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# Pharmacists' attitudes and intention to adopt telemedicine: Integrating the market-orientation paradigm and the UTAUT

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ABSTRACT

The severe impact of the SARS-CoV-2 (COVID-19) virus on healthcare systems caused a sharp increase in patients' demand for telemedicine. Despite this acceleration, and while telemedicine is usually associated with the transition to a market-oriented paradigm in healthcare, available studies have not examined to what extent health professionals' attitudes and intention to adopt telemedicine are shaped by customers' demand. This study addressed this gap by proposing a model that combines the market-orientation paradigm with the unified theory of acceptance and use of technology (UTAUT) to explain pharmacists' attitudes toward telemedicine and its adoption. The findings from a survey of 202 pharmacists revealed that market orientation is positively associated with performance expectancy, effort expectancy, and social influence but negatively related to facilitating conditions. In turn, performance expectancy, effort expectancy and facilitating conditions affect the intention to adopt telemedicine. These findings have implications for the network of actors involved in the provision of telemedicine services.

## 1. Introduction

Recent advances in digital technologies have the potential to dramatically improve the delivery of healthcare services, particularly through telemedicine (Kraus et al., 2021). Bird (1971, p. 95), who can justifiably be considered the pioneer of telemedicine, provided the first formal and published definition of telemedicine: "the practice of medicine without the usual physician-patient confrontation (…) by means of any interactive audio-video communications system". A contemporary definition of telemedicine was proposed by Bashshur et al. (2000). Their definition:

> viewed telemedicine as a system of care composed of six essential elements: (a) geographic separation between provider and recipient of information, (b) use of information technology as a substitute for personal or face-to-face interaction, (c) staffing to perform necessary functions (including physicians, assistants, and technicians), (d) an organizational structure suitable for system or network development and implementation, (e) clinical protocols for treating and triaging patients, and (f) normative standards of behavior in terms of physician and administrator regard for quality of care, confidentiality, and the like. (Bashshur et al., 2000, p. 614)

With the increase in technological applications and the phenomenon of digitization, the need arose for a broader discipline that not only includes telemedicine but also considers other tools aimed at healthcare professionals and end uses (e.g., teleassistance, telemonitoring, television). Hence, the birth of eHealth, a further evolution of the notion of telemedicine, established as a result of e-applications. Nowadays, "eHealth" is defined as the use of information and communication technologies locally and remotely to combine and integrate health, information, and communication technologies; telemedicine is considered a subset of eHealth (Duplaga and Zieliński, 2006). Scott and Mars (2019) recently highlighted how the terms "telemedicine" and "eHealth" are often considered synonymous for health professionals, to lose the conceptual nuances and differences that the academic literature proposes.

Despite telemedicine's benefits (Arfi et al., 2021; Baudier et al., 2021), there were low rates of diffusion, as healthcare providers and patients did not embrace the innovation with conviction until the spread of COVID-19 (Tsai et al., 2019). The pandemic resulted in a sharp increase in patients' demand for telemedicine and in its provision by healthcare professionals (Busso et al., 2022). Many patients now expect telemedicine to "be a continuous practice, post-COVID-19, as it provides timely healthcare and meets their wider social needs much more

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effectively than traditional service delivery" (Leite and Hodgkinson, 2021, p. 312). However, some studies identified signals that the end of the pandemic may mitigate healthcare professionals' interest in the adoption and use of telemedicine (Iyanna et al., 2022). Hence, there is a need to understand healthcare professionals' attitudes, and drivers of, the intention to adopt telemedicine following the peak of COVID-19 infection.

Studies considering healthcare professionals' adoption of telemedicine have mostly focused on the impacts of healthcare professionals' perceptions of aspects such as technology usefulness and ease of use (Garavand et al., 2022; Kamal et al., 2020). In addition, Leite and Hodgkinson (2021) emphasize the personal benefits that health professionals can obtain from the adoption of these technologies. However, the role played by the market, and specifically by customers, in shaping health professionals' attitudes toward telemedicine and their adoption intention has been overlooked to a large extent. However, while telemedicine is usually associated with the transition to a market-oriented approach in healthcare, customers' affects health professionals' attitudes toward telemedicine have not been examined as far as we are aware (Tsiotsou and Boukis, 2022).

