences made, but it requires longer periods of time and has elevated costs (Creswell and Creswell, 2018).

Geographical limitations: more than 97% of the respondents are from universities located in the capital, Tunis, and in Northern Tunisia. Although efforts were made to obtain responses from students that geographically more distant, only 3% of the respondents were studying in universities in the center and south Tunisia. A sample with geographical representation, thus, containing respondents from the various Tunisian regions could have provided more accuracy and would have landed more potency in regards to generalization of the theoretical model.

Focusing only on business students: business students were selected as the target population of the present research based on recommendations from the literature as explained in the fourth capital, regarding the choice of the target population. A sample with various curriculums, especially engineering studies would have provided even further insights on cognitive adaptability and entrepreneurial competencies, and their impact on the entrepreneurial intention.

Gender comparison: the sample obtained in the present research presented an imbalance between the two genders, with more than 69% women. Such unbalanced distribution did not allow a faire judgement based on gender. Moreover, for the fact that the present studies considered the target individuals on the basis of their studies and not in the basis of their gender, gender comparison did not take an important part of the analyses.

The present research provided theoretical and empirical evidences related to the factors that condition the entrepreneurial intention of Tunisian students. It also presented insights on the importance of the role of cognitive adaptability in a context of entrepreneurship educations programs within universities. Moreover, expected results such as the mediating role of entrepreneurial competencies in the relationship between cognitive adaptability and the

entrepreneurial intention opens doors for further exploration and investigation. The following suggestions can be retained for the continuity and enrichment of the present research:

Interest in comparative studies: the present research took the Tunisian context as its field of investigation. In fact, the specificities of the Tunisian context, starting from characteristics such as it being a post-revolutionary context, a developing country and taking into account the cultural factors, studies in different contexts, such as developed economies could offer more explanation regarding the role of cognitive adaptability in the relationship between entrepreneurial competencies and the entrepreneurial intention, as well as the exploration of what competencies condition or predict the development of the entrepreneurial intention within students. A longitudinal study to explain more in depth the formulation of entrepreneurial intentions and the development of entrepreneurial competencies in a context where cognitive adaptability is developed.

Test the applicability of recommended guidelines: the present research resulted in defining three principal pillars when considering the entrepreneurial intention of Tunisian students, applying and evaluating the outcomes of entrepreneurship education programs based on the latter pillars could land answers regarding their applicability and their efficacy. Moreover, it could be a serious commitment towards defining the role of cognitive adaptability and metacognition in general in learning context and if they, as suggested by the literature, can effectively have an impact on improving students' performance and stabilize their learning.

Exploration of the mediating role of entrepreneurial competencies in the relationship between cognitive adaptability and entrepreneurial intentions: the mediating role of entrepreneurial competencies was presented in the results of the statistical analyses made in the present research. Although such result could explain and remediate to the absence of relationship between cognitive adaptability and the entrepreneurial intention of students, the positivist position of the research did not allow further exploration since there are not theoretical proof of such relationship.

Analysis based on gender: Authors such as Botha and Bignotti (2017) argued that traditional gender stereotypes and lack of entrepreneurial knowledge could lead to less interest in entrepreneurship from female students. Such suggest that comparing the development of entrepreneurial intention on the basis of gender could land further insights on individual differences and how culture related to gender roles interferes with the students' decision to become entrepreneurs. Such analysis could lead also to exploring the development of cognitive adaptability and if it is conditioned by the student's gender.

Bibliography

Published articles

- Abdennadher S. and Boudabbous S., (2014). “Rôle du parcours scolaire dans l’acte entrepreneurial : cas du contexte tunisien”. *Recherches & éducations*, 12 | octobre 2014. URL : <http://journals.openedition.org/rechercheseducations/2284>
- Ahmed, I., Nawaz, M.M., and Ahmad, Z. (2010), “Determinants of students’ entrepreneurial career intentions: Evidence from business graduates”. *European Journal of Social Science*. 15(2); 14-22
- Ajzen, I. 1991, “The Theory of Planned Behavior”, *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, pp. 179-211.
- Al Mamun A., Nawi B.C.N., Dewiendren A., Shamsudin S. (2016), “Examining the effects of entrepreneurial competencies on students’ entrepreneurial intention”, *Mediterranean Journal of Social Sciences* MCSER Publishing, Rome-Italy ; Vol 7 No 2 March 2016,ISSN 2039-2117 (online), ISSN 2039-9340 (print), Doi:10.5901/mjss.2016.v7n2p119.
- Alvi H.F., Prasad A.,Segarra P.(2017). “The Political Embeddedness of Entrepreneurship in Extreme Contexts: The Case of the West Bank”. *Journal of Business Ethics*. 1-14. 10.1007/s10551-017-3637-9.
- Amouri, A., Sidrat, S., Boudabbous, S., and Boujelbene, Y. (2016). “Effects of Role Models on Developing Entrepreneurial Intention among Graduate Students in Tunisia”, *IOSR Journal of Business and Management (IOSR-JBM)*. e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 18, Issue 7 .Ver. III (July 2016), PP 73-80 www.iosrjournals.org. <https://doi.org/10.9790/487X-1807037380>
- Antonicic, J. A., Antonicic, B., Gantar, M., Hisrich, R. D., Marks, L. J., Bachkirov, A. A., Kakkonen, M.-L. (2018). “Risk-Taking Propensity and Entrepreneurship: The Role of Power Distance”. *Journal of Enterprising Culture*, 26(01), 1–26. <https://doi.org/10.1142/s0218495818500012>
- Arasti Z, Kiani Falavarjani M, Imanipour N. (2012), “A Study of Teaching Methods in Entrepreneurship Education for Graduate Students”. *Higher Education Studies* 2012; 2(1): 2–10. Persian.
- Asyraf W., M. (2014). “Hierarchical component using reflective-formative measurement model in partial least square structural equation modeling (PLS-SEM)”. *International Journal of Mathematics and Statistics Invention (IJMSI)*, 2(2), 55–71.
- Auplat C. (2006). “Do NGOs influence entrepreneurship? ; Insights from the developments of biotechnologies and nanotechnologies”. *Society and Business Review*, Vol. 1 No. 3, pp. 266-279 DOI: <http://dx.doi.org/10.1108/17465680610706337> .Copyright © 2006, Emerald Group Publishing Limited
- Amanjee, B., Crous, F., and Crafford, A. (2006). *Towards validating a framework of adaptive schemata for entrepreneurial success*. *SA Journal of Industrial Psychology*, 32(3). doi:10.4102/sajip.v32i3.434

- Bae, T. J., Qian, S., Miao, C. and Fiet, J. O. (2014), “The Relationship Between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review”. *Entrepreneurship Theory and Practice*, 38: 217–254. doi:10.1111/etap.12095,
- Bandura, A. (2001). “Social cognitive theory: an agentic perspective”, *Annual Review of Psychology*, 52(1), 1-26.
- Bartram D. (2005) «The Great Eight Competencies: A Criterion-Centric Approach to Validation », *Journal of Applied Psychology*, Vol. 90, No. 6, 1185–1203.
- Bécharde J-P. et D. Grégoire (2005), “Entrepreneurship Education Research Revisited: the case of Higher Education”, *Academy of Management Learning and Education*. Vol. 4 n° 1, pages 22-43.
- Bennett, R. (2006). “Business lecturers' perception of the nature of entrepreneurship”, *International Journal of Entrepreneurial Behavior and Research*. 12(3). 165 – 188. <http://dx.doi.org/10.1108/13552550610667440>
- Bird B. J. (1992), “The operation of intentions in time: the emergence of the new venture”, *Entrepreneurship theory and practice*, Fall 1992.
- Blakey, E., and Spence, S. (1990). “Developing Metacognition”. *ERIC Digest*. ERIC Identifier: ED327218, 1990-11-00; ERIC Clearinghouse on Information Resources Syracuse NY. <https://eric.ed.gov/?id=ED327218> (Last viewed 29/01/2018)
- Bosma, N. Hessels, J. Schutjens, V., Van Praag, M., and Verheul, Ingrid, (2012) “Entrepreneurship and Role Models”. *Journal of Economic Psychology*, Vol. 33, No. 2, 2012. Available at SSRN: <https://ssrn.com/abstract=1803091>
- Botha, M., and Bignotti, A. (2017). “Exploring moderators in the relationship between cognitive adaptability and entrepreneurial intention: findings from South Africa”. *International Entrepreneurship and Management Journal*. <https://doi.org/10.1007/s11365-017-0437-8>
- Botha, M., Carruthers, T., J., and Venter, M.,W., (2019), “The relationship between entrepreneurial competencies and the recurring entrepreneurial intention and action of existing entrepreneurs”. *Southern African Journal of Entrepreneurship and Small Business Management*. 11(1), a214. <https://doi.org/10.4102/sajesbmv11i1.191>.
- Brandstatter, V., Heimbeck, D., Malzacher, J. T., and Frese, M. (2003), “Goals need implementation intentions: The model of action phases tested in the applied setting of continuing education”; *European Journal of Work and Organizational Psychology*, 12(1), 37–59.
- Brännback, M. Krueger, N.; Carsrud, A.; and Elfving, J. (2007) “ “trying” to be an entrepreneur? A goal-specific” challenge to the intentions model”, *Frontiers of Entrepreneurship Research*: Vol. 27: Iss. 6, Article 8. Available at: <http://digitalknowledge.babson.edu/fer/vol27/iss6/8> (last seen 07/01/2017).
- Broonen J. P. (2013), “Des intentions aux actes: la volition en conseil en orientation”, *L'orientation scolaire et professionnelle* [online], 39/1 - 2010, URL:<http://osp.revues.org/2493> ; DOI : 10.4000/osp.2493

