Determinants of e-pharmacy adoption and the mediating role of social influence among young users

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Abstract

Purpose – This study aims to examine the mediating role of social influence on the relationship between key predictors of E-pharmacy adoption among young consumers based on the unified theory of adoption and use of technology (UTAUT).

Design/methodology/approach – This study employs a quantitative correlational research design. Based on cluster sampling, data was collected from 306 university students from three public universities in southwestern Nigeria. Data was analysed using partial least square structural equation modeling.

Findings – The primary determinant driving the adoption of e-pharmacy is performance expectancy. Social influence plays a partial mediating role in linking performance expectancy to e-pharmacy adoption. In contrast, it fully mediates the relationship between effort expectancy, facilitating conditions and the adoption of e-pharmacy services.

Research limitations/implications – This study provides theoretical clarity on recent issues within the UTAUT framework. Findings highlight the complexity of how social factors interact with individual beliefs and external conditions in determining technology acceptance.

Practical implications – Research includes information relevant to access the impact of e-pharmacy services on healthcare accessibility, affordability and quality in developing countries.

Originality/value – The findings extend the adoption of technology literature in healthcare and offer a new understanding of adoption dynamics. The results emphasize the importance of performance expectancy in driving e-pharmacy adoption, providing a clear direction for stakeholders to enhance service quality and user experience of e-pharmacy. Additionally, the mediating effect of social influence highlights the significance of peer recommendations, celebrity endorsements and social media campaigns in shaping consumer adoption of e-pharmacies among young people.

Keywords E-pharmacy, E-pharmacy adoption, Technology adoption, Social influence, UTAUT, Young consumers

Paper type Research paper

1. Introduction

In the contemporary healthcare landscape, adopting e-pharmacies has emerged as a significant and transformative development, signalling a substantial departure from the conventional brick-and-mortar pharmacy model (Klimanov *et al.*, 2021). This transition is

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propelled by a multi-faceted interplay of factors, encompassing the increasing dependence on digital platforms, the rapid pace of technological progress and the ongoing evolution of consumer preferences (Pieriegud, 2019). In recent years, e-pharmacies have been increasingly popular due to their convenience and accessibility (Lostakova *et al.*, 2012). Consumers are increasingly choosing e-pharmacy for many reasons. Among these is that e-pharmacies' wide selection of pharmaceutical products simplifies access to essential information and ensures consumers' privacy (Singh and Rana, 2022). The convenience of e-pharmacies also makes them appealing (Gupta, 2020). The flexibility to place orders from home and receive doorstep delivery makes e-pharmacy an enticing choice. This convenience eliminates the need to visit a pharmacy, which appeals to busy people or those with mobility issues. Also, in developing countries, many poor people struggle to get proper healthcare, making their health worse and keeping them trapped in poverty. Using technology to access healthcare is seen as crucial to help bridge this gap and improve accessibility for patients (Dhagarra *et al.*, 2020).

Another benefit of e-pharmacy is cost-effectiveness (Priyanka and Ashok, 2016). Online platforms offer discounts, competitive pricing and generic alternatives. This affordability might drastically lower consumer healthcare costs, making healthcare more affordable. E-pharmacies provide health information (Priyanka and Ashok, 2016). They offer health and wellness advice, medication specifics and simple access to prescription and dosage histories. This information richness helps consumers make informed healthcare decisions, building agency and confidence in maintaining their well-being. E-pharmacies' extensive product options, unsurpassed convenience, cost-efficiency and essential healthcare information have driven their popularity. E-pharmacies are an innovative force in modern healthcare, providing customers with greater access and empowerment to improve their health (Singh *et al.*, 2020). Within this dynamic context, the current study aims to emphasize the paramount significance of e-pharmacy adoption, examine its determinants and delve deeper into the intricate role that social influence (SI) plays in this dynamics, particularly among the younger generation of consumers in an emerging market.