This study addresses this gap and suggests a model that integrates the market-oriented paradigm (Line et al., 2019) and the unified theory of acceptance and use of technology (UTAUT) (Williams et al., 2015) to explain pharmacists' intention to adopt telemedicine. Specifically, the model evaluates the influence of a pharmacists' level of market orientation on the UTAUT's antecedents (performance expectancy, effort expectancy, social influence, and facilitating conditions), which explain the intention to adopt telemedicine. The study findings have implications for the network of actors involved in telemedicine services (e.g., device producers and distributors) to facilitate pharmacists' adoption of telemedicine. This contribution aims to deepen the theoretical knowledge, combining technological innovations, as perceived by pharmacists, with market orientation. This orientation in the healthcare sector is particularly innovative, and our study intends to investigate its implications. The literature (e.g., Garavand et al., 2022; Kamal et al., 2020) has often focused on the product or the health service, and very little has been theorized or demonstrated regarding the new patient/consumer expectations of adoption from a managerial point of view. In this context, pharmacists appears to be the most appropriate healthcare professional figures, as they effectively perform the role of retailer while maintaining a strong clinical background.

The next section of this article reviews the market-orientation paradigm and the UTAUT model, presenting the research model and hypotheses. The methods are then described, and the results are presented. The last sections discuss the implications of the findings and outline the study conclusions and limitations.

## 2. Background and research model

### 2.1. Market-orientation paradigm

The market-orientation paradigm was introduced in the 1990s through the work of Narver and Slater (1990) and Kohli and Jaworski (1990). Specifically, Kohli and Jaworski (1990, p. 6) defined "market orientation" as "the organization wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization wide responsiveness to it". Narver and Slater (1990) demonstrated that the level of a firm's market orientation is positively related to its profitability. Therefore, a firm's orientation to its customers is central to this original conceptualization of the market-orientation paradigm, and customers conceived as the main driver of firm performance (Line et al., 2019). In the following decades, some work proposed several extensions of the original construct to consider additional stakeholders beyond customers—for example, government and regulators (Line et al., 2019). Other extensions of the original conceptualization include the distinction between market-driven (or customer-driven) approaches and market-driving (or customer-driving) approaches, which anticipate customer needs (Jaworski et al., 2000; Jaworski and Kohli, 2017; Narver et al., 2004). In all cases, customer focus remains crucial. In particular, market focus is intended as the capability, reflecting a firm's market-orientation approach (Vorhies et al., 1999). A market-oriented company prioritizes the customer at the top of the corporate organizational ladder (Kohli and Jaworski, 1990).

In this study, we embrace the original conceptualization of market orientation—thus, focus on customers—and share the market-driven perspective. This choice results from the specific research context: the adoption of telemedicine services by Italian pharmacists. In Italy, the list of telemedicine services that can be provided by pharmacists is dictated by national regulations (Federfarma, 2021). Therefore, pharmacists cannot anticipate customer needs by introducing other telemedicine services.

According to the market-driven paradigm, market-driven firms focus on learning customers' needs and expectations, which guide the firms' delivery processes (Vorhies and Harker, 2000). Previous research reported that market-driven firms rank high in the customer-focus capability, which comprises a firm's performance in reacting to and adapting its current offering to customer needs and developing new goods and services to meet customer needs (Vorhies et al., 1999).

### 2.2. UTAUT model

The UTAUT states that a person's behavioral intention to adopt a certain technology is explained by four variables: performance expectancy, effort expectancy, social influence, and facilitating conditions. In turn, behavioral intention affects user behavior (Williams et al., 2015). Precisely, "performance expectancy" is defined as an individual's belief that using the system will assist them in achieving job performance (Kim and Malhotra, 2005; Limayem et al., 2007; Venkatesh et al., 2003; Venkatesh et al., 2012). "Effort expectancy" is defined as the degree of ease with which the system may be used (Davis, 1989; Thompson et al., 1991; Venkatesh et al., 2003; Venkatesh et al., 2012). "Social influence" is defined as an individual's perception that key others (e.g, the loved ones, colleagues, end-users) feel that the individual should utilize the new system (Thompson et al., 1991; Venkatesh and Davis, 2000; Venkatesh et al., 2003; Venkatesh et al., 2012). "Facilitating conditions" are defined as an individual's belief that an organizational and technological infrastructure exists to enable system utilization (Taylor and Todd, 1995; Venkatesh et al., 2003; Venkatesh et al., 2012).

The UTAUT has been extensively applied in research on healthcare digital services and proved valuable to explain, for example, the adoption of eHealth services by patients (Alam et al., 2020). Although we are aware of the existence of other models aiming to explain the technology-acceptance phenomenon, in this study the UTAUT model was chosen for three reasons:

a) The UTAUT is one of the most innovative research models and already carries the constructs of many previous models (Tamilmani et al., 2021).
b) The UTAUT has been successfully used in other eHealth services research (Haikal et al., 2022) to determine the reason for the adoption/non-adoption of other eHealth services.
c) The UTAUT may be able to predict the decision to adopt new technologies in the healthcare industry (Duarte and Pinho, 2019).