- Bruyat C., Julien P.A., (2001), “Defining the field of research in entrepreneurship”, *Journal of Business Venturing*, Volume 16, Issue 2, 2001,Pages 165-180,ISSN 0883-9026, [https://doi.org/10.1016/S0883-9026\(99\)00043-9](https://doi.org/10.1016/S0883-9026(99)00043-9).
- Buana, Y. (2016). “Mapping the phenomenon of students’ entrepreneurial intention”. *Binus Business Review*, 7(2), 117-123. <http://dx.doi.org/10.21512/bbr.v7i2.1745>.
- Chan, R., Shum, D., Toulopoulou, T., and Chen, E. (2008). “Assessment of executive functions: Review of instruments and identification of critical issues”. *Archives of Clinical Neuropsychology*, 23, 201-216.
- Cheng, M.I., Dainty, A. R. J., and Moore, D. R. (2003). “The differing faces of managerial competency in Britain and America”. *Journal of Management Development*, 22(6), 527–537.
- Chevalier, N. (2010). “Les fonctions exécutives chez l’enfant : Concepts et développement”. *Canadian Psychology*, 51(3), 149–163. <https://doi.org/10.1037/a0020031>
- Choi, M. J., and Jeong, D. Y. (2013). “A Study on the Effect of Metacognition to the Information-Seeking Behavior of Undergraduate Students”. *Journal of the Korean society for Library and Information Science*; Volume 47 Issue 2 / Pages.75-101 <https://doi.org/10.4275/KSLIS.2013.47.2.075>
- Cox, K., C., and Castrogiovanni, G. (2016). “Entrepreneurial Alertness, Metacognition, and Opportunity Identification”, *Academy of Management Proceedings*. Vol. 2016, No. 1. <https://doi.org/10.5465/ambpp.2016.15008abstract>
- Curran J., Stanworth J., (1989). “Education and Training for Enterprise: Problems of Classification, Evaluation, Policy and Research”, *International Small Business Journal*, Vol 7, Issue 2, pp. 11 – 22; First Published January 1, 1989, <https://doi.org/10.1177/026624268900700201>.
- David A., K. (2004) “Entrepreneurship education: can business schools meet the challenge?”, *Education and Training*, Vol. 46 Issue: 8/9, pp.510-519, <https://doi.org/10.1108/004009104105>.
- Davidsson, P., Low M., and Wright, M. (2001). “Editors’ introduction: Low and MacMillan ten years on – Achievements and future directions for entrepreneurship research”. *Entrepreneurship Theory and Practice*, 25 - 4, 5-16.
- Dehghanpour F., A. (2013),” The process of impact of entrepreneurship education and training on entrepreneurship perception and intention”, *Education and Training*, Vol. 55 Issue 8/9 pp. 868 – 885. <http://dx.doi.org/10.1108/ET-04-2013-0053>
- Devika, and Singh, R. (2019). “Influence of metacognitive awareness on engineering students’ performance: a study of listening skills”. *Procedia Manufacturing*, 31, 136–141. <https://doi.org/https://doi.org/10.1016/j.promfg.2019.03.021>
- Duman, B. (2018). “The Relationship between the Entrepreneurship Characteristics and Metacognitive Awareness Levels of Pre-Service Teachers”. *Journal of Education and Training Studies*, 6(5), 152–159. <https://doi.org/10.11114/jets.v6i5.3080>

- Edewor, P., A., Abimbola, O., H., and Ajayi, M. P. (2014). “An Exploration of Some Sociological Approaches to Entrepreneurship”, *European Journal of Business and Management*. www.iiste.org ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.6, No.5,2014, 18–24.
- Elfving J., Carsrud A.L., Brännback M. (2009), “Understanding the Entrepreneurial Mind”, *International Studies in Entrepreneurship* .24, DOI 10.1007/978-1-4419-0443-0_2
- Fairlie, R. W., and Holleran, W. (2011). “Entrepreneurship training, risk aversion and other personality traits: Evidence from a random experiment”. *Journal of Economic Psychology journal*. 33 (2012) 366–378. <https://doi.org/10.1016/j.joep.2011.02.001>
- Fayolle A. and Verstraete T. (2005) “Paradigmes et entrepreneuriat”. *Revue de l'entrepreneuriat*. volume 4 , num 1, 2005.
- Fayolle A., Gailly B., Lassas-Clerc, N., (2006) “Assessing the impact of entrepreneurship education programs: a new methodology”, *Journal of European Industrial Training*, Vol. 30 Issue: 9, pp.701-720, <https://doi.org/10.1108/03090590610715022>.
- Fedakova, D., Studena, I., and Kozarova, Z. (2018). “Entrepreneurial risk perception and entrepreneurial intention of employed and unemployed in the context of entrepreneurial individual resources”. *Individual and Society*. Institute of Social Sciences., Vol. 21, No. 2, pp. 31-46.
- Fernández-Serrano, J., and Liñán, F. (2014). “Culture and Entrepreneurship: The Case of Latin America”. *Innovar*, vol. 24, special edition 2014, 169-180.
- Filion L. J. (1997), “From Entrepreneurship to Entreprenology”. *Journal of Enterprising Culture*, vol. 6, no 1 (March 1998) : 1-23
- Fishbein M., and Ajzen, A. (1975). “Beliefs, attitudes, intentions, and behavior: An introduction to theory and research”. Reading, MA: Addison Wesley.
- Flavell, J. H. (1979). “Metacognition and Cognitive Monitoring A New Area of Cognitive - Developmental Inquiry”. *American Psychologist*, 34(10), 906–911. <https://doi.org/10.1037/0003-066x.34.10.906>
- Frese M. (2009), “Toward a Psychology of Entrepreneurship — An Action Theory Perspective” *Foundations and Trends in Entrepreneurship* Vol. 5, No. 6. 437–496 c 2009 DOI: 10.1561/03000000028.
- Gakova Y. V., and Nikitina E. K (2014) “competency - based approach to effective performance of future competent and creative translators of professionally oriented texts” *European Scientific Journal*. March 2014 edition vol.10, No.8 ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431.
- Greenberger D. B., Sexton D. L., (1988), “An interactive model of new venture initiation”, *Journal of Small Business Management*, July 1988, vol. 26, n° 3, p.1-7
- Hamid, F., S., Rangel, G., J., Taib, F., M.; and Thurasamy, R. (2013) “The relationship between risk propensity, risk perception and risk-taking behaviour in an emerging market,” *International Journal of Banking and Finance*. Vol. 10: Iss. 1, Article 7.

- Hamidi, D., Wennberg, K., and Berglund, H. (2008), “Creativity in entrepreneurship education”, *Journal of Small Business and Enterprise Development*, Vol. 15 No. 2, pp. 304-20. <https://doi.org/10.1108/14626000810871691>
- Hamilton R. T. and Harper D. A. (1994), “The Entrepreneur in Theory and Practice”. *Journal of Economic Studies* Vol. 21 No. 6, 1994, pp. 3-18.
- Hashim N., A., Raza S., and Minai M., S. (2018). “Relationship between entrepreneurial competencies and small firm performance: are dynamic capabilities the missing link ?” *Academy of Strategic Management Journal*. Volume 17, Issue 2, 2018. 17(2), 1–10.
- Hayton, J.C. and McEvoy, M. (2006), “Guest editor’s note”, *Human Resource Management*, Vol. 45 No. 3, pp. 291-4.
- Heath, M (2009) “Cognition in Aristotle's Poetics. Mnemosyne”, 62 (1). 51 – 75, Pawlik p.and d’Ydewalle G. (Eds.) *Psychological Concepts: An International Historical Perspective*. Hove, UK: Psychology Press, 2006.
- Hernandez É., M. (1995), “L'entrepreneuriat comme processus.” *Revue internationale P.M.E.* 81 (1995): 107–119.
- Hernandez É., M., (2006). “Les trois dimensions de la décision d'entreprendre”, *Revue française de gestion* 2006/9 (n° 168-169), p.337-357. DOI 10.3166/rfg.168-169.337-357.
- Hmieleski, K.M. and Corbett, A.C. (2006), “Proclivity for improvisation as a predictor of entrepreneurial intentions”, *Journal of Small Business Management*, Vol. 44, Issue 1, pp.45-63.
- Hoelscher, Mark, (2012), “Entrepreneurship Education: Lessons Learned”, *Journal of Women's Entrepreneurship and Education*, issue 1-2, p.126-129, <https://EconPapers.repec.org/RePEc:ibg:jwejou:y:2012:i:1-2:p:126-129>.
- Holland, Daniel V. (2006) “responding to adversity: a metacognitive approach to resilience”, *Frontiers of Entrepreneurship Research*: Vol. 26: Iss. 8, Article 4. Available at: <http://digitalknowledge.babson.edu/fer/vol26/iss8/4>
- Honig, B. (2004). “A contingency model of business planning”, *Academy of Management Learning and Education*. 3(3). 258–273.
- Hooper, D., Coughlan, J. and Mullen, M. R. (2008). “Structural Equation Modelling: Guidelines for Determining Model Fit.” *The Electronic Journal of Business Research Methods*. Volume 6 Issue 1 2008, pp. 53 - 60, available online at www.ejbrm.com
- Hurst, D., MacDougall, S., Pelham, C. (2008) “Aligning personal and entrepreneurial vision for success: The entrepreneur counseling model of the Acadia Centre for Social and Business Entrepreneurship”, *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 2 Issue: 4, pp.367-386, DOI:10.1108/17506200810913926.
- Iacob, S., Popescu, C., and Ristea, A. L. (2015). “The Role of Epistemological Paradigms in Research in Social Sciences and Humanities”. *Theoretical and Applied Economics*, Volume XXII (2015), No. 4(605), Winter, pp. 247-252.
- Iakovleva, T. and Kolvereid, L. (2009) ‘An integrated model of entrepreneurial intentions’, *International Journal of Business and Globalization*, Vol. 3, No. 1, pp.66–80.