Technology has accelerated the growth and development of e-pharmacies (Thusi, 2022). Thusi's research highlights numerous technological advancements that have transformed healthcare through e-pharmacies. The increased usage of smartphones and mobile apps has made e-pharmacy services more accessible and easier to use while on the go (Raut *et al.*, 2022). Mobile devices have made e-pharmacy platforms easier to access, integrating them into daily life. Mobile technologies and artificial intelligence (AI) are crucial to e-pharmacy. AI improves inventory management, personalizes suggestions and enhances consumer experiences (Khan *et al.*, 2023). AI customizes the e-pharmacy experience to consumer preferences and demands through complex algorithms and machine learning, improving platform efficiency and efficacy. Telehealth integration is another notable e-pharmacy trend (Yang and He, 2023). Many platforms now provide remote medical consultations. People can get medical advice and electronic prescriptions from home without visiting a hospital. In e-pharmacies, product safety and authenticity are crucial (Mahesh *et al.*, 2020). Blockchain is being used to overcome this issue. Blockchain helps track the pharmaceutical supply chain from production to distribution (Abbas *et al.*, 2020). The process is more transparent and accountable, and counterfeit or inferior pharmaceuticals are prevented, protecting consumer health. The rapid rate of technical innovation drives e-pharmacy's expansion and evolution (Bandivadekar, 2022). Mobile applications, AI, telehealth integration, blockchain and data security make e-pharmacy services more accessible, efficient and secure, making them essential in modern healthcare.

Initially limited to high-income nations, e-pharmacy businesses have grown substantially in low and middle-income countries over the past decade (Miller *et al.*, 2021). Although their popularity is rising, the reasons young people use e-pharmacies are unclear (Rajput and Seetharaman, 2022). According to Williams *et al.* (2015), by analyzing the existence of each of

the unified theory of adoption and use of technology (UTAUT) constructs, experts will be able to determine the intention of an individual to use technological innovation. This will, in turn, assist in identifying predominant predictors of acceptance within a particular context. The UTAUT offers a comprehensive model for understanding technology acceptance. It amalgamates factors like performance expectancy (PE), effort expectancy (EE), SI and facilitating conditions to predict user intentions and behaviour regarding technology adoption and usage in various contexts (Venkatesh *et al.*, 2003). In the social context, it highlights the impact of peer pressure, social norms and interactions on individuals' decisions to adopt and use technology. The theory emphasizes the significance of social factors in shaping attitudes and behaviors toward technology adoption.

Ahmad *et al.* (2019) highlighted the mediating effect of SI on consumer behaviour, mainly through celebrity endorsements. Although their study focused on a different context, it suggests that SI might mediate consumer choices pertinent to e-pharmacy adoption. While their study examines the impact of youthful celebrity endorsements in social media advertising on young consumers' purchasing intentions and SI, and Herjanto *et al.* (2020) explore celebrity endorsements, brand image, trust and repurchase intention on Instagram, their findings may not directly align with the complexities of healthcare choices, such as e-pharmacy adoption, which are influenced by different factors. Therefore, the current study examines e-pharmacy adoption, its determinants and the mediating role of SI among young consumers in Nigeria.