### 2.3. Model and research hypotheses

The suggested model (Fig. 1) integrates the market-orientation paradigm and the UTAUT, proposing that customer focus affects a pharmacist's performance expectancy, effort expectancy, social influence, and facilitating conditions.

Overall, previous research demonstrated that a firm's market

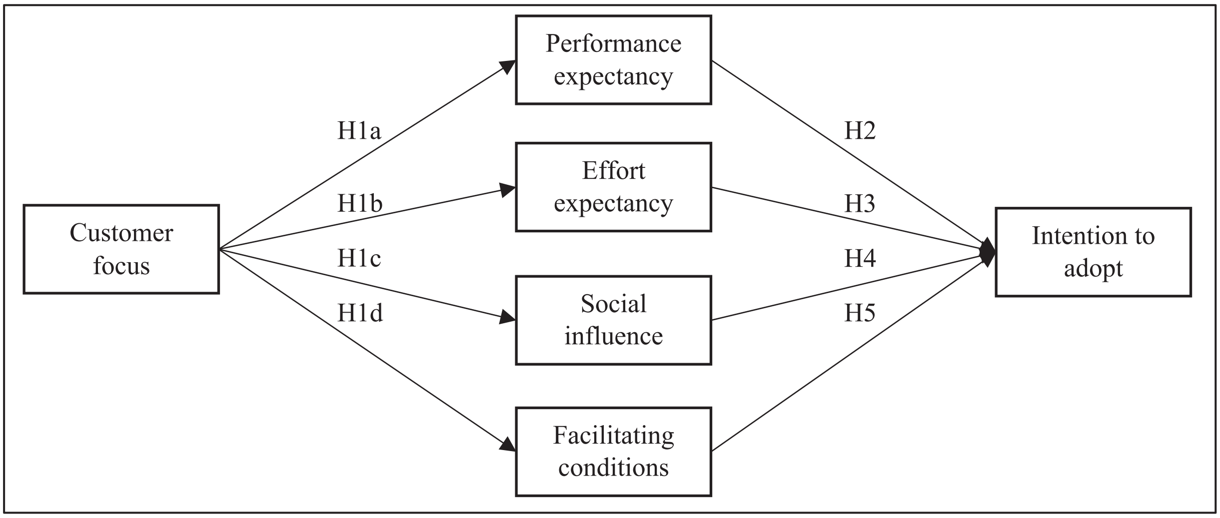


**Fig. 1.** Research model.

orientation is related to its level of innovativeness, which reflects the willingness to adopt new technologies and strategies to promote innovation (Kirca et al., 2005; Newman et al., 2016; Tajeddini et al., 2006). It also revealed that a firm's level of market orientation and, particularly, of customer focus, were positively associated with performance, since they guide the firm to design products and services according to customer needs (Hult et al., 2005; Mokhtar, 2013; Takata, 2016). More interestingly, high levels of market orientation were positively related not only to actual performance but also to managers' expectation about the future performance enabled by the adoption of new technologies (Herrero et al., 2018). Therefore, in this study, we posit that customer focus is positively associated with performance expectancy.

Additionally, customer-oriented organizations are more inclined to learning, which facilitates the deployment of new technologies (Mahmoud et al., 2016). In other words, customer orientation fosters organizational learning, which enables the firm to exploit innovations (Salavou, 2005). Therefore, in this study, we posit that customer focus is positively associated with effort expectancy. In fact, consistent with its original conceptualization proposed by Venkatesh et al. (2003), effort expectancy reflects the perceived ease of learning to use a new technology.

Moreover, customer orientation had positive effects on managers' awareness of key others' opinion about the use of a new technology (Herrero et al., 2018). Further research in the context of technology adoption indicated that market orientation was positively related to behavioral norms—that, is to social influence (Caniëls et al., 2015). Therefore, the available research supports the argument that customer focus is positively related to social influence.

In addition, a firm's customer orientation had positive effects on its personnel's self-efficacy perception—that is, on the perception of possessing the skills to perform the required activity (Celuch et al., 2000). Furthermore, the perceived consistency between the firm's market approach and customer demand made personnel more comfortable in performing the task (Siguaw et al., 1994). We suggest that such self-efficacy may improve the perception of the facilitating conditions, which support the use of the new technologies. In fact, facilitating conditions indicate the perception of possessing the resources and knowledge needed to successfully use the new technology (Venkatesh et al., 2003). This view is consistent with the most recent understanding of the market-orientation concept, which is considered a driver of contributing resources to co-create value with the network of relevant stakeholders (Line et al., 2019).