- Ireland, R. D., Webb, J. W., and Coombs, J. E. (2015). "Theory and Methodology in Entrepreneurship Research. Research Methodology in Strategy and Management", *Research Methodology in Strategy and Management*. DOI:111-141. doi:10.1016/s1479-8387(05)02006-0
- Jaccard, J., Dodge, T., and Guilamo-Ramos, V. (2005). "Metacognition, Risk Behavior, and Risk Outcomes: The Role of Perceived Intelligence and Perceived Knowledge". *Health Psychology*, 24(2), 161–170. doi:10.1037/0278-6133.24.2.161
- Jennings, C. and Wargnier, J. (2010). "Experiential learning: A way to develop agile minds in the knowledge economy?", *Development and Learning in Organizations: An International Journal*, Vol. 24, Issue. 3, pp. 14-
- Johannisson, B., Landstrom, H. and Rosenberg, J.. (1998). "University Training for Entrepreneurship - An Action Frame of Reference". *European Journal of Engineering Education*. 23. 477-496. 10.1080/03043799808923526.
- Johannisson, Bengt and Anders Nilsson (1989), "Community Entrepreneurship – Networking for Local Development." *Entrepreneurship and Regional Development* 1(1),1–19.
- Johnsen C., J., Sørensen, B., M., (2017). "Traversing the fantasy of the heroic entrepreneur". *International Journal of Entrepreneurial Behavior and Research*, Vol. 23 Issue: 2, pp.228-244, doi: 10.1108/IJEER-01-2016-0032.
- Johnston, A. (2014). "Rigour in research: theory in the research approach". *European Business Review*, 26 (3). pp. 206-217.
- Kamariah I. et al. (2015), "Entrepreneurial Intention, Entrepreneurial Orientation of faculty and students towards Commercialization", *Procedia - Social and Behavioral Sciences*. 181 (2015) 349 – 355.
- Kamaruddeen M., A., Yusof, N., and Said, I. (2010). "Innovation and Innovativeness: Difference and Antecedent Relationship". *The IUP Journal of Architecture* Vol. 2, No. 1, pp. 66-78, SSRN: <https://ssrn.com/abstract=1564646>
- Karabulut tuğba (2016) "Personality Traits on Entrepreneurial Intention in Procedia" - *Social and Behavioral Sciences* 229:12-21 · DOI:10.1016/j.sbspro.2016.07.109 ·
- Karatas-Özkan, M. (2017). "Diversity Dimensions of Entrepreneurship: Addressing Multiple Strands of Diversity in Entrepreneurship Research. In Management and Diversity". *Emerald Publishing Limited*. Vol. 4, pp. 10–209. <https://doi.org/doi:10.1108/S2051-233320160000004011>.
- Kaur H. and Bains A. (2013) "Understanding the Concept of Entrepreneur Competency". *Journal of Business Management and Social Sciences Research*, 2 (11), 31 -33.
- Kiganane, L., and Kyalo, T., (2015). "Examining the Pedagogy of Entrepreneurship Education and its Contribution in Creating Entrepreneurship Propensity in Kenya ". *International Journal of Science and Research (IJSR)* ISSN: 2319-7064.
- Kim, D., and Lee, D. (2018). "Impacts of Metacognition on Innovative Behaviors: Focus on the Mediating Effects of Entrepreneurship". *Journal of Open Innovation: Technology, Market, and Complexity*, 4(2), 18. <https://doi.org/10.3390/joitmc4020018> .

- Koe W.L. (2016), “The relationship between Individual Entrepreneurial Orientation (IEO) and entrepreneurial intention”, *Journal of Global Entrepreneurship Research* (2016) 6:13 DOI 10.1186/s40497-016-0057-8
- Krueger, Jr. and Norris F. (2007), “What Lies Beneath? The Experiential Essence of Entrepreneurial Thinking”, *Entrepreneurship theory and practice*. January 2007.
- Krueger, Norris, Jr., and Peter R. Dickson (1994), “How Believing in Ourselves Increases Risk Taking: Perceived Self-Efficacy and Opportunity Recognition”. *decision Sciences*, 25 , 385–400.
- Kusmintarti, A., Thoyib, A., Maskie, G., and Ashar, K. (2016). “Entrepreneurial Characteristics as a Mediation of Entrepreneurial Education Influence on Entrepreneurial Intention”. *Journal of Entrepreneurship Education*, 19(1), 24-37.
- Lai, E. R. (2011). “Metacognition: A Literature Review”. *Research Reports, always learning, Pearson*, 41. <https://doi.org/10.2307/3069464>
- Lazar N. and Paul G. (2015), “Entrepreneurial Competencies In A Business Enterprise – An Over View”. *International journal of scientific research* Vol4, Issue 1, January 2015 ISSN No 2277 – 8179.
- Lazar N. and Paul G. (2015), “Entrepreneurial Competencies In A Business Enterprise – An Over View”. *International journal of scientific research* Vol4, Issue 1, January 2015 ISSN No 2277 – 8179.
- Lebusa M J (2014), “Entrepreneurial Intention in Advanced Undergraduate Students”; *Mediterranean Journal of Social Sciences* MCSER Publishing, Rome-Italy Vol 5 No 27 ISSN 2039-2117. ISSN 2039-9340 (print)
- Lee, S.M., Chang, D. and Lim, S. (2015), “Impact of Entrepreneurship Education: A Comparative Study of the U.S. and Korea” *The International Entrepreneurship and Management Journal* 1: 27. <https://doi.org/10.1007/s11365-005-6674-2>
- Liang, C.-T., Lee, J.-L., and Liang, C. (2015). “Interaction of psychological factors in shaping entrepreneurial intention among computer and electrical engineering students”, *Journal of Entrepreneurship Management and Innovation (JEMI)*, Volume 11, Issue 2, 2015: 5-29
- Lima F., Bruni, Adriano L. (2017). “Metacognition in entrepreneurs: psychometric diagnostic associated to age and sex”. *REAd. Revista Eletrônica de Administração* (Porto Alegre), 23(spe), 345-370. <http://dx.doi.org/10.1590/1413-2311.178.67690>.
- Lin S., P. (2015) “Raising Public Awareness: The Role of the Household Sector in Mitigating Climate Change”. *International Journal of Environmental Research and Public Health*. 12, 13162-13178; doi:10.3390/ijerph121013162.
- Liñán F. (2007), “The role of entrepreneurship education in the entrepreneurial process”, *Handbook of research in entrepreneurship education* 1, 230-247.
- Liñán F., and Chen Y., W. (2009), “Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions”, *Entrepreneurship theory and practice*.
- Liñán, F. (2004). “Intention-Based Models of Entrepreneurship Education”. *Piccola Impresa / Small Business*. 2004. 11-35.

- Llouga S. N., Mouloungni A. N. and Sahut, J. (2014). "Entrepreneurial intention and career choices: the role of volition," *Small Business Economics*, Springer, vol. 42(4), pages 717-728, April.
- Loué C. and Baronet, J. (2012). "Toward a new entrepreneurial skills and competencies framework: a qualitative and quantitative study". *International Journal of Entrepreneurship and Small Business*, 17 (4), 455-477,
- Loué C. and Majdouline, I. (2015). "Les compétences de l'entrepreneur marocain : validation quantitative d'un référentiel ", *Revue internationale PME - RIPME*.
- Lyons, E., and Laurina Z. (2017). "The Impact of Entrepreneurship Programs on Minorities." *American Economic Review*, 107(5): 303-07.DOI: 10.1257/aer.p20171008.
- Malebana M. J. (2014). "The Effect of Knowledge of Entrepreneurial Support on Entrepreneurial Intention", *Mediterranean Journal of Social Sciences*, MCSER Publishing, Rome-Italy. <https://doi.org/10.5901/mjss.2014.v5n20p1020>
- Man T., W., Lau T., and Snape E. (2008). "Entrepreneurial competencies and the performance of small and medium enterprises: an investigation through a framework of competitiveness". *Journal of Small Business and Entrepreneurship* 21(3): 257–276.
- Man, T., W., Y., Lau, T., and Chan, K., F. (2002). "The competitiveness of small and medium enterprises - A conceptualization with focus on entrepreneurial competences". *Journal of Business Venturing* 17, 123-142.
- Maresch D. et al. (2016), "The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs" *Technological Forecasting and Social Change*; 104 (2016) 172–179 <http://dx.doi.org/10.1016/j.techfore.2015.11.0060040-1625>. Elsevier.
- Mcdonald, S., Gan, B., C., Fraser, S., S., Oke, A. And Anderson, A., R. (2015). "A review of research methods in entrepreneurship 1985-2013". *International Journal of Entrepreneurial Behavior and Research*, 21 (3), pp. 291 – 315.
- McMullen J., S., and Shepherd D., A. (2006). "Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur", *Academy of Management Review* 2006, Vol. 31, No. 1, 132–152.
- Mellouli, M., Zammit, N., Limam, M., Elghardallou, M., Mtiraoui, A., Ajmi, T., and Zedini, C. (2018). "Prevalence and Predictors of Internet Addiction among College Students in Sousse, Tunisia". *Journal of Research in Health Sciences*, 18(1), e00403. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/29445049>
- Mitchell, R. K., Smith, B., Seawright, K. W. and Morse, E. A. (2000). "Cross-cultural cognitions and the venture creation decision". *Academy of Management Journal*, 43(5), 974-993.
- Mitchelmore S., Rowley J. (2010) "Entrepreneurial competencies: a literature review and development agenda", *International Journal of Entrepreneurial Behavior and Research*, Vol. 16 Issue: 2, pp.92-111, DOI:10.1108/13552551011026995.
- Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., and Wager, T. D. (2000). "The Unity and Diversity of Executive Functions and Their Contributions to Complex