Prior research contends that only PE and behavioural intention (BI) demonstrate the strongest predictive capability among the variables studied in technology adoption research. Other variables examined did not meet this criterion, with SI coming closest to meeting these predictive standards (Williams *et al.*, 2015). Our research asserts that SI is pivotal in shaping technology adoption. This assertion is supported by studies highlighting its profound impact on fellow human behaviour and the acceptance of technology (Graf-Vlachy *et al.*, 2018; Vannoy and Palvia, 2010). However, we observe a limitation in current interpretations of SI, primarily relying on samples from the US and China. This poses a risk to the generalizability and predictive validity of the results based on Graf-Vlachy *et al.* (2018). Our study aims to contribute to a more nuanced understanding of SI by exploring its mediating role within the unified theory of acceptance and use of technology (UTAUT). While we acknowledge the validity of the traditional UTAUT framework in explaining e-pharmacy adoption among young consumers, we argue that SI transcends its role as a mere predictor. We contend that SI plays a paramount role in the model, surpassing its conventional status, as people inherently imitate each other in the adoption process. The existing literature presents a scarcity of research addressing this argument, with limited exploration conducted by prominent researchers such as (Batucan *et al.*, 2022; Joa and Magsamen-Conrad, 2022; Marikyan and Papagiannidis, 2023). This gap in knowledge calls for additional, comprehensive investigations into the subject matter. Our research is designed to bridge this gap and enhance the depth of knowledge concerning SI within the UTAUT framework, particularly in e-pharmacy adoption among young consumers. This approach offers a more comprehensive and nuanced perspective, shedding light on the intricate dynamics of technology adoption influenced by social factors.

2. Literature review and hypothesis development

2.1 Theoretical background

The current research builds on the foundation of the UTAUT, allowing for a systematic study of the complexities of e-pharmacy adoption among young customers and the mediation function of SI. The UTAUT is an information systems theory that simulates how consumers receive and utilize technology. The model recommends that when consumers are presented

with new technology, such as e-pharmacy mobile applications, several dynamics sway their decision about how and when they will utilize it, particularly PE, which describes the gradation to which an individual believes that using a specific system would boost their job performance. EE is the gradation to which an individual believes that utilizing a particular system would be free from exertion (Ibam *et al.*, 2018). Social influence (SI) refers to the degree to which peers and significant others influence the use of a particular system. Facilitating conditions (FC) is the degree to which an individual believes that organizational and technical infrastructure exists to support the system (Venkatesh *et al.*, 2003). FC in the UTAUT is compatible with perceived behavioural control in the theory of planned behaviour (TPB).

UTAUT is one of the most significant extensions of Ajzen and Fishbein's theory of reasoned action (TRA) in the literature. As of 2015, the UTAUT model has been cited over 5,000 times, referencing various technologies like mobile technology, tax payment systems, hospital information systems, and Internet websites (Williams *et al.*, 2015). UTAUT also extends Davis's technology acceptance model, the most extensively functional model of users' technology acceptance and usage (Brandon-Jones and Kauppi, 2018). Established by Davis (1989) and Bagozzi (1992). Technology adoption model (TAM) substitutes several of TRA's attitude measures with the two technology acceptance measures ease of use and usefulness. The TRA and UTAUT models exhibit strong behavioural characteristics due to the multi-faceted nature of innovative technologies like personal computers. Decision-makers often grapple with uncertainty when it comes to their effective adoption. Individuals tend to develop strategies and goals for learning how to use these innovative technologies before making efforts to utilize them. Consumer perspectives regarding usage and intentions to use technology may lack clarity initially or may emerge after initial efforts to acquire the necessary knowledge to operate the technology (Venkatesh *et al.*, 2012).

2.2 Performance expectancy and adoption of e-pharmacy

PE plays a pivotal role in technology adoption. It forms a positive and substantial connection, intricately linked with factors like Internet banking, Website design and the quality of customer service (Rahi *et al.*, 2019). PE is an individual's belief in a system's capacity to enhance their job performance. This construct encompasses five critical elements drawn from various models: perceived usefulness, extrinsic motivation, job fit, relative advantage and outcome expectations (Venkatesh *et al.*, 2003). PE can be found in elements of innovation diffusion theory, the model of Personal computer (PC) utilization, the motivational model, the technology acceptance model and some extensions of the TPB and the TRAs. A review by Williams *et al.* (2015) found PE to be the best predictor of technology adoption, second to BI. Williams and colleagues' findings are consistent with previous research among college students (Tey and Moses, 2018) although some researchers have contradictory results (see Attuquayefio and Addo, 2014). In the context of e-pharmacy adoption, previous research has found that PE positively correlates with both e-pharmacy adoption and the intention to recommend (Sabbir *et al.*, 2020; Srivastava and Raina, 2020). Given these, we hypothesize that:

H1. PE will have a significant predictive effect on students' adoption of e-pharmacy.