There are studies in the literature (e.g., Herrero et al., 2018; Caniëls et al., 2015) that highlight the role of the customer and the market as a driver to explain managerial choices. These are mostly studies relating to goods and services other than those offered in pharmacies, and this study aims to verify that this driver is also detectable in the healthcare sector.

Hence, we posit that customer focus is positively associated with facilitating conditions. Thus, based on the presented arguments, we hypothesize that:

**H1a.** Customer focus is positively associated with performance expectancy.

**H1b.** Customer focus is positively associated with effort expectancy.

**H1c.** Customer focus is positively associated with social influence.

**H1d.** Customer focus is positively associated with facilitating conditions.

The UTAUT literature provided extensive support on the positive association between the four antecedents (performance expectancy, effort expectancy, social influence and facilitating conditions) and intention to adopt a new technology (for a detailed review, see Williams et al., 2015). A recent literature review (Garavand et al., 2022) has concluded that researchers have addressed physicians' intention to adopt telemedicine mostly using the technology-acceptance model (Davis, 1989) and the theory of planned behavior (Ajzen, 1991). However, Garavand et al.'s (2022) review also showed that two of 37 studies used the UTAUT (Adenuga et al., 2017; Mengesha and Garfield, 2019). Both of those studies confirmed the significance of the UTAUT antecedents, even though Mengesha and Garfield (2019) did not include social influence in their model, and Adenuga et al. (2017) found that social influence was not significant. Our hypotheses were identified following an in-depth study of innovative technology adoption—specifically, of the factors that lead to the intention to adopt such technologies. These studies mainly concerned the adoption of new technologies related to the provision of services. Investigating these phenomena turned out to be particularly appropriate for pharmacies as retailers that themselves provide services.

Consequently, in this study, we draw on the UTAUT's tenets and hypothesize that:

**H2.** Performance expectancy is positively associated with intention to adopt telemedicine.

**H3.** Effort expectancy is positively associated with intention to adopt telemedicine.

**H4.** Social influence is positively associated with intention to adopt telemedicine.

**H5.** Facilitating conditions are positively associated with intention to adopt telemedicine.

## 3. Methods

The model was tested using data collected through a survey of a sample of 202 Italian pharmacists. In Italy, there are 19,669 pharmacies (about one pharmacy for every 3032 inhabitants), of which 17,890 are private firms and 1689 are public pharmacies owned by municipalities (Federfarma, 2021). In this research, we did not consider public pharmacies because, in their case, decisions about the adoption of new technologies and new services are made by public bodies using heterogeneous composite decision-making processes. We thus focused on the owners of private pharmacies to examine their decisions to adopt telemedicine. We excluded owners of pharmacy chains with more than three stores, because we wanted to ensure we had answers from decision makers only. This decision to greatly restrict the number of points of sale was for prudence, as we did not want to risk having respondents adopt or not adopt the technology for reasons beyond their direct control. The decision to adopt or not to adopt a technology such as telemedicine is strategic rather than operational. It involves transforming the pharmacy from a place of sale of goods (pharmaceuticals) to a place from which services are systematically provided. A choice of this type is far-reaching and is normally made by those pharmacy owners who have control over the local business, as suggested by Khan et al. (2008).

Since 2018, the Italian national authorities have implemented several interventions to support the large-scale adoption of new eHealth services by pharmacies, including the Holter blood-pressure device, Holter monitor test, and electrocardiogram. These interventions were first launched in nine out of 20 Italian regions and then extended to others (Federfarma, 2021).

With the support of the Italian Association of Private Pharmacies, we compiled a list with the contact details of 900 pharmacy owners eligible for our study. Each was sent an email with details of the study and a link to an online questionnaire. We received 202 usable questionnaire responses, giving a response rate of 22.4 %. Such a rate is satisfactory, albeit it was influenced by some specific circumstances. Data collection took place from December 2021 to May 2022, when many pharmacies had a remarkable workload because of COVID-19 tests. Hence, two recalls were necessary to reach the final response rate.

The presence of non-response bias was examined through the comparison of early and late respondents' profiles and answers using *t*-tests. No significant difference emerged (Armstrong and Overton, 1977). Following the guidelines by Podsakoff et al. (2003), we applied Harman's single-factor test, which revealed that no individual factor could explain most of the variance. This finding implies that our data were not influenced by common method bias.