- “Frontal Lobe” Tasks: A Latent Variable Analysis”. *Cognitive Psychology*, 41(1), 49–100. <https://doi.org/10.1006/cogp.1999.0734>.
- Mohsen et al. (2017) “assessing the role of entrepreneurial competencies on innovation performance: a partial least squares (pls) approach”, *The Journal of Business Inquiry*, 16, Issue 1 (Special Issue), ISSN 2155-4072.
- Morris, M. H., Shirokova, G. and Tsukanova, T. (2017). “Student entrepreneurship and the university ecosystem: a multi-country empirical exploration”. *European Journal of International Management*, 11(1), 65. <https://doi.org/10.1504/ejim.2017.081251>
- Moshman, D. (2017). “Metacognitive Theories Revisited”. *Educational Psychology Review*, 30(2), 599–606. <https://doi.org/10.1007/s10648-017-9413-7>.
- Mulder, M., Gulikers, J., Biemans, H., and Wesselink, R. (2009). “The new competence concept in higher education: error or enrichment?”. *Journal of European Industrial Training*, 33(8/9).
- Mwasalwiba Ernest Samwel, (2010) “Entrepreneurship education: a review of its objectives, teaching methods, and impact indicators”, *Education and Training* , Vol. 52 Issue: 1, pp.20-47, <https://doi.org/10.1108/00400911011017663>.
- Nazarieh M. (2016), “A brief history of metacognition and principles of metacognitive instruction in learning”; *BEST: Journal of Humanities, Arts, Medicine and Sciences (BEST: JHAMS)* Vol. 2, Issue 2, Dec 2016, 61-64.
- Nefzi, N. (2018). “Fear of failure and entrepreneurial risk perception”. *International Journal of Entrepreneurial Knowledge*, 6(2), 45-58. Doi: 10.2478/IJEK-2018-0013.
- Nová, J. (2015) “Developing the entrepreneurial competencies of sport management students”. *Social and Behavioral Sciences*. 174, 2015, 3916 – 3924.
- Nowiński W., Haddoud, M., Y., (2019). “The role of inspiring role models in enhancing entrepreneurial intention”. *Journal of Business Research*, Volume 96, 2019, p. 183-193, ISSN 0148-2963, <https://doi.org/10.1016/j.jbusres.2018.11.005>.
- Obschonka, M. and Stuetzer, M. (2016). “Integrating Psychological Approaches to Entrepreneurship: The Entrepreneurial Personality System (EPS)”. *Small Business Economics*. 49. 10.1007/s11187-016-9821-y.
- Ozaralli N. and N. K. Rivenburgh (2016). “Entrepreneurial intention: antecedents to entrepreneurial behavior in the U.S.A. and Turkey”. *Journal of Global Entrepreneurship Research*. 6:3 DOI 10.1186/s40497-016-0047-x
- Paladan N. D.B.A. (2015). ”Business University Student Entrepreneurial Competencies : Towards Readiness for Globalization”. *Advances in Economics and Business* 3(9): 390-397, 2015 DOI: 10.13189/aeb.2015.030905.
- Paul J. and Shrivatava A. (2016), “Do young managers in a developing country have stronger entrepreneurial intentions? Theory and debate”. *International Business Review* 25 (2016) 1197–1210 <http://dx.doi.org/10.1016/j.ibusrev.2016.03.003> 0969-5931/ã 2016 Elsevier Ltd.

- Paul J., Shrivatava A. (2016), “Do young managers in a developing country have stronger entrepreneurial intentions? Theory and debate”, *International Business Review* (2016), <http://dx.doi.org/10.1016/j.ibusrev.2016.03.003>
- Peng Z. X., Lu G. and Kang H. (2012).”Entrepreneurial Intentions and Its Influencing Factors: A Survey of the University Students in Xi’an China”. *Creative Education*, Vol.3, supplement, 95-100.
- Peterman, N., E., and Kennedy, J. (2003), “Enterprise Education: Influencing Students’ Perceptions of Entrepreneurship”. *Entrepreneurship Theory and Practice*, 28: 129–144. doi:10.1046/j.1540-6520.2003.00035.x
- Phelan C., and Sharpley R. (2011) “Exploring Agritourism Entrepreneurship in the UK” *Tourism Planning and Development* 8(2):121-136 .
- Pihie, Z. A. L., Bagheri, A., and Sani, Z. H. A. (2013). “Knowledge of Cognition and Entrepreneurial Intentions: Implications for Learning Entrepreneurship in Public and Private Universities”. *Procedia - Social and Behavioral Sciences*, 97, 174–181. <https://doi.org/10.1016/j.sbspro.2013.10.219>
- Prabhu V. P. (2013). “Proactive Personality and Career Future: Testing a Conceptual Model and Exploring Potential Mediators and Moderators”. *American Journal of Management*. vol. 13(1) 2013.
- Priyanto, S., H., and Sandjojo, I. (2005). “Relationship between entrepreneurial learning, entrepreneurial competencies and venture success: empirical study on SMEs”. *International Journal of Entrepreneurship and Innovation Management*, 5(5-6), 454-468.
- Ramocki, S., P., (2007). “Metacognition and transfer: Keys to improving marketing education”. *Journal of Marketing Education*, 29(1), 18–24. <https://doi.org/10.1177/0273475306291469>
- Reed A., E., Mikels J., A., and Löckenhoff C., A. (2012). “Choosing with confidence: Self-efficacy and preferences for choice”. *Judgment and Decision Making*, Vol. 7, No. 2, pp. 173–180.
- Reyes, G., Mariano R., A., and Herrera M, N. (2018). “Personal Entrepreneurial Competencies and Entrepreneurial Intention of Non-Business Students Enrolled in an Introductory Entrepreneurship Course”. *Journal of Economics, Management & Agricultural Development*. Vol. 4, No. 1.
- Rezaei, S. (2017). “Entrepreneurial Competencies Benefiting Entrepreneurial Intention: Iranian Adults at Home and in the Diaspora”. *Iranian Entrepreneurship: Deciphering the Entrepreneurial Ecosystem in Iran and in the Iranian Diaspora*. https://doi.org/10.1007/978-3-319-50639-5_12
- Rezaei, Z., M., Hogan, M., O’Reilly, J., Cleary, B., and Murphy E. (2014) “Using Interactive Management to Identify, Rank and Model, Entrepreneurial Competencies as Universities’ entrepreneurship Curricula”, *Journal of entrepreneurship*, 2014 23: 57. 53.
- Romdhane, Y. B., and Amar, M. B. (2019). “Relationship between the Exchange Rate and Macroeconomic Instability Before and After the Tunisian Revolution”, *International Journal of Social Science and Economics Invention*, Volume 05, Issue 04, <https://doi.org/10.23958/ijsssei/vol05-i04/108>

- Sajilan, S., and Tehseen, S. (2019). "Network competence and firm performance: The mediating role of entrepreneurial innovativeness among Malaysian Chinese entrepreneurs of wholesale businesses". *Asian Academy of Management Journal*, 24, 187–201. <https://doi.org/10.21315/AAMJ2019.24.S1.13>
- Sajjad S I et al, (2012) "Impact of Culture on Entrepreneur Intention". *Information Management and Business Review* Vol. 4, No. 1, pp. 30-34, ISSN: 2220-3796.
- Salajeghe S., Sayadi S., Mirkamali K.S. (2014) "The Relationship between Competencies of Project Managers and Effectiveness in Project Management: A competency Model". *Management Research Report*. ISSN: 1444-8939 Vol.2 (4): PP. 4159-4167.
- Sánchez, J., C. (2011), "University training for entrepreneurial competencies: Its impact on intention of venture creation" *International Entrepreneurship and Management Journal*. 7:239–254 DOI 10.1007/s11365-010-0156-x.
- Sánchez, J., C. (2013), "The Impact of an Entrepreneurship Education Program on Entrepreneurial Competencies and Intention", *Journal of Small Business Management*, 51(3), pp. 447–465, Doi: 10.1111/jsbm.12025.
- Scharff, L., Draeger, J., Verpoorten, D., Devlin, M., Dvorakova, L. S., Lodge, J. M., and Smith, S. (2017). "Exploring Metacognition as Support for Learning Transfer. Teaching and Learning Inquiry": *The ISSOTL Journal*, 5(1) <https://doi.org/10.20343/teachlearninqu.5.1.6>
- Schlaegel C., and Koenig M. (2014) "Determinants of Entrepreneurial Intent: A Meta-Analytic Test and Integration of Competing Models". *Entrepreneurship theory and practice*. DOI: 10.1111/etap.12087.
- Schraw, G., and Moshman, D. (1995), "Metacognitive Theories". *Educational Psychology Review*. 7:4. Paper 40. <http://digitalcommons.unl.edu/edpsychpapers/40>
- Shenura S., Haile A., and Negash E. (2016) "Challenges Inhibiting the Flourishing of Entrepreneurial Competencies of MSE's in Jimma Zone, Ethiopia." *International Journal of Scientific and Research Publications*, Volume 6, Issue 2, February 2016 37 ISSN 2250-3153.
- Shepherd, D. A., Williams, T. A., Patzelt, H., (2015). "Thinking About Entrepreneurial Decision Making: Review and Research Agenda". *Journal of Management* Vol. 41 No. 1, 11–46. <https://doi.org/10.1177/0149206314541153>
- Sherman, P., Sebora, T., and Digman, L. (2008) "Experiential Entrepreneurship in the Classroom: Effects of Teaching Methods on Entrepreneurial Career Choice Intentions", *Journal of Entrepreneurship Education*. Vol. 11, pp. 29-42.
- Shima, N., Rani, A., Krishnan, K. S., Saidun, Z., and Ahmad, H. (2019). "The relationship between entrepreneurship education and entrepreneurial intention of universiti kuala lumpur – teknoputra alumni", *Humanities and Social Sciences Reviews* eISSN: 2395-6518, Vol 7, No 1, 2019, pp 147-155 <https://doi.org/10.18510/hssr>.
- Shippman J. S., Ash, R. A., Battista, M, Carr, L., Eyde, L. D., Hesketh, B., Kehoe, J. Pearlman, K., and Sanchez, J. I. (2000). "The practice of competency modeling". *Personnel Psychology*, 53, 703-740.