2.3 Effort expectancy and adoption of e-pharmacy

EE is the perceived effortlessness of using a particular system (Venkatesh *et al.*, 2003). It underlines the importance of user-friendliness in technology adoption. EE is close to the perceived ease of use concept in the TAM introduced by (Davis, 1989). Some research studies have found that EE substantially influences individuals' BIs to use technology (Becker, 2016; Braun, 2013). This is based on the assumption that consumers will be more inclined toward adopting technology that demands minimal effort for effective utilization. EE functions

within the framework of individual-level characteristics outlined by the UTAUT model. It indicates the intrinsic motivational component of using a particular system (Yoo *et al.*, 2012). Findings from prior investigations within the online pharmacy context suggest that EE exerts a positive and statistically significant influence on the intention to use (Sabbir *et al.*, 2020). Implying that when the utilization of online pharmacy services is perceived as simple, transparent and reasonable, it enhances the likelihood of adoption among young people. Therefore, we hypothesize that:

H2. EE will have a significant predictive effect on students' adoption of e-pharmacy.

2.4 Facilitating conditions and adoption of e-pharmacy

FC is the degree to which an individual believes that organizational and technical infrastructure exists to support the system (Venkatesh *et al.*, 2003). FC in the UTAUT is compatible with perceived behavioural control in the TPB. FC are identified as having a significant impact on the BI to use e-pharmacy services in a study uncovering the factors that influence BI to use e-pharmacy services in Bangladesh (Gani *et al.*, 2022). In global healthcare, research indicates that facilitating conditions is one of the major factors promoting the adoption of robotic-assisted surgeries in advanced countries (BenMessaoud *et al.*, 2011). One reason for this is the availability of assessable technical support representatives. Previous research has also revealed that FC exerts a positive influence on consumers' BI in both e-health (Boontarig *et al.*, 2012) and mHealth adoption (Alam *et al.*, 2020), underscoring its significance as a determinant in these contexts.

In the context of e-pharmacy adoption, the market and technical setup for online medicine shopping resembles that of general online shopping (Yin *et al.*, 2016). Research indicates that online pharmacies facilitate the international procurement of pharmaceutical products, enhancing consumer access to local and overseas medication sources (Abanmy, 2017). E-pharmacies hold significant potential for meeting patients' medication requirements in post-inpatient situations. These systems promote patient engagement and self-management by providing access to personal health records, medication reminders and educational resources (Yang *et al.*, 2021). Patients can actively participate in healthcare decisions and stay informed about their conditions. Nevertheless, to fully realize these advantages, research underscores the necessity of essential infrastructure conditions for technology adoption. These conditions encompass, but are not limited to, (1) robust Internet connectivity (Zeadally and Bello, 2021), (2) a robust cyber-security system (Becker, 2016) and (3) an efficient transportation system (Solomon *et al.*, 2020). Some researchers also advocate for regulations in the emerging e-pharmacy climate in low and middle-income countries due to public health concerns, such as the sale of prescription-only medicines without prescriptions and sub-standard/falsified medications (Miller *et al.*, 2021). Therefore, we hypothesize that:

H3. FC will have a significant predictive effect on students' adoption of e-pharmacy.

2.5 The mediating role of social influence

Within information systems research, SI has been integrated as a pivotal factor encompassing interpersonal aspects relating to technology adoption and utilization (Chan *et al.*, 2010). While it is undeniable that technology has the power to shape society, it is equally undeniable that the dynamics of society play a significant role in influencing the trajectory and development of technology (Vannoy and Palvia, 2010). SI encompasses an individual's perception of the views held by significant others in their environment and their concrete recommendations and behavioural actions (Eckhardt *et al.*, 2009). These significant others may be employers, family members, extension agents or other role models who play essential roles at various levels of technology adoption (Eckhardt *et al.*, 2009; Mgendi *et al.*, 2022).

