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ORIGINAL

User acceptance of health information technologies (HIT): an application of the theory of planned behavior

Aceptación por parte de las usuarias de las tecnologías de la información en salud (HIT): una aplicación de la teoría del comportamiento planificado

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ABSTRACT

Health Information Technologies (HIT) has a significant chance of enhancing the standard of medical treatment, but their acceptance faces major obstacles including low adoption rates and professional hesitancy. Limited research on HIT adoption, especially in poor nations, adds to this problem and clearly challenges health care managers and researchers. It emphasizes the need of knowing the elements influencing acceptance, choice, and usage of healthcare technology to improve user adoption willingness. Using past studies from several nations, this paper investigates the elements driving HIT adoption within the prism of the Theory of Planned Behavior (TPB). Using a Systematic Literature Review (SLR) under direction from the PRISMA framework guaranteed an open and exhaustive study. With eight publications compared to six from wealthy countries, the results expose a notable trend: emerging countries help more to promote HIT adoption research. Furthermore, the combination of TPB with other theories like the Technology Acceptance Model (TAM) provides a whole framework for grasp the elements influencing HIT uptake. Core TPB components include subjective norms, attitude, and perceived behavioral control are well known in industrialized nations and supported by TAM's perceived utility and simplicity of use, along with demographic elements, therefore stressing a user-centric approach. Research on emerging nations, particularly China, shows, on the other hand, a wide spectrum of variables on HIT adoption including personal, technical, social, and institutional ones. The results greatly improve our knowledge of HIT adoption seen from the TPB perspective and provide insightful analysis for legislators developing sensible plans for HIT implementation.

Keywords: Adoption; HIT; Theory of Planned Behavior; Systematic Literature Review; Developed Countries; Developing Countries.

RESUMEN

Las tecnologías de la información sanitaria (HIT) tienen grandes posibilidades de mejorar el nivel de los tratamientos médicos, pero su aceptación se enfrenta a importantes obstáculos, entre ellos los bajos índices de adopción y las reticencias de los profesionales. La escasa investigación sobre la adopción de HIT, especialmente en países pobres, se suma a este problema y supone un claro reto para gestores sanitarios e investigadores. Se hace hincapié en la necesidad de conocer los elementos que influyen en la aceptación, la elección y el uso

de la tecnología sanitaria para mejorar la voluntad de adopción por parte de los usuarios. A partir de estudios realizados en varios países, este artículo investiga los elementos que impulsan la adopción de la HIT desde el prisma de la Teoría del Comportamiento Planificado (TPB). El uso de una Revisión Sistemática de la Literatura (SLR) bajo la dirección del marco PRISMA garantizó un estudio abierto y exhaustivo. Con ocho publicaciones frente a seis de países ricos, los resultados exponen una tendencia notable: los países emergentes ayudan más a promover la investigación sobre la adopción de HIT. Además, la combinación de la TPB con otras teorías como el Modelo de Aceptación de la Tecnología (TAM) proporciona un marco completo para captar los elementos que influyen en la adopción de la HIT. Los componentes básicos del TPB, como las normas subjetivas, la actitud y el control conductual percibido, son bien conocidos en los países industrializados y se apoyan en la utilidad percibida y la sencillez de uso del TAM, junto con elementos demográficos, lo que hace hincapié en un enfoque centrado en el usuario. La investigación sobre países emergentes, en particular China, muestra, por otra parte, un amplio espectro de variables sobre la adopción de las tecnologías de la información y la comunicación, incluidas las personales, técnicas, sociales e institucionales. Los resultados mejoran notablemente nuestro conocimiento de la adopción de las tecnologías de la información desde la perspectiva de la teoría de la competencia y aportan un análisis perspicaz para que los legisladores elaboren planes sensatos de implantación de las tecnologías de la información.

Palabras clave: Adopción; HIT; Teoría del Comportamiento Planificado; Revisión Sistemática de la Literatura; Países Desarrollados; Países en Desarrollo.

INTRODUCTION

In today's fast-paced environment, contemporary institutions operate within a highly competitive landscape, further complicated by rapid advancements in information technology and changing consumer needs. This reality necessitates those businesses continually adapt and innovate to meet evolving demands, a theme extensively discussed in the literature (Al-Alwan et al., 2022; Al-Hawary & Alhajri, 2020; Al-Hawary & Obiadat, 2021; Al-Nawafah et al., 2022; Al-Qudah et al., 2012; Altarifi et al., 2015; Tariq et al., 2022). Comparably, during the decade, technological innovations have significantly changed the healthcare sector (Al-Momani & Ramayah, 2023c). Healthcare organizations increasingly rely on digital solutions and advanced technologies for efficient operation. This includes a broad array of HIT, such as e-prescribing, Electronic Health Records (EHRs), order entry systems for physicians that are computerized, radiological information systems, practice management support, and clinical decision support systems (Zhan et al., 2024). Individuals, healthcare providers, and community health organizations can effectively collect, share, and utilise health information due to these technologies (Alsyouf et al., 2023). Their integration not only streamlines various tasks but also significantly improves healthcare management and reduces costs(Al-Momani & Ramayah, 2023a; Kurdi et al., 2023).Additionally, HIT plays a crucial role in aiding hospital managers in making accurate decisions and boosting hospital efficiency(Nadri et al., 2018).