- Simon, M., Houghton, S. M., & Aquino, K. (2000). "Cognitive biases, risk perception, and venture formation: How individuals decide to start companies". *Journal of Business Venturing*, 15(2), 113–134.
- Sledzik, K. (2013). "Schumpeter's View on Innovation and Entrepreneurship". *SSRN Electronic Journal*. 10.2139/ssrn.2257783. p.131-132.
- Sniehotta F., F., Presseau J., and Araújo-Soares V. (2014) "Time to retire the theory of planned behavior", *Health Psychology Review*, 8:1, 1-7.
- Solesvik, M., Z. (2019). "Entrepreneurial competencies and intentions: the role of higher education". *Forum Scientiae Oeconomia*, Volume 7 . No. 1, 7(1). <https://doi.org/10.23762/FSO>
- Stewart, A. M. (1983). "Book Reviews: The Competent Manager - a Model for Effective Performance Richard E. Boyatzis Wiley, 1982", Isbn 0 471 09031 X. *Management Education and Development*, 14(2), 144–147. doi:10.1177/135050768301400208
- Taherdoost H. (2016). "Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research". *International Journal of Academic Research in Management (IJARM)*. Vol. 5, No. 2, 2016, Page: 18-27, ISSN: 2296-1747
- Thompson, E. R. (2009). "Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric". *Entrepreneurship: Theory and Practice*, 33(3), 669–694.
- Thrash, T., and Elliot, J., A. (2003). "Inspiration as a Psychological Construct". *Journal of personality and social psychology*. 84. 871-89. 10.1037/0022-3514.84.4.871.
- Trevor D., Kevin H. and Thia H. Downs, D. S., and Hausenblas, H. A. (2005). "The theories of reasoned action and planned behavior applied to exercise: a meta-analytic update". *Journal of Physical Activity and Health*, 2, 76-97.
- Trifiletti, E., Capozza, D., Pasin, A., & Falvo, R. (2009). "A validation of the Proactive Personality Scale". *TPM-Testing, Psychometrics, Methodology in Applied Psychology*, 16(2), 77-93.
- Tsakiridou H. Stergiou S. (2014) "Entrepreneurial Competences and Entrepreneurial Intentions of Students in Primary Education" *International Journal of Humanities Social Sciences and Education (IJHSSE)* Volume 1, Issue 9, pp. 106-117 ISSN 2349-0373 .
- Uladzimir K. and Foss L., "In Search of Alignment: A Review of Impact Studies in Entrepreneurship Education," *Education Research International*, vol. 2017, DOI:10.1155/2017/1450102.
- Urban, B. (2012). "Applying a metacognitive perspective to entrepreneurship: empirical evidence on the influence of metacognitive dimensions on entrepreneurial intentions". *Journal of Enterprising Culture*, 20(02), 203–225.
- Ustav S., Venesaar U., (2018) "Bridging metacompetencies and entrepreneurship education", *Education + Training*, Emerald Publishing Limited 0040-0912 DOI: doi.org/10.1108/ET-08-2017-0117.
- Valliere D. (2015) "An Effectuation Measure of Entrepreneurial Intent". *Procedia Social and Behavioral Sciences*, 169 (2015) 131 – 142 1877-0428. Elsevier Ltd.

- Vandergrift, L., Goh, C., C., M., Mareschal, C., J., and Tafaghodtari, M., H. (2006). “The metacognitive awareness listening questionnaire (MALQ): Development and validation”, *Language Learning*, 56:3, pp. 431–462.
- Venkataraman S. (2000) “The promise of entrepreneurship as a field of research” University of Maryland University of Virginia. *Academy of Management review*. Vol.25, No. 1,217-226.
- Volery T. et al, (2015), “Entrepreneur ambidexterity: A study of entrepreneur behaviors and competencies in growth-oriented small and medium-sized enterprises”, *International Small Business Journal* 2015, Vol. 33(2) 109–129.
- Wahab A., Mahmmud R.; Bin Bakar. (2015) “How do managerial competency and self-efficacy affect performance of university leaders?”. *Journal for Studies in Management and Planning*. Volume 01 Issue 06 July 2015 e-ISSN: 2395-0463.
- Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W. and West, M. (2004). “On the validity of subjective measures of company performance”. *Personnel Psychology*, 57(1): 95-118.
- Wan F.W. Y., and Suleiman M. L. (2015). “Entrepreneurial competencies Perceived to be Important for Entrepreneurship Lecturers in Malaysia”. *Studies in Social Sciences and Humanities*, 2(3), 163-1723.
- Wang Y. S. et al. (2016) “The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs” *Thinking Skills and Creativity* 22 22–35 <http://dx.doi.org/10.1016/j.tsc.2016.08.003> 1871-1871. Elsevier Ltd.
- Wang Y., Y. N. and Wu C. (2014). “An Analysis of Factors Which Influence Entrepreneurial Motivation Focused on Entrepreneurs in Jiang Xi Province in China”. *Journal of Applied Sciences*, 14: 767-775.
- Watkins, M. W. (2018). “Exploratory Factor Analysis: A Guide to Best Practice”. *Journal of Black Psychology*, 44(3), 219–246. <https://doi.org/10.1177/0095798418771807>
- Wickramaratne, A., Kiminami, A., and Yagi, H. (2014). “Entrepreneurial competencies and entrepreneurial orientation of tea manufacturing firms in Sri Lanka”, *Asian Social Science*, Vol. 10, No. 18; 2014 ISSN 1911-2017 E-ISSN 1911-2025vPublished by Canadian Center of Science and Education.
- Wu W. (2009). “A competency-based model for the success of an entrepreneurial start-up”. *WSEAS Transactions on business and economics Issue 6*, Volume 6, June 2009.
- Yan, R. (2012). “Review of Entrepreneurial Cogniton : Concept and Dimensions”. *IPCSIT* vol. 52, *IACSIT Press, Singapor* <https://doi: 10.7763/IPCSIT.2012.V52.43>
- Yeung, N., and Summerfield, C. (2012). “Metacognition in human decision-making: Confidence and error monitoring”. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1594), 1310–1321. <https://doi.org/10.1098/rstb.2011.0416>
- Zerbinati, S., and Al-Laham, A., (2007). “Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and

resources". *Journal of Business Venturing*, 22(4), pp. 566-591. DOI: 10.1016/j.jbusvent.2006.05.002.

Books and Chapters

- Akhtar, I. (2016). *Research in Social Science: Interdisciplinary Perspectives*, Edition: 1st, Chapter: Research Design, pp.17.
- Bandura, A. (1989). "Social cognitive theory". In R. Vasta (Ed.), *Annals of child development*. Vol. 6. Six theories of child development (pp. 1-60). Greenwich, CT: JAI Press.
- Becker, E., and Vrijnsen, J. (2017). Cognitive processes in CBT. *The Science of Cognitive Behavioral Therapy*. Elsevier Inc. All rights reserved. Chapter 4, p.77 <https://doi.org/10.1016/B978-0-12-803457-6.00004-0>
- Boyatzis, R. E., Goleman, D. and Rhee, K. (1999). "Clustering competence in emotional intelligence: Insights from the Emotional Competence Inventory (ECI)". *Handbook of Emotional Intelligence*. R. Bar-On and D. A. Parker. San Francisco, Jossey Bass.
- Boyatzis, R.E. (1982). *The Competent Manager: A Model for Effective Performance*. John Wiley and Sons, New York, NY.
- Brown, T. A. (2015). *Methodology in the social sciences. Confirmatory factor analysis for applied research (2nd ed.)*. New York, NY, US: The Guilford Press.
- Bryman, A., and Bell E., (2011). *Business Research Methods 3e*, OUP Oxford, 2011, ISBN: 0199583404, 9780199583409
- Cañas, J. Fajardo I. and Salmerón L. (2006). Cognitive Flexibility, Chapter 6 in book: *International encyclopedia of ergonomics and human factors*, Editors: *Waldemar Karwowski*, pp.297-300. DOI: <https://doi.org/10.13140/2.1.4439.6326> . ISBN: 13: 978-0415304306
- Creswell J., W., and Creswell J., D., (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications, ISBN: 1506386717, 9781506386713
- Dvoulety, O., and Orel, M. (2019). Entrepreneurial Activity and Its Determinants: Findings from African Developing Countries. Chapter2, In book: *Sustainable Entrepreneurship: The role of collaboration in the global economy*. Edition: Contributions to Management Science. Springer International Publishing 10.1007/978-3-030-12342-0_2.
- Fadel, C., Bialik, M., and Trilling, B. (2015). Four-dimensional education: the competencies learners need to succeed. Chapter 6 in Book: *Metacognition – Reflecting on learning goals, strategies and results* p.94-97. The Center for Curriculum Redesign, Boston. <https://bit.ly/2SVVXF9> (Last viewed 16/01/2019).
- Fayolle A., O. Basso, Erno T. Tornikoski.(2001) "Entrepreneurial commitment and new venture creation: a conceptual exploration". In *Handbook of Research on New Venture Creation*, of Hindle K. and Klyve K., Edward Elgar Publishing, p.160-182, 2011.
- Ferreira J.J., Fernandes C.I., Raposo M.L. (2018) Measuring and Understanding the Psychological Effects of Entrepreneurial Intentions: Multigroup Analysis. In: Tur Porcar A., Ribeiro Soriano D. (eds) *Inside the Mind of the Entrepreneur*. Contributions to Management Science. Springer, Cham
- George, D. and Mallery, P. (2003). *SPSS for Windows Step-by-Step: A Simple Guide and Reference, 14.0 update (7th Edition)*. [http://1st-iiiep.iiiep-unesco.org/cgi-bin/wwwi32.exe/\[in=epidoc1.in\]/?t2000=026564/\(100\)](http://1st-iiiep.iiiep-unesco.org/cgi-bin/wwwi32.exe/[in=epidoc1.in]/?t2000=026564/(100)).
- Hofstede, G. (1980). "Culture's consequences: international differences in work-related value". Beverley Hills, California: Sage Publications.

- Neisser, U. (1967). Cognitive Psychology. *The American Journal of Psychology* (Vol. 105). <https://doi.org/10.2307/1422917>
- Kyrö, P. and Carrier, C. (2005). Entrepreneurial learning in universities: Bridges across borders. Chapter in Book: *The dynamics of learning entrepreneurship in a cross-cultural university context* (pp. 14-43). Hämeenlinna: University of Tampere. Google Scholar.
- Licht, A., and I. Siegel, J. (2005). The Social Dimensions of Entrepreneurship. *The Oxford Handbook of Entrepreneurship*. <https://doi.org/10.1093/oxfordhb/9780199546992.003.0019>
- Macko, A., and Tyszka, T. (2009). Entrepreneurship and Risk Taking. *Applied Psychology* (Vol. 58). <https://doi.org/10.1111/j.1464-0597.2009.00402.x>
- Martin, W. E., and Bridgmon, K. D. (2012). *Quantitative and statistical research methods from hypothesis to results*. San Francisco: Jossey-Bass.
- McCaffrey, Matthew and Salerno, Joseph T. (2011), A Theory of Political Entrepreneurship (2011). *Modern Economy*, Vol. 2, No. 4, pp. 552-560. SSRN: <https://ssrn.com/abstract=2487134>
- O'Brien D. (2016) - An Introduction to the Theory of Knowledge- Second edition, Polity Press (2016). (n.d.). I SBN-13: 978-1-5095-1240-9
- Schumpeter, J. A. (2008). *Capitalism, socialism, and democracy*. New York: *Harper Perennial Modern Thought*, 2008. Print.
- Schwarz, N. (2013), Metacognition. In chapter 2: Consciousness and unconsciousness. In E. Borgida and J. A. Bargh (Eds.), *APA Handbook of Personality and Social Psychology: Attitudes and Social Cognition*. Washington, DC: APA
- Shapero, A., and Sokol, L., (1982). 'The Social Dimensions of Entrepreneurship', in Kent, C., Sexton, D., and Vesper, K., H. (eds.). *The Encyclopedia of entrepreneurship Englewood Cliffs, NJ: Prentice-Hall*. 72-90.
- Shepherd, D. A., and Patzelt, H. (2018). Prior knowledge and entrepreneurial cognition. Chapter 2 in book: *Entrepreneurial cognition: Exploring the mindset of entrepreneurs*. Entrepreneurial Cognition. *Springer International Publishing*. ISBN: 9783319717821 <https://doi.org/10.1007/978-3-319-71782-1>
- Sonnentag S. and Frese M. (2001), Performance Concepts and Performance Theory January 2005 DOI:10.1002/0470013419. Chapter 1, in book: *Psychological Management of Individual Performance*. Edited by Sabine Sonnentag. 2002 *John Wiley and Sons, Ltd*.
- Thiétart, R.A. et al. (2001), *Doing management research, a comprehensive guide*, translated by Samantha Wauchope. SAGE Publications, London.
- Zali, M., R., Tootoonchy, M., Farsi, J., Y., and Faghieh, N. (2018). *Entrepreneurship Education and Research in the Middle East and North Africa (MENA)*. Springer. <https://doi.org/10.1007/978-3-319-90394-1>
- Zeng, Z., and Honig, B. (2016), How Should Entrepreneurship Be Taught to Students with Diverse Experience? A Set of Conceptual Models of Entrepreneurship Education, Chapter 8, in book: *Models of Start-up Thinking and Action: Theoretical, Empirical and Pedagogical Approaches (Advances in Entrepreneurship, Firm Emergence and Growth, Vol. 18)*, *Emerald Group Publishing Limited*, pp. 237-282. <https://doi.org/10.1108/S1074-754020160000018007>