Furthermore, expanding our understanding of social factors in consumer behaviour (Ahmad *et al*., 2019), explored the impact of youthful celebrity endorsements in social media advertisements on the purchasing intentions of young consumers. This study not only underscores the significance of SI in shaping consumer choices but also emphasizes the specific role of celebrity endorsements, adding a layer of complexity to the understanding of consumer behaviour (Ahmad *et al*., 2019). Graf-Vlachy and Buhtz (2017) delved into the impact of SI on technology adoption within healthcare settings. Their findings add a layer of depth by highlighting the pivotal role of social factors in shaping decisions related to healthcare technologies, particularly underscoring the relevance of SI in domains like e-pharmacy adoption. In alignment with the previous studies, Manca *et al*., (2022) acknowledge the complexity of SI processes. Their proposed structure accounts for various dimensions, including live social interactions, diffusion processes, translation and reflexivity processes, conformity related to social norms and correlated effects tied to psychometric attitudinal characteristics of peers. By encompassing these diverse facets, the study highlights the intricate nature of SI in technology adoption.

The research by Manca *et al*. (2022) aligns with Graf-Vlachy and Buhtz (2017) call to recognize the multi-faceted nature of SI, extending beyond traditional predictors. Additionally, it emphasis on the critical role of social factors in shaping decisions, showcasing that observable variables do not solely determine the choice of adopting new technologies but are intricately influenced by social dynamics facilitating information exchange and understanding among individuals. Together, these studies highlight the need for a holistic consideration of SI in shaping technology adoption behaviours across diverse contexts. Therefore, we hypothesize that:

H4. Social mediate will mediate the relationship between PE, EE, FC, and adoption of e-pharmacy.

3. Analytical approach

3.1 Materials and method

3.1.1 Participants and procedure. The current study was conducted in southwestern Nigeria. A cluster sampling procedure was conducted to select university students from three public universities as respondents. Students were selected from all levels of study and diverse fields. This is to capture a heterogeneous sample of young people in the study area. Informed consent was obtained from the respondents and participation was voluntary. The study's objectives were explained to the respondents and exclusion criteria were stated. Respondents were also informed that they could withdraw from participation at any time. Next, cluster sampling was used to select respondents. Three public universities were randomly selected as clusters, and 110 students were randomly selected from each university. Data for this study was collected through a self-administered questionnaire distributed by the researchers and enumerators to respondents in students' assembly areas, libraries, faculty general areas and lecturer halls. A total of 306 respondents (185 males and 121 females) completed the questionnaire, providing a 92.7% response rate. Respondents ages range from 18 to above 31 years (M = 23.56, Standard deviation (SD) = 3.57).

3.1.2 Measures. In addition to demographic information, the questionnaire included standardized scales and items to measure the key variables: Adoption of e-pharmacy, PE, EE, FC and SI. The items in the questionnaire were adapted based on established measurement scales identified in the literature.

Adoption of e-pharmacy: This variable was measured using the modified version of the use behaviour sub-section of the UTAUT questionnaire (Attuquayefio and Addo, 2014). Respondents were asked to rate their usage behaviour and intentions regarding e-pharmacy

services on a Likert-type scale ranging from 1 strongly disagree to 7 strongly agree. The reliability for this scale was 0.827.

PE: The perceived usefulness of e-pharmacy services was measured using the perceived usefulness scale developed by (Davis, 1989; Davis *et al.*, 1989). Participants were asked to assess how they perceive e-pharmacy services in terms of improving their healthcare experience. Responses range from 1 strongly disagree to 7 strongly agree. The reliability for this scale was 0.82.