Global issues, such as pandemics, and the fourth Industrial revolution, have spurred the healthcare sector's rapid adoption of HIT (Epizitone et al., 2023).However, research on its adoption in developing countries is limited (Bawack & Kala Kamdjoug, 2018). Furthermore, (Bawack & Kala Kamdjoug, 2018) highlighted the substantial challenge of HIT adoption in developing countries. In addition, despite evidence from (Lin et al., 2019) that higher adoption rates of HIT could improve healthcare service quality, numerous studies indicate low adoption rates and a general reluctance towards technology in the healthcare sector (Al-Azzam et al., 2023; Crisan & Mihaila, 2023; Jianxun et al., 2021; Rahdar et al., 2023; Turan & Koç, 2022). This reluctance among healthcare professionals presents a significant obstacle for health service management and researchers (Saare et al., 2021; Dimitrovski et al., 2021). Consequently, recognizing how healthcare technology is selected, approved, and utilized is crucial, as multiple factors determine users' willingness to adopt these technologies (Rahdar et al., 2023). Therefore, recognizing the significance of HIT adoption is crucial for developers and companies alike (Nadri et al., 2018). Accordingly, this systematic review contributes to the field by analyzing existing studies on HIT adoption across developed and developing nations, framed by the theory of planned behavior.

The TPB, developed by Ajzen and Fishbein, the reasoned action theory by adding "perceived behavioral control", thus accommodating a wider array of factors influencing human actions (Ajzen, 1991; Fishbein & Ajzen, 1975). The TPB proposes that behavior is impacted by attitudes, subjective standards, objectives, and perceived control. This framework is instrumental in predicting and understanding diverse behaviors, particularly in digital and healthcare settings, offering both theoretical and practical insights for behavioral interventions (Guo et al., 2022). However, TPB has been critiqued for not fully considering emotional influences on behavior, an aspect vital in health behavior research(Dutta-Bergman, 2005; Guo et al., 2022).

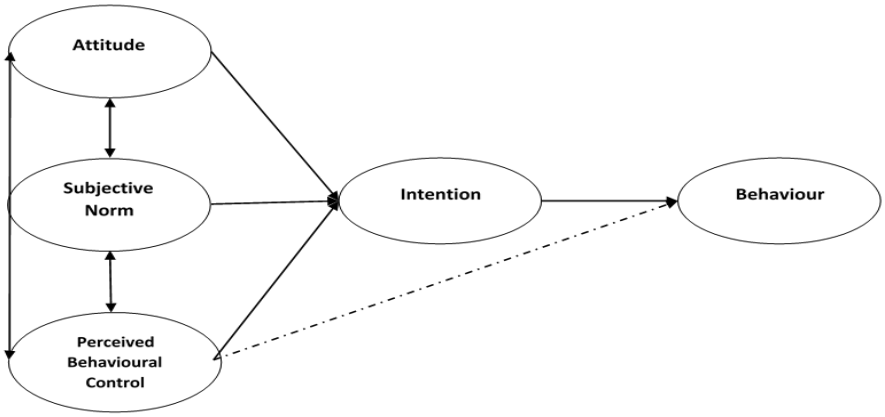

Figure 1. The theory of planned behavior

METHOD

This paper uses the TPB as a theoretical framework and does an SLR to investigate the main determinants of HIT acceptance. Following the PRISMA statement flow diagram (Moher et al., 2009) and in line with Al-Momani, 2023a, 2023c, our approach follows the procedural steps advised by (Briner & Denyer, 2012; Denyer & Tranfield), 2009; thus efficiently arranges the SLR inside the PRISMA parameters. Five phases comprise our methodological approach: formulating research questions, locating pertinent literature, choosing and critically evaluating articles, data analysis and synthesis, and lastly distribution and application of the insights acquired (Briner & Denyer, 2012; Denyer & Tranfield, 2009). Starting with careful study design and question development, the first step consisted of a thorough search across two main databases: Web of Science (WoS) and Scopus. The selection of these databases was predicated upon their regular updates (Chadegani et al., 2013; Harzing & Alakangas, 2016) and great coverage in many different scientific fields. While Scopus provides a combination of theoretical and practical works, WoS is well-known for emphasizing basic research (Stahlschmidt & Stephen, 2020). By combining both databases, the study intends to increase the credibility of the conclusions by means of a comparison analysis, so addressing the strengths and shortcomings of the databases as mentioned by (Yubo et al., 2023), thus guaranteeing the validity of the research output.

Question Formulation

The first and most critical step in conducting a SLR is the formulation of precise research questions, which lay the foundation for the entire review process. Therefore, initiating the literature review with clear and well-defined questions is essential. This study primarily focuses on exploring particular research questions below:

RQ1. What significant advancements did earlier study endeavors on HIT make?

RQ2. What factors influence the adoption of HIT in different countries?