**Table 1**
Respondent profiles.

| Variable | Frequency ($n = 202$) |
|---|---|
| Gender | |
| Female | 115 (56.3 %) |
| Male | 87 (43.1 %) |
| Age | |
| < 30 years | 10 (4.9 %) |
| 30–39 years | 18 (8.9 %) |
| 40–49 years | 21 (10.4 %) |
| 50–59 years | 105 (52.0 %) |
| 60 + years | 48 (23.8 %) |
| Years of ownership of the pharmacy | |
| < 10 years | 35 (17.3 %) |
| 10–19 years | 28 (13.9 %) |
| 20–29 years | 118 (58.4 %) |
| 30–39 years | 17 (8.4 %) |
| 40 + years | 4 (2.0 %) |

Table 1 summarizes the respondents' profiles. Overall, most respondents were female, had an average age of 52.9 years, and had 20.2 years' experience as owner of their pharmacy. Therefore, the sample reflects quite well the majority of Italian pharmacy owners who are more frequently female (55 % female, 45 % male) and have an average age of 48 years (Federfarma, 2021).

The questionnaire included multiple-item measures of all constructs, all taken from well-established scales. Performance expectancy, effort expectancy, social influence, facilitating conditions, and intention were measured using the original UTAUT scales (Venkatesh et al., 2003). When necessary, the items were adapted slightly to the research context and their clarity was checked with a convenience sample of 20 pharmacists during pretests. Customer focus was measured through four items from Vorhies et al. (1999), registering to what extent the respondents perceived that their pharmacy performed well in specific areas (reacting to changes in the marketplace, reacting to competitor moves, reacting to customer needs, adapting current offering to customer needs). All items were rated on Likert-type seven-point scales. The complete list of items is reported in Table 2.

Data were analyzed through covariance-based structural equation modeling (CB-SEM) using IBM AMOS software. CB-SEM is an appropriate method when the focus of the research is explanation—that is, reproducing the covariance matrix—as it is in the case of this study (Hair et al., 2019b). After checking the assumptions for CB-SEM, we assessed the measurement model and then the structural model (Hair et al., 2019a; Kline, 2011).

## 4. Results

### 4.1. Measurement model

Confirmatory factor analysis was used to assess the measurement model. Overall, the goodness of fit was satisfactory (Bagozzi and Yi, 2012; Kline, 2011). The estimates indicated a value of the model chi-square ($\chi^2$) equal to 313.48 ($P < 0.01$) with a degrees of freedom (*df*) value of 191 and a $\chi^2$ to *df* ratio of 1.64, thus smaller than the maximum acceptable value of 3 (Kline, 2011). The confirmatory fit index (CFI) was 0.98, larger than the threshold of 0.93 (Bagozzi and Yi, 2012). The root mean square error of approximation (RMSEA) was 0.05, below the cutoff of 0.08. Moreover, estimations of its 90 % confidence intervals (0.04–0.06) showed that the upper level was below the limit of 0.10 (Kline, 2011). Finally, the standardized root mean residual (SRMR) was 0.03, thus within the maximum level of 0.08 (Bagozzi and Yi, 2012).

All standardized factor loadings were >0.708, indicating that each construct explained more that 50 % of the variance of each of its items (Table 2). In addition, for each construct, the average variance extracted (AVE) was larger than 0.50 and the composite reliability larger than 0.70. Therefore, indicator reliability, internal consistency reliability, and convergent validity were confirmed (Hair et al., 2019a). Finally, discriminant validity was achieved because the value of the AVE for each construct was larger than that construct's highest squared correlation with all other constructs (Fornell and Larcker, 1981) (Table 3).

### 4.2. Structural model

The next step involved the structural-model estimation and hypothesis testing. The findings (Table 4) showed that $\chi^2$ was equal to 469.82 ($df = 198$, $P < 0.01$), resulting in a $\chi^2$ to *df* ratio of 2.37, smaller than the threshold of 3 (Bagozzi and Yi, 2012). Moreover, the CFI was 0.96, SRMR was 0.08, and RMSEA was 0.08, with 90 % confidence interval bounds of 0.07 and 0.09. Therefore, the overall goodness of fit—that is, the difference between the observed variance-covariance matrix and the expected, model-implied, variance-covariance matrix—was satisfactory.