Effort Expectancy: EE was assessed using the modified relative advantage scale (Moore and Benbasat, 1991) and the outcome expectation scale (Compeau and Higgins, 1995). Respondents rated the ease of using e-pharmacy services and their expected outcomes on a Likert-type scale ranging from 1 strongly disagree to 7 strongly agree. Cronbach's alpha reliability score for this scale was 0.92.

Facilitating Conditions: This variable was measured using a modified version of the facilitating condition scale (Thompson *et al.*, 1991) and the compatibility scale (Moore and Benbasat, 1991). Participants indicated their perceptions of the external conditions that facilitate e-pharmacy adoption on a Likert scale ranging from 1 strongly disagree to 5 strongly agree. The reliability score for this scale was 0.77.

Social Influence: SI was assessed using a combination of the subjective norm scale (Ajzen, 1991; Davis *et al.*, 1989). Respondents were asked to indicate the extent to which they agree that social factors and norms influence their decision to adopt e-pharmacy services on a Likert scale ranging from 1 strongly disagree to 5 strongly agree. The reliability of this scale was 0.92.

The survey questionnaire was administered electronically, and participants were assured of the confidentiality and anonymity of their responses. Overall, this study aimed to address some of the limitations identified in previous research by employing a quantitative approach, a diverse participant sample, and standardized measurement scales to investigate the factors influencing e-pharmacy adoption and the mediating role of SI.

3.2 Analytical strategy

The research model underwent validation through the application of partial least squares structural equation modelling (PLS-SEM) using Smart-PLS 3.2.8 software. A bootstrapping procedure involving 5,000 sub-samples was employed to analyse the data. The study further investigated the mediating role of SI by assessing the indirect effect through the PLS bootstrapping technique in elucidating the relationship between independent variables and the adoption of e-pharmacy.

3.2.1 Preliminary analysis. The measurement model of the study was evaluated through the assessment of reliability, convergent and discriminant validity. All variables were measured reflectively. The factor loadings of all constructs were above 0.50, suggesting that the underlying latent variables account for over 50% of the variability observed in the construct scores, which indicates that constructs had sufficient convergent validity based on (Benitez *et al.*, 2020; Henseler, 2018). The estimated values for composite reliability (CR) and Cronbach's alpha, as well as the average variance extracted (AVE) values all surpassed their respective cutoff points of 0.7 and 0.5, indicating a high level of reliability, as depicted in Table 1. This aligns with the recommendation of Benitez *et al.* (2020).

3.2.2 Structural model. Results derived from the PLS-SEM analysis indicated that four out of the six initially proposed hypotheses in this study were substantiated by statistically significant associations at a significance level of $p = 0.01$ (refer to Tables 2 and 3). PE was significantly and positively associated with adopting e-pharmacy ($\beta = 0.34$, $t = 3.86$, SD = 0.081, $f^2 = 0.064$, $p = 0.0$). As a result, this finding confirmed Hypothesis 1. Conversely, EE and facilitating conditions exhibited no statistically significant effect on e-pharmacy

Table 1.
The reliability and validity of latent and observed variables

		Fornell-Larcker criterion					HTMT								
	Constructs	1	2	3	4	5	1	2	3	4	5	α	Rho_A	CR	AVE
1	Adoption of e-pharmacy	0.862										0.827	0.832	0.896	0.742
2	Effort expectancy	0.388	0.874				0.423					0.923	0.942	0.942	0.764
3	Facilitating conditions	0.493	0.592	0.717			0.576	0.791				0.771	0.802	0.838	0.513
4	Performance expectancy	0.572	0.756	0.59	0.836		0.636	0.824	0.743			0.915	0.922	0.933	0.699
5	Social influence	0.678	0.472	0.623	0.63	0.851	0.764	0.5	0.688	0.671		0.924	0.925	0.941	0.725

Source(s): Table by authors

adoption. Consequently, the findings of this study lead to the rejection of Hypotheses H2 and H3. Based on the results of the present study, the R-squared (R^2) value was notably high, at 0.50, suggesting that the sets of independent variables explain 50% of the variance in adopting e-pharmacy.