PhD Theses

Borjon S., F. (2016). "Flexibilité cognitive et résolution de problèmes. Au-delà des aspects développementaux, confronter son point de vue à un autre". *Thèse de doctorat de l'université lumière Lyon 2* ; école doctorale : ed 485 éducation psychologie information communication.

Morallane, M., H., (2016). "The relationship between personality traits and cognitive adaptability of established entrepreneurs." *University of Pretoria*.

Conference and working papers

Bort-Mir, L. (2015). "New ways of teaching metacognitive skills in Higher Education: CONVERSTAND; software for a better knowledge acquisition". *Proceedings of INTED2015 Conference 2nd-4th March 2015, Madrid, Spain*. ISBN: 978-84-606-5763-7

Brown T., A. "Confirmatory Factor Analysis for Applied Research". Series Editor's Note by Todd D. Little. *The Guilford press New York London*. <https://doi.org/10.1198/tas.2008.s98> ISBN 978-1-4625-1779-4 (hardcover) — ISBN 978-1-4625-1536-3 (paperback)

Gheryaani S., T. and Bouhelbène Y. (2015). "Evaluation des structures d'accompagnement d'entreprises du point de vue des créateurs: Le cas de la Tunisie". *International Journal of Economics & Strategic Management of Business Process*. 3rd International Conference on Innovation and Engineering Management (IEM-2015) Copyright IPCO-2015, pp.27-39 ISSN 2356-5608.

Josyula, D., Anderson, M., and Perlis, D. (2005). "Metacognition for dropping and reconsidering intentions" Conference: 2005 *AAAI Spring Symposium on Metacognition in Computation*, March 21-23 2005, Stanford, California, USA.

Lauriol Jacques (1996), "Une approche sociocognitive de la décision stratégique : Le Cas B.S.C". Esc Toulouse. Conference paper. <https://www.strategie-aims.com/events/conferences/18-veme-conference-de-l-aims/communications/1137-une-approche-socio-cognitive-de-la-decision-strategique-le-cas-b-s-c/>

Mahmoudi M., and Tounès, A. (2015). "Influence of Entrepreneurial Competences on the Entrepreneurial Intention of Management Students: the case of North Africa". Conference: *ICSB World Conference*, Dubai-2015.

Matta, S., Appleton, S. and Bleaney, M. (2016). "The Impact of the Arab Spring on the Tunisian Economy". Policy Research Working Paper; No. 7856. World Bank, Washington, DC. <https://openknowledge.worldbank.org/handle/10986/25301> License: CC BY 3.0 IGO.

Sun B. and Zeng Z.J. (2014) "Proactive Personality and Career Success: A Person-organization Fit Perspective". *International Conference on Economic Management and Trade Cooperation (EMTC 2014)*.

Wang, W., Zhao, J., Zhang, W., and Wang, Y. (2015). "Conceptual framework for risk propensity, risk perception, and risk behavior of construction project managers" In: Raidén, A B and Aboagye-Nimo, E (Eds) *Procs 31st Annual ARCOM Conference*, 7-9 September 2015, Lincoln, UK, Association of Researchers in Construction Management, 165-174.

Zahra S. A. (2011). "Entrepreneurial Capability: Opportunity Pursuit and Game Changing". Paper presented at the DRUID 2011 on *Innovation, Strategy, and Structure - Organizations, Institutions, Systems and Regions* at Copenhagen Business School, Denmark, June 15-17, 2011.

Zulkifli, S. and Perera, N. (2011). "A literature analysis on business performance for SMES - subjective or objective measures?" 2011 *SIBR Conference on Interdisciplinary Business and Economics Research* (pp. 1-9). Bangkok, Thailand: Society of Interdisciplinary Business Research. (SIBR).

Projects and reports

Acs, Z.J., Szerb, L., Lloyd, A. (2018). "Global Entrepreneurship Index". The global entrepreneurship and development institute: Washington, DC, USA

Cacciotti, G., and Hayton, J., C. (2014). "Fear of failure and entrepreneurship: a review and direction for future". Enterprise Research Center research paper 24, 1–62.

Cunningham, P., Matusovich, H., and Blackowski, S. (2018). "Teaching metacognition: Helping students own and improve their learning". Skillful Learning. Rose-Hulman institute of technology. Terre Haute Indiana.

Donnellan T., Hanrahan K. and Hennessy T., (2012). "Defining an Institutional Framework for the Labor Market Factor Market". Working paper, Copyright 2012,

Ellis, K., and Williams, C. (2011). "Maximizing impact of youth entrepreneurship support in different contexts Background report, framework and toolkit for consultation", Overseas Development Institute (March).

European Commission, Innovation Scoreboards project (2015)
http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf seen 10th of September 2015.

Fischer, H. E., Boone, W. J., Fischer, H. E., and Boone, W. J. (2014). "Quantitative Research Designs and Approaches Quantitative Research Designs and Approaches". *University of Duisburg-Essen, Germany Knut Neumann Leibniz-Institute for Science and Mathematics Education (IPN), Kiel, Germany.*

Fogel G. K., and Lawrence (2010) "Business environment in china: economic, political, and cultural factors Technological". University MBAA Proceedings 2010 – Papers

Heard R. G. and Sibert J. (2000). "Growing new businesses with seed and venture capital: state experiences and options", the National Governors' Association, 444 North Capitol Street, Washington, D.C. 20001-1512. All rights reserved.

Inglehart, R. (1997). "Modernization and post modernization". Princeton: Princeton University Press.

Lackeus, M. (2015). "Entrepreneurship in education: What, why, when, how". Entrepreneurship360, background paper for OECD-LEED., 1–45.

OECD (2001). "Evaluation d'opérations d'appui budgétaire - Etudes relatives à la coopération entre la CE et la Tunisie" *rapport final*. Vol. 3, mars 2011.

SALEEM Project (2018), “Rapport sur la Cartographie des dispositifs existants dans les villes de Sfax et Carthage –Tunisie”. Rapport édité par Belhaj et al., co-financé par le programme Erasmus+ de l'Union Européenne (2018).

Strebler M., Robinson D., and Heron P. (1997). “Getting the best out of your competencies. Institute of employment studies”, University of Sussex, Brighton.

Websites

Agency for the promotion of industry and innovation, Tunisian ministry of industry and SMEs:

<http://www.tunisieindustrie.nat.tn/> (Last visited in: 10/09/2019).

Central bank of Tunisia: <https://www.bct.gov.tn/> (Last visited in 10/08/2019).

IFEDA: <http://www.ifeda.org.tn/stats/francais.pdf> (Last visited in 22/07/2019).

Ministry of higher education and scientific research of Tunisia: <http://www.mes.tn> (Last visited in 10/07/2019).

National Institute of Statistics of Tunisia: <http://www.ins.tn/en/> (Last visited in 10/07/2019).

World Bank: <https://data.worldbank.org/indicator/NY.GNS.ICTR.CD> (Last visited in 08/07/2019).

Appendices

Appendix A :

Questionnaire

Cette enquête est réalisée dans le cadre d'une recherche doctorale. Elle vise à comprendre l'impact des compétences entrepreneuriales sur l'intention d'entreprendre chez les étudiants. À travers cette étude, nous essayerons d'identifier les compétences entrepreneuriales acquises et si elles permettent de développer l'intention entrepreneuriale chez les étudiants, ce qui nous aidera par la suite à guider les programmes éducatifs vers une meilleure considération des compétences requises pour lancer votre propre entreprise. Nous vous assurons que la confidentialité totale de vos réponses sera préservée. Indications : Il n'y a ni bonnes ni mauvaises réponses. Nous nous intéressons à ce que vous pensez vraiment. Veuillez donc répondre librement à toutes les questions.

Vous êtes :

- Homme Femme

Quel âge avez vous?

- < 22 ans
 22 ans - 25 ans
 Plus de 25 ans

Dans quelle(s) université(s) êtes-vous actuellement inscrits ?

.....

Avez-vous déjà eu une expérience professionnelle ?

- Oui Non

Etes-vous un membre actif d'une association ou d'un club ?

- Oui Non

Avez-vous déjà participé à un évènement sur l'entrepreneuriat ?