The results highlighted that customer focus had significant effects on all four UTAUT independent variables. Customer focus had positive

**Table 2**
The measurement model.

| Construct | Item | CR | Factor loading |
|---|---|---|---|
| Performance expectancy | PERF1—I would find the new eHealth services useful in my job | – | 0.96 |
| | PERF2—Adopting the new eHealth services would enable me to execute my work more quickly | 25.70 | 0.91 |
| | PERF3—Adopting the new eHealth services would improve my productivity | 33.78 | 0.96 |
| | PERF4—If I adopt the new eHealth services, I will increase my chance to increase my performance | 31.17 | 0.94 |
| Effort expectancy | EFF1—My interaction with the software to deliver the new eHealth services would be clear and understandable | – | 0.91 |
| | EFF2—It would be easy for me to become skillful at using the software which enables the provision of the new eHealth services | 25.96 | 0.95 |
| | EFF3—I would find the new eHealth services easy to deliver | 28.33 | 0.97 |
| | EFF4—Learning to deliver the new eHealth services would be easy for me | 25.93 | 0.95 |
| Social influence | SI1—People who are important to me, such as colleagues, think that I should adopt the new eHealth services | – | 0.86 |
| | SI2—The local associations of pharmacists would be helpful in the adoption of the new eHealth services | 13.48 | 0.78 |
| | SI3—In general, the staff of my pharmacy would support the adoption of the new eHealth services | 17.30 | 0.91 |
| Facilitating conditions | FC1—I would have the resources needed to adopt the new eHealth services | – | 0.85 |
| | FC2—I would have the knowledge necessary to use the new eHealth services | 20.32 | 0.88 |
| | FC3—The new eHealth services are not compatible with other systems I use[a] | 18.84 | 0.92 |
| | FC4—A specific person (or group of people) would be available for assistance in case I find difficulties when using the new services | 20.62 | 0.97 |
| Customer focus | *My organization performs well in:* CF1—Reacting to changes in the marketplace | – | 0.89 |
| | CF2—Reacting to competitor moves | 33.64 | 0.89 |
| | CF3—Reacting to customer needs | 21.51 | 0.93 |
| | CF4—Adapting the current offering to customer needs | 21.53 | 0.93 |
| Intention | INT1—I intend to adopt the new eHealth services in the next few months | – | 0.97 |
| | INT2—I predict I would use the new eHealth services in the next few months | 48.35 | 0.99 |
| | INT3—I plan to use the new eHealth services in the next few months | 35.43 | 0.95 |

CR = composite reliability.
[a] Reversed item.

influence on performance expectancy (β = 0.878, $P < 0.01$), effort expectancy (β = 0.788, $P < 0.01$), and social influence (β = 0.782, $P < 0.01$). Therefore, H1a, H1b, and H1c were supported. It had a significant but negative impact (β = −0.649, $P < 0.01$) on facilitating conditions. Hence, H1d was rejected. Moreover, performance expectancy (β = 0.617, $P < 0.01$), effort expectancy (β = 0.252, $P < 0.05$), and facilitating conditions (β = 0.314, $P < 0.01$) had positive effects on intention to adopt the new eHealth services (i.e., H2, H3, and H5 were supported). Finally, the findings demonstrated that social influence (β = −0.169, $P > 0.10$) had no significant impact on intention to adopt the new eHealth services (H4 was rejected).

## 5. Discussion

### 5.1. Theoretical implications

The findings of this study offer several insights to advance the available knowledge on healthcare professionals' intention to adopt telemedicine. First, the overall combination of market-orientation paradigm and the UTAUT proved valuable to gain an in-depth understanding of the mechanisms leading to intention to adopt. On one hand, the model confirmed that the antecedents outlined by the UTAUT model have significant effects on intention to adopt, the only exception being social influence. On the other hand, the model clarifies how market orientation shapes the UTAUT antecedents.

In detail, the results indicate that market orientation had positive effects on three UTAUT antecedents, performance expectancy, intention to adopt, and social influence. Hence, pharmacists with higher levels of market orientation—who are more sensitive to consumers' demand for telemedicine services at pharmacies—developed higher performance expectations, perceive less effort in adopting telemedicine, and experience stronger levels of social influence. This is not surprising because