3.2.3 Mediation test of social influence. The relationship between PE and the adoption of e-pharmacy was statistically significant in the direct model, as illustrated in Table 3. When considering the mediating Influence of SI, the connection between PE and e-pharmacy Adoption (H4a) remained significant ($\beta = 0.246$, $t = 5.452$, $p = 0.00$), indicating a partial mediation effect of SI in the association between PE and adoption of e-pharmacy.

The findings regarding the impact of EE and facilitating conditions on e-pharmacy adoption in the direct model were not statistically significant. In contrast, in the mediation model (H4b), the results reveal a complete mediation effect, with SI fully mediating the relationships between EE and e-pharmacy adoption ($\beta = -0.075$, $t = 2.017$, $p = 0.041$) as well as facilitating conditions and e-pharmacy adoption (H4c) ($\beta = 0.207$, $t = 5.704$, $p = 0.00$).

4. Discussion and conclusion

The primary objective of this study was to examine the determinants of e-pharmacy adoption and investigate the mediating role of SI in a sample of university students. The findings of this study revealed that the most critical factor predicting the adoption of e-pharmacy among young people is PE. This suggests that young individuals' perception of the benefits and utility of e-pharmacy significantly influences its adoption. This result is consistent with previous research (Srivastava and Raina, 2020), which found that PE is significantly associated with e-pharmacy Adoption in India. The result supports that when patients believe that a particular technology can enhance treatment effectiveness, they are more inclined to utilize services provided by that technology (Dhagarra *et al.*, 2020). Our findings also echo those of (Honein-Abouhaidar *et al.*, 2020), who found that the predictive capacity of perceived usefulness outweighed perceived ease of use in explaining BI toward adopting electronic patient portals, a prevalent technological innovation in healthcare.

Findings from this study also suggest that SI is a potent mediator in the UTAUT model. Given that all three predictors of the adoption of e-pharmacy in this study were mediated by SI. A full mediation effect was found for the facilitating condition-adoption path and the EE-adoption path, while a partial mediation was found for the PE-adoption path. SI partially mediates the relationship between PE and the adoption of e-pharmacy because, as noted

H	Path coefficient direct effect	β	(STDEV)	*T* statistics	Sig	Conclusion
H2	Effort expectancy → Adoption	−0.125	0.07	1.789	0.074	Not Significant
H3	Facilitating conditions → Adoption	0.077	0.058	1.322	0.186	Not Significant
H1	Performance expectancy → Adoption	0.311	0.081	3.86	0	Significant

Source(s): Table by authors

Table 2. Path analysis results: direct effect

H	Path direction	β	P	LB	UB
H4b	Effort expectancy → Social Influence → Adoption	−0.075	0.041	−0.149	−0.005
H4c	Facilitating conditions → Social Influence → Adoption	0.207	0	0.141	0.285
H4a	Performance expectancy → Social Influence → Adoption	0.246	0	0.162	0.343

Source(s): Table by authors

Table 3. Mediating effect of social influence

earlier, PE is a more direct predictor of an individual's intention to adopt new technology, particularly in modern healthcare. However, the full mediation effect for other predictors suggests that facilitating conditions primarily influence an individual's intention to adopt a new technology through SI. This implies that individuals are more inclined to adopt a new healthcare technology when they observe others using it and perceive its user-friendliness and practical utility. Our finding aligns with contemporary research indicating that SI functions as a mediator linking expectancy factors (performance and effort) to healthcare workers' intention to adopt intelligent computing systems for diagnosis and treatment purposes (Cheng *et al.*, 2022). Based on our research model, it is noteworthy that the demonstration effect within SI may alleviate initial concerns regarding the insignificant direct effect of facilitating conditions, as behaviours observed in an individual's environment are readily imitated.