- Oui Non

Avez-vous participé volontairement à une formation en entrepreneuriat ? (*Formation, cours payant, évènements organisés par des associations, etc.*)

- Oui Non

Connaissez-vous :

- | | | | | |
|---|--------------------------|-----|--------------------------|-----|
| Un/ des entrepreneur(s) | <input type="checkbox"/> | Oui | <input type="checkbox"/> | Non |
| Les structures d'accompagnement à l'entrepreneuriat | <input type="checkbox"/> | Oui | <input type="checkbox"/> | Non |
| Associations spécialisées dans l'entrepreneuriat | <input type="checkbox"/> | Oui | <input type="checkbox"/> | Non |

Les entrepreneurs que vous connaissez sont :

- Mon père / Ma mère Mon frère/ Ma sœur La famille proche
 Mes amis Connaissances Je ne connais pas
 d'entrepreneurs

L'intention entrepreneuriale et l'adaptabilité cognitive : Veuillez indiquer dans quelle mesure vous êtes d'accord avec les propositions suivantes ?

Cochez la case qui représente votre degré d'accord, de « Pas du tout d'accord » à « Tout à fait d'accord ».

	Pas du tout d'accord	Pas d'accord	indifférent	D'accord	Tout à fait d'accord
J'ai l'intention de lancer ma propre entreprise dans le futur.					
Je planifie soigneusement mon avenir.					
Je lis des journaux ou revues relatifs au business, entrepreneuriat, etc..					
Je ne cherche jamais d'opportunité de création d'entreprise.					
Je lis des livres/articles sur la planification financière.					
Je suis en train d'économiser de l'argent pour démarrer une entreprise.					
Je ne lis pas de livres sur la création d'une entreprise.					
Je planifie mes finances avec soin.					
Je ne compte pas lancer ma propre entreprise					
Je remets en question mes propres idées sur une tâche avant de commencer.					
Je passe du temps à apprendre comment lancer une entreprise.					
Je me trouve régulièrement en pause pour vérifier ma compréhension d'un problème ou d'une situation en question.					
Je me base sur mon intuition pour savoir si la stratégie que je suis en train d'utiliser sera la plus efficace.					
Je réussis mieux quand je connais la tâche en avance.					
Je pense à ce que les autres pensent de mes actions.					
Je sais bien organiser les informations.					
Je suis conscient(e) des stratégies que j'utilise quand je travaille sur une tâche donnée.					
J'essaye d'utiliser des stratégies qui ont été efficaces dans le passé.					
Je concentre consciemment mon attention sur les informations importantes.					
Je me demande toujours si j'ai atteint mes objectifs une fois que je termine une tâche donnée.					
Je crée mes propres exemples pour donner plus de sens aux informations.					
Je me trouve en train d'utiliser automatiquement des stratégies qui ont fonctionné dans le passé.					
J'utilise différentes stratégies selon la situation.					

	Pas du tout d'accord	Pas d'accord	indifférent	D'accord	Tout à fait d'accord
Je pense à plusieurs façons de résoudre un problème puis je choisis la meilleure.					
J'essaie de traduire les nouvelles informations en mes propres mots.					
Je me pose des questions sur la tâche avant de commencer.					
Je me demande si j'ai envisagé toutes les options après avoir résolu un problème.					
Je réévalue mes idées lorsque je suis confus(e).					
Lors de l'exécution d'une tâche, j'évalue fréquemment mes progrès par rapport à mes objectifs.					
Je comprends comment la réalisation d'une tâche est liée à mes objectifs.					
Je me trouve à analyser l'utilité d'une stratégie donnée lorsque je suis engagé dans une tâche donnée.					
Je me pose des questions sur ma performance lors de l'accomplissement d'une tâche.					
Je compte sur mon intuition pour m'aider à formuler des stratégies.					
Je me définis souvent des objectifs.					
J'essaie de décomposer les problèmes en composants plus petits.					
Je sais quel type d'informations est le plus important et à prendre en compte lorsque je rencontre un problème.					
Je me concentre sur la signification et le sens des nouvelles informations.					
Je me demande si j'ai envisagé toutes les options lors de la résolution d'un problème.					
Je pense à ce que je dois vraiment accomplir avant de commencer une tâche.					
Je me demande si j'ai appris le plus possible quand je termine une tâche.					
Je m'arrête et je reviens sur les informations qui ne sont pas claires.					
J'organise mon temps pour atteindre au mieux mes objectifs.					
Je me demande s'il y avait un moyen plus facile de faire les choses après avoir fini une tâche.					
Je m'arrête et relis quand je suis confus(e).					
Je fixe des objectifs spécifiques avant de commencer une tâche.					

Les compétences entrepreneuriales : Veuillez indiquer dans quelle mesure vous êtes représentés par les propositions suivantes?

Cochez la case selon votre degré d'accord, de « Pas du tout d'accord » à « Tout à fait d'accord ».

	Pas du tout d'accord	Pas d'accord	indifférent	D'accord	Tout à fait d'accord
Je suis capable de faire un budget pour mon entreprise.					
J'essaie toujours des activités nouvelles et inhabituelles.					
Je suis capable de développer un produit en utilisant des techniques d'identification des besoins.					
Je peux communiquer mes idées commerciales à d'autres personnes telles que des mentors, des clients potentiels ou des partenaires potentiels.					
Je privilégie plus l'expérimentation et l'approche originale.					
Lors de mes activités quotidiennes, je découvre et je vois de nouvelles idées potentielles autour de moi.					
Je suis capable de mener une étude de marché.					
Si je ne lance pas ma propre entreprise, il se peut que je rate une belle occasion.					
Je suis en mesure d'évaluer les forces et les faiblesses de mon idée d'entreprise par rapport aux produits / services existants sur le marché.					
A mon avis, la probabilité qu'une nouvelle entreprise ne réussisse pas est très élevée.					
Voir des opportunités potentielles ne me vient pas très naturellement.					
Je sais comment développer et analyser les déclarations de revenus (Taxes, impôts..).					
Je recueille d'abord beaucoup d'informations avant de commencer un nouveau projet.					
Je préfère les approches uniques et exceptionnelles.					
Je connais les exigences financières et les considérations pour lancer et diriger une entreprise.					
Je suis particulièrement attentif(ve) ou sensible aux nouvelles opportunités.					
Je suis capable de déterminer les stratégies de fixation des prix et les canaux de commercialisations appropriés.					
Il existe une grande incertitude quant à la prévision de la performance d'une nouvelle entreprise.					
Globalement, je qualifierais l'option de créer une entreprise comme quelque chose de positif.					
J'aime toujours essayer mes propres moyens.					
Démarrer une nouvelle entreprise est très risqué.					

	Pas du tout d'accord	Pas d'accord	indifférent	D'accord	Tout à fait d'accord
Je comprends la mentalité des consommateurs et comment leur vendre mon produit / service.					
Je sais comment proposer et vendre des idées et des produits / services aux gens.					
Je vois la possibilité de démarrer une entreprise comme une opportunité potentielle à poursuivre.					
Je demande l'avis de personnes plus expérimentées que moi sur les tâches sur lesquelles je travaille.					
Lorsque je travaille sur un projet pour quelqu'un, je lui pose de nombreuses questions pour être sûr(e) de bien comprendre.					
Je me vois bien créer et gérer une entreprise à l'avenir.					
Le risque global d'une nouvelle entreprise est élevé.					
Je passe à l'action sans perdre mon temps à recueillir des informations.					

Appendix B: Items coding

Entrepreneurial intention (EI)	I1	I intend to set up a company in the future	
	I2	I plan my future carefully	
	I3	I read business newspapers	
	I4	I never search for business start-up opportunity	
	I5	I read financial planning books	
	I6	I am saving money to start a business	
	I7	I do not read books on how to set up a firm	
	I8	I plan my finances carefully	
	I9	I have no plans to launch my own business	
	I10	I spend time learning about starting a firm	
Entrepreneurial competencies (EC)	Information seeking	IF1	I first gather a great deal of information before starting a new task or project.
		IF2	I seek the advice of people who know a lot about the tasks I am working on.
		IF3	I take action without wasting time gathering information.
		IF4	When working on a project for someone, I ask many questions to be sure I understand what the person wants.
	Innovativeness	IN1	Prefer unique, one-of-a-kind approach
		IN2	Favor experimentation and original approach
		IN3	Try new and unusual activities
		IN4	Try my own unique way
	Opportunity identification	OP1	Seeing potential opportunities does not come very naturally to me (reverse scoring)
		OP2	I have a special alertness or sensitivity toward new opportunities.
		OP3	While going about routine day-to-day activities, I see potential new venture ideas all around me.
	Risk taking propensity	RT1	Starting a new business is very risky
		RT2	I see the possibility of starting a business as a potential opportunity to pursue
		RT3	The probability of a new venture doing poorly is very high
		RT4	If I don't start my own business, I may be missing a great opportunity
		RT5	There is great uncertainty when predicting how well a new venture will do
		RT6	Overall, I would label the option of starting a business as something positive
		RT7	The overall riskiness of a new venture is high
	Training and skills	TS1	I am able to see myself starting and running a business in future
		TS2	I am confident of developing a product using needs identification techniques
		TS3	I understand the mindset of consumers and how to market my product/service to them
TS4		I am able to communicate my business ideas to other people such as mentors, potential customers and potential business partners	
TS5		I am capable of conducting a market research by myself	
TS6		I know how to pitch and sell ideas and products/ services to people	
TS7		I am able to determine appropriate pricing strategies and channels for marketing	
TS8		I am confident of doing up a budget for my business	
TS9		I understand the financial requirements and considerations to start and run a business	
TS10		I am able to assess the strengths and weaknesses of my business idea in comparison to existing products/services in the market	
TS11	I understand how to develop and analyze income statements		

Cognitive adaptability (CA)	Goal orientation	GO1	I often define goals for myself.
		GO2	I understand how accomplishment of a task relates to my goals.
		GO3	I set specific goals before I begin a task.
		GO4	I ask myself how well I've accomplished my goals once I've finished.
		GO5	When performing a task, I frequently assess my progress against my objectives.
	Metacognitive choice	MC1	I ask myself if I have considered all the options when solving a problem.
		MC2	I ask myself if there was an easier way to do things after I finish a task.
		MC3	I ask myself if I have considered all the options after I solve a problem.
		MC4	I re-evaluate my assumptions when I get confused.
		MC5	I ask myself if I have learned as much as I could have when I finished the task.
	Metacognitive experience	ME1	I think about what I really need to accomplish before I begin a task.
		ME2	I use different strategies depending on the situation.
		ME3	I organize my time to best accomplish my goals.
		ME4	I am good at organizing information.
		ME5	I know what kind of information is most important to consider when faced with a problem
		ME6	I consciously focus my attention on important information.
		ME7	My "gut" tells me when a given strategy, I use will be most effective.
		ME8	I depend on my intuition to help me formulate strategies.
	Metacognitive knowledge	MK1	I think of several ways to solve a problem and choose the best one.
		MK2	I challenge my own assumptions about a task before I begin.
		MK3	I think about how others may react to my actions
		MK4	I find myself automatically employing strategies that have worked in the past.
		MK5	I perform best when I already have knowledge of the task.
		MK6	I create my own examples to make information more meaningful.
		MK7	I try to use strategies that have worked in the past.
		MK8	I ask myself questions about the task before I begin.
		MK9	I try to translate new information into my own words.
		MK10	I try to break problems down into smaller components.
		MK11	I focus on the meaning and significance of new information.
	Metacognitive monitoring	MM1	I periodically review to help me understand important relationships.
		MM2	I stop and go back over information that is not clear.
		MM3	I am aware of what strategies I use when engaged in a given task.
		MM4	I find myself analyzing the usefulness of a given strategy while engaged in a given task.
		MM5	I find myself pausing regularly to check my comprehension of the problem or situation at hand.
		MM6	I ask myself questions about how well I am doing while I am performing a novel task.
MM7		I stop and reread when I get confused.	