**Table 4**
Structural-model estimates.

| | Unst. coeff.[a] | SE | Std. coeff. |
|---|---|---|---|
| Hypotheses | | | |
| H1a: Customer focus ➔ performance expectancy | 1.028** | 0.060 | 0.878 |
| H1b: Customer focus ➔ effort expectancy | 0.774** | 0.055 | 0.788 |
| H1c: Customer focus ➔ social influence | 0.643** | 0.054 | 0.782 |
| H1d: Customer focus ➔ facilitating conditions | −0.649** | 0.067 | −0.652 |
| H2: Performance expectancy ➔ intention to adopt | 0.617** | 0.110 | 0.578 |
| H3: Effort expectancy ➔ intention to adopt | 0.252* | 0.115 | 0.198 |
| H4: Social influence ➔ intention to adopt | −0.169 | 0.146 | −0.111 |
| H5: Facilitating conditions ➔ intention to adopt | 0.314** | 0.098 | 0.249 |
| Model fit | | | |
| $\chi^2$ | 469.82, $df$ = 198, $P < 0.01$ | | |
| $\chi^2$:$df$ | 2.37 | | |
| CFI | 0.96 | | |
| RMSEA | 0.08 [0.07–0.09] | | |
| SRMR | 0.08 | | |

CFI = confirmatory fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; Unst coeff. = *Unstandardized coefficients; Std. coeff. = Standardized coefficients.*
* $P < 0.05$.
** $P < 0.01$.
[a] 90 % confidence interval.

**Table 3**
Average variance extracted (AVE), composite reliability (CR), and squared correlations among constructs.

| Constructs | AVE | CR | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. Performance expectancy | 0.89 | 0.97 | 1.00 | | | | | |
| 2. Effort expectancy | 0.89 | 0.97 | 0.69 | 1.00 | | | | |
| 3. Social influence | 0.72 | 0.88 | 0.66 | 0.57 | 1.00 | | | |
| 4. Facilitating conditions | 0.82 | 0.95 | 0.45 | 0.40 | 0.37 | 1.00 | | |
| 5. Customer focus | 0.83 | 0.95 | 0.66 | 0.50 | 0.50 | 0.35 | 1.00 | |
| 6. Intention | 0.94 | 0.98 | 0.23 | 0.19 | 0.12 | 0.03 | 0.21 | 1.00 |

these pharmacists perceive existing customer demand for these new services. Simultaneously, adopting telemedicine implies mostly an investment in learning and knowledge, since much of the equipment required for telemedicine-service provision is loaned for free. Higher levels of market orientation also mitigate effort expectation, mainly understood as the expectation of learning. Further, social influences appear positively affected by marketing orientation, meaning that such orientation emphasizes the expectations created by the pharmacists among themselves in keeping up with the times and providing their users with quality service, proximity, and reducing the waiting times associated with conventional health facilities (i.e., hospitals, medical clinics, etc.).

However, contrary to expectations, market orientation has negative effects on facilitating conditions, which represent a crucial aspect in the adoption of telemedicine. As outlined by Venkatesh et al. (2003, p. 447), facilitating conditions are "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system." With the facilitating conditions, the ability of several actors to create a system becomes relevant (Kraus et al., 2021)—on one hand, certainly the public actor—that is, the legislator—who promotes laws in favor of the adoption of telemedicine; on the other hand, the professional associations, which act as guarantors of the functioning of the system. Therefore, our findings suggest that pharmacists with higher market orientation are more skeptical about the readiness of the overall ecosystem that should support the correct functioning of telemedicine.

The study results reinforce the importance of value co-creation and the involvement of the consumer and other actors in the service-delivery process. This empowerment combines with the empowerment that the patient/consumer must have to participate in the co-creation process. Thinking from an ecosystem perspective is therefore necessary (Vargo and Lusch, 2016), where the pharmacist and the customer are at the micro level, and the other players operate at the *meso* level. In this context, the macro level is represented by national legislation.

The results also largely confirm the available knowledge about the positive effects of the UTAUT antecedent on adoption intention. However, contrary to other studies (Alam et al., 2020), in this research, the impact of social influence on intention to adopt is not significant. Hence, it seems that social influence—expectations created among pharmacists—do not affect a pharmacist's intention to adopt or not to adopt telemedicine.

### 5.2. Managerial implications

This study can offer relevant insights to the network of actors and managers who are responsible for configuring the provision of telemedicine services (Jiang, 2022). The findings of this research support that it is not sufficient to analyze and interpret the antecedents (performance expectancy, effort expectancy, social influence and facilitating conditions) of pharmacists' technology acceptance and use, but it is relevant to assess their market-orientation level. Hence, there may be an advantage to telemedicine-service providers in determining the market-orientation level of their actual and potential customers (pharmacists), then clustering them using market-orientation level as a segmentation base. The clearer understanding gained may enable telemedicine providers to run a more conscious targeting strategy and develop lower risk marketing policies; that is, by targeting or not targeting pharmacists below a certain market-orientation level and/or crafting different value proposals depending on their market-orientation level. In this sense, pharmacists' attitudes to changes in the marketplace (questionnaire item Customer Focus [CF] 1 [see Table 2]), competitor moves (CF2), customer needs (CF3), and adapting current offerings to customer needs (CF4) could be monitored systematically.