This study's originality lies in its comprehensive investigation of factors influencing e-pharmacy adoption and the mediating role of SI. Contributing to the existing literature fills gaps by offering a more refined understanding of adoption dynamics. The findings emphasize the importance of PE in driving e-pharmacy adoption, providing a clear direction for stakeholders to enhance service quality and user experience of e-pharmacy. Additionally, the mediating effect of SI highlights the significance of peer recommendations, celebrity endorsements and social media campaigns in shaping consumer adoption of e-pharmacies among young people. It also provides a clear interpretation of the mechanism through which determinants of technology adoption are related. Findings also suggest that to determine the adoption of e-pharmacy among young people, researchers, marketers and other pharmaceutical stakeholders should target SI as it plays a pivotal role.

5. Research implications

5.1 Theoretical implications

This study provides theoretical clarity in the UTAUT, giving room for an alternative understanding of causal relationships between variables. Findings highlight the complexity of how social factors interact with individual beliefs and external conditions in determining technology acceptance. It suggests that SI shapes the relationship between individual perceptions of user-friendliness and the external facilitating conditions necessary for technology adoption. In the context of e-pharmacy adoption, the influence of social factors may surpass the direct influence of EE or the availability of external facilitating conditions, indicating that peer influence or social networks heavily shape individuals' perceptions and behaviours regarding technology adoption. The full mediation of EE and facilitating conditions by SI highlights their intricate interplay in the UTAUT model, prompting its refinement to capture technology adoption complexities better.

5.2 Practical implication

This study provides valuable insights into e-pharmacy adoption and advances numerous critical areas of expertise. It includes information relevant to access the impact of e-pharmacy services on healthcare accessibility, affordability and quality in developing countries. First, this study presents a comprehensive view of e-pharmacy adoption determinants. The study provides a complete picture of adoption by investigating SI's direct and mediated effects. This multi-dimensional perspective helps healthcare providers and marketers design more educated and effective e-pharmacy promotion strategies. This complete understanding is essential to navigate adoption in a digital healthcare environment, particularly in developing countries. Second, the study shows that PE drove e-pharmacy adoption, while EE and facilitating conditions did not. This suggests the need for a push in technological

advancements and innovations tailored to developing countries' specific needs and infrastructural limitations. Adapting e-pharmacy in developing countries may require platform developers to ensure user applications work efficiently with limited connectivity or low-resource settings, which can enhance their usability and accessibility. Thirdly, SI mediates crucial elements and e-pharmacy adoption. Based on these findings, marketers should focus on leveraging SI in marketing strategies for online pharmacies. Encouraging visible displays of positive experiences within e-pharmacy campaigns and emphasizing testimonials or endorsements from respected figures or social groups that could prompt others to imitate this behaviour, fostering trust and increasing adoption rates. Additionally, highlighting the ease of use and providing accessible information about the e-phamacy's benefits can further enhance this effect.

Finally, the study supports the findings of previous researchers. This consistency among studies supports the assumption that e-pharmacy adoption variables are stable and generalizable, offering solid decision-making and policy formulation ideas. This study provides a deep insight into e-pharmacy adoption and offers insight into potential users' needs, preferences and concerns regarding e-pharmacy services. This insight allows stakeholders to tailor their services better to meet the requirements and expectations of the local population, enhancing acceptance and adoption.

5.3 Limitations and future research directions

While this study sheds light on e-pharmacy adoption in emerging economies, its cross-sectional design restricts the exploration of evolving technology uptake. Consequently, there's a pressing need for longitudinal investigations to track the dynamic adoption patterns, especially among younger users. Additionally, the data primarily sourced from educated urban youths indicates a potential bias, highlighting the necessity for future research encompassing diverse demographics, including rural and other community settings, to comprehensively understand e-pharmacy adoption trends.

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