	Reverse coding
	Distracter items

Appendix C : SPSS correlation matrix output

	Gender	Age	Voluntarily participate in an entrepreneurship program	Participating in an entrepreneurial event	Member of an ONG or a student's club	Prior professional experience	Knowing an entrepreneur	Knowing entrepreneurship support structures	Knowing ONGs specialized in entrepreneurship	Your father or mother are entrepreneurs	Your brother or sister are entrepreneurs	An entrepreneur within your close families	An entrepreneur within your circles of friends	An entrepreneur within you acquaintances	You do not know any entrepreneur	Entrepreneurial intention	Information seeking	Innovativeness	Opportunity identification	Risk as an opportunity	Risk as a threat	Training and skills	Goal orientation	Metacognitive choice	Metacognitive experience	Metacognitive knowledge	Metacognitive monitoring
Gender	1.000	.016	-.113*	-.122*	-.103	-.137*	-.158**	-.044	-.158**	.005	-.050	-.095	-.127*	-.116*	.128*	.090	-.025	.066	.069	.006	.118*	.289**	.071	.039	.059	.039	-.007
Age	.016	1.000	-.020	-.042	.044	-.233**	-.137*	-.102	-.033	-.055	-.018	-.041	-.199**	.011	.059	.118*	.037	.073	.087	-.055	.063	.187**	.091	.126*	.099	.134*	.055
Voluntarily participate in an entrepreneurship program	-.113*	-.020	1.000	.491**	.294**	.077	.289**	.300**	.286**	.128*	-.008	.080	.225**	.192**	-.258**	-.159**	-.187**	-.201**	-.169**	-.033	-.261**	-.243**	-.175**	-.163**	-.124*	-.108	-.240**
Participating in an entrepreneurial event	-.122*	-.042	.491**	1.000	.422**	.192**	.307**	.390**	.433**	.164**	.045	.064	.277**	.253**	-.315**	-.226**	-.207**	-.231**	-.235**	-.062	-.189**	-.266**	-.139*	-.197**	-.110	-.121*	-.269**
Member of an ONG or a student's club	-.103	.044	.294**	.422**	1.000	.161**	.261**	.242**	.238**	.085	.152**	.062	.274**	.256**	-.253**	-.095	-.056	-.119*	-.071	-.097	-.065	-.126*	.017	-.048	-.045	-.030	-.057
Prior professional experience	-.137*	-.233**	.077	.192**	.161**	1.000	.297**	.184**	.153**	.196**	.082	.189**	.252**	.112*	-.264**	-.233**	-.130*	-.211**	-.192**	.006	-.144*	-.231**	-.127*	-.248**	-.111	-.221**	-.172**
Knowing an entrepreneur	-.158**	-.137*	.289**	.307**	.261**	.297**	1.000	.378**	.386**	.170**	.135*	.356**	.377**	.654**	-.857**	-.164**	-.248**	-.240**	-.237**	-.085	-.203**	-.295**	-.162**	-.225**	-.097	-.111	-.221**
Knowing entrepreneurship support structures	.438	.071	.000	.000	.000	.001	.000	1.000	.102	.744	.000	.000	.000	.000	.000	.000	.063	.000	.025	.863	.066	.000	.050	.000	.085	.352	.000
Knowing ONGs specialized in entrepreneurship	-.158**	-.033	.286**	.433**	.238**	.153**	.386**	.485**	1.000	.103	.171**	.123*	.171**	.323**	-.333**	-.144*	-.135*	-.158**	-.153**	-.066	-.088	-.220**	.003	-.143*	.033	.041	-.141*
Your father or mother are entrepreneurs	.005	-.055	.128*	.164**	.085	.196**	.170**	.093	.103	1.000	.091	.268**	.180**	-.001	-.217**	-.077	-.170**	-.111	-.204**	.123*	-.174**	-.202**	-.119*	-.179**	-.124*	-.064	-.165**
Your brother or sister are entrepreneurs	-.050	-.018	-.008	.045	.152**	.082	.135*	.019	.171**	.091	1.000	.100	.053	.143*	-.124*	.044	-.027	.040	-.013	-.169**	.093	-.005	.049	.021	.020	.017	-.001
An entrepreneur within your close families	-.095	-.041	.080	.064	.062	.189**	.356**	.208**	.123*	.268**	.100	1.000	.278**	.112*	-.384**	-.169**	-.090	-.175**	-.183**	-.056	-.148**	-.156**	-.112*	-.155**	-.053	-.113*	-.166**
An entrepreneur within your circles of friends	-.127*	-.199**	.225**	.277**	.274**	.252**	.377**	.273**	.171**	.180**	.053	.278**	1.000	.190**	-.402**	-.203**	-.108	-.219**	-.218**	.075	-.207**	-.176**	-.040	-.105	-.011	-.057	-.087
An entrepreneur within you acquaintances	-.116*	.011	.192**	.253**	.256**	.112*	.654**	.266**	.323**	-.001	.143*	.112*	.190**	1.000	-.703**	-.121*	-.108	-.124*	-.162**	-.089	-.115*	-.231**	-.082	-.117*	.002	-.057	-.136*
You do not know any entrepreneur	.128*	.059	-.258**	-.315**	-.253**	-.264**	-.857**	-.360**	-.333**	-.217**	-.124*	-.384**	-.402**	-.703**	1.000	.137*	.207**	.232**	.246**	.076	.185**	.263**	.164**	.209**	.112*	.101	.240**
Entrepreneurial intention	.090	.118*	-.159**	-.226**	-.095	-.233**	-.164**	-.217**	-.144*	-.077	.044	-.169**	-.203**	-.121*	.137*	1.000	.352**	.360**	.376**	-.188**	.457**	.500**	.345**	.221**	.233**	.269**	.244**
Information seeking	-.025	.037	-.187**	-.207**	-.056	-.130*	-.248**	-.106	-.135*	-.170**	-.027	-.090	-.108	-.108	.207**	.352**	1.000	.478**	.489**	.011	.465**	.444**	.410**	.479**	.460**	.424**	.472**
Innovativeness	.066	.073	-.201**	-.231**	-.119*	-.211**	-.240**	-.206**	-.158**	-.111	.040	-.175**	-.219**	-.124*	.232**	.360**	.478**	1.000	.567**	.156**	.575**	.538**	.412**	.550**	.440**	.445**	.489**
Opportunity identification	.069	.087	-.169**	-.235**	-.071	-.192**	-.237**	-.127*	-.153**	-.204**	-.013	-.183**	-.218**	-.162**	.246**	.376**	.489**	.567**	1.000	.032	.495**	.540**	.453**	.520**	.449**	.454**	.395**
Risk as an opportunity	.006	-.055	-.033	-.062	-.097	.006	-.085	.010	-.066	.123*	-.169**	-.056	.075	-.089	.076	-.188**	.011	.156**	.032	1.000	-.063	-.027	.106	.136*	.041	.013	.198**
Risk as a threat	.118*	.063	-.261**	-.189**	-.065	-.144*	-.203**	-.104	-.088	-.174**	.093	-.148**	-.207**	-.115*	.185**	.457**	.465**	.575**	.495**	-.063	1.000	.486**	.413**	.370**	.313**	.374**	.355**
Training and skills	.289**	.187**	-.243**	-.266**	-.126*	-.231**	-.295**	-.253**	-.220**	-.202**	-.005	-.156**	-.176**	-.231**	.263**	.500**	.444**	.538**	.540**	-.027	.486**	1.000	.420**	.412**	.505**	.446**	.369**
Goal orientation	.071	.091	-.175**	-.139*	-.017	-.127*	-.162**	-.085	-.049	-.112*	-.040	-.082	.164**	.345**	.410**	.412**	.453**	.453**	.420**	.106	.413**	.420**	1.000	.584**	.643**	.627**	.651**
Metacognitive choice	.039	.126*	-.163**	-.197**	-.048	-.248**	-.225**	-.216**	-.143*	-.179**	.021	-.155**	-.105	-.117*	.209**	.221**	.479**	.550**	.520**	.136*	.370**	.412**	.584**	1.000	.590**	.574**	.658**
Metacognitive experience	.059	.099	-.124*	-.110	-.045	-.111	-.097	-.098	.033	-.124*	.020	-.053	-.011	.002	.112*	.233**	.460**	.440**	.449**	.041	.313**	.505**	.643**	.590**	1.000	.630**	.581**
Metacognitive knowledge	.039	.134*	-.108	-.121*	-.030	-.221**	-.111	-.053	.041	-.064	.017	-.113*	-.057	-.057	.101	.269**	.424**	.445**	.454**	.013	.374**	.446**	.627**	.574**	.630**	1.000	.592**
Metacognitive monitoring	-.007	.055	.240**	-.269**	-.057	-.172**	-.221**	-.206**	-.141*	-.165**	-.001	-.166**	-.087	-.136*	.240**	.244**	.472**	.489**	.395**	.198**	.355**	.369**	.651**	.658**	.581**	.592**	1.000