Nonetheless, this research confirms and clarifies the role of the UTAUT antecedents in the intention to adopt telemedicine. Indeed, telemedicine-service providers might consider that pharmacists' performance expectancy, effort expectancy, and facilitating conditions have positive effects on the intention to adopt telemedicine services. Relying on these results, marketing managers could craft more effective telemedicine value proposals that properly stress the mentioned UTAUT antecedents. Telemedicine providers may save costs by reducing marketing efforts aimed at generating social influence on pharmacists, since the judgment and influence of key people does not seem to affect pharmacists' adoption choice.

In summary, the network of actors and managers responsible for configuring the provision of telemedicine services needs to consider that pharmacists who are more market oriented perceive stronger potential benefits to their performance from the adoption of telemedicine, but also show higher skepticism toward the readiness of the actors needed for effective functioning of telemedicine. It is not enough that the devices to deliver telemedicine services are fully functional and highly reliable; reassurance of pharmacist on the technology is also required, which necessitates a telemedicine system that evenly distributes the responsibilities primarily related to the patient's health diagnosis.

Despite the presence of national legislation since 2011 regarding new technology adoption by pharmacies, adoption has remained very limited. This study suggests that action at the consumer level, creating awareness and empowerment, is important to increase adoption. Simultaneously, action at the level of pharmacies as service providers is necessary. The absence of one of these components, represented by the mentioned micro, *meso*, and macro levels (Vargo and Lusch, 2016), represses adoption, despite the good intentions of the legislator or individual players in the sector.

## 6. Conclusions and limitations

This research aims to address a specific gap in the healthcare marketing literature concerning to what extent health professionals' attitudes and intention to adopt telemedicine are shaped by customer demand. To that end, we propose a model that combines the market-orientation paradigm with the UTAUT to explain pharmacists' attitudes toward telemedicine and its adoption. Theoretically, the model confirms that three of the four UTAUT antecedents (performance expectancy, effort expectancy, and facilitating conditions) have significant effects on pharmacists' intention to adopt telemedicine services. The model also clarifies how market orientation shapes UTAUT's antecedents. Practically, the study offers relevant insights for configuring strategic and operational decisions for telemedicine-service provision (i.e., support for pharmacist clustering, target selection, telemedicine-service value-proposal definition).

This study has some limitations that represent interesting directions for future research. First, this study does not consider public pharmacies and pharmacy chains. As clarified in Section 3, Methods, we restricted pharmacist type to include in the sample only respondents (pharmacists) with the power to manage their store and to make technology-adoption decisions directly. However, the analysis of public pharmacies and pharmacy chains would be extremely relevant to a complete understanding of health professionals' attitudes and intention to adopt telemedicine shaped by customers' demand. However, as indicated, the most up-to-date statistics indicate that, of 19,669 pharmacies in Italy, only 1689 (8.58 %) are public; the remaining 17,980 (91.41 %) are private (Federfarma, 2021).

Second, the data collection took place during a peculiar period (winter 2021–spring 2022), when the COVID-19 pandemic was experiencing one of its peaks, and many pharmacies had a remarkable workload because of COVID-19 tests. Thus, replication of the data-collection process in the future, during the so-called post-pandemic new normality, would seem an appropriate way to assess the robustness of the proposed model.

Third, the sample analyzed is composed of Italian pharmacists only. A geographical extension of the survey would increase knowledge of the phenomena under analysis. Following the appropriate international marketing-research methodologies, more general results could be achieved. Indeed, an international or cross-national comparison of the results could be interesting (carefully considering the international differences in terms of political, environmental, legal, social, and technological factors, among others).

Finally, the present research relies on the CB-SEM method. Future research could adopt an experimental approach for testing the results achieved by this study. For example, an experiment undertaken with different groups of pharmacists divided according to their market-orientation level and manipulating marketing stimuli dealing with each UTAUT antecedent could be interesting.

## CRediT authorship contribution statement

**Nicola Cobelli:** Conceptualization, methodology, software, data curation, writing, software, validation, visualization, investigation.

**Fabio Cassia:** Conceptualization, methodology, software, data curation, writing, validation, visualization.

**Raffaele Donvito:** Methodology, writing, validation, writing—review and editing, visualization.

## Declaration of competing interest

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## Data availability

Data will be made available on request.

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