Finding Research

To maintain the SLR's quality and guarantee transparency, this study utilized two reputable databases: The WoS and Scopus. These platforms were pivotal in identifying articles pertinent to the research questions by employing specific search terms. On March 10, 2024, a targeted search was conducted within article titles, abstracts, and keywords using two sets of keywords: Group A focused on the theory of planned behavior, also spelled theory of planned behaviour, and abbreviated as TPB. Group B encompassed terms related to digital health, including e-health, digital informatics, electronic medical records, electronic health records, health informatics, digital health, telehealth, and telemedicine.

Choosing and Assessing the Articles

Table 1 presents the research protocol, specifying the criteria for article inclusion and exclusion. The selection process entailed a three-stage screening, sequentially examining titles, abstracts, and full texts. The Rayyan tool, designed to aid the SLR process, supported this approach figure 3. Articles meeting the inclusion criteria were systematically cataloged in Mendeley for management and organized in an Excel spreadsheet for detailed analysis.

Evaluation and Combination

The chosen articles were thoroughly analyzed and synthesized in this research, classifying them based on criteria such as country type, publication year, research setting, and frequency of factors.

Presenting and Applying the Findings

Research on the adoption of HIT is examined in this SLR. The next parts will go over the research issues that this study intends to solve.

Table 1. The Systematic Literature Review Adopted Protocol

1.	Objectives	1) To determine the main contributions of earlier HIT research projects. 2) To determine the main elements influencing HIT adoption in various nations.	
2.	Research questions	1) What major contributions did earlier HIT research projects make? 2) What variables affect the adoption of HIT in various nations?	
3.	Keywords and synonyms	Group A Keywords: theory of Planned Behavior, Theory of Planned Behaviour, TPB. Group B Keywords: e-health, digital informatics, electronic medical records, health informatics, electronic health records, telehealth, digital health, telemedicine.	
4.	Source selection	Requirements: the sources must be accessible and acknowledged as superior sources worldwide.	
	A- Criteria definition	Research language: english Methods for Finding Sources: the sources must be readily accessible and acknowledged as superior sources worldwide. Source List: scopus & WoS.	
	B- Study selection criteria	Inclusion Criteria IC1: the paper addresses the adoption of HIT by applying TPB. IC2: the paper should be peer-reviewed. IC3: the paper should be with a digital object identifier (DOI).	Exclusion Criteria EC1: the paper does not identify the TPB theory to address the adoption of HIT. EC2: the entire text of the article is not accessible. EC3: it is a conference paper/book chapter/ review/ book/ note/conference review/ Editorial. EC4: the paperwork is not in English.
5.	Study type definition	Journal articles published.	
6.	Study initial selection	The initial search took place on March 10, 2024.	

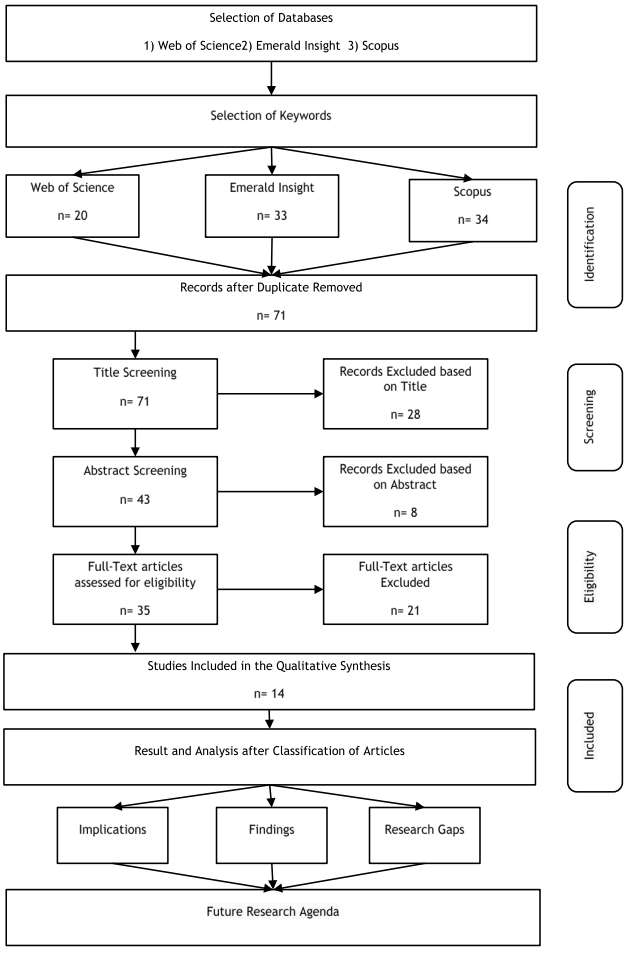

Figure 2. PRISMA flowchart of the study

RESULTADOS

In this section, comprehensive responses to the research questions outlined in this SLR are provided. Fourteen studies met the exclusion and inclusion criteria set forth for this SLR. Table 2 presents a detailed overview of these selected articles, summarizing the current state of literature on the topic.

Table 2. Factors Affecting Heath Information Systems Adoption (N=14)

Authors	Objectives	Theory	Statistical tool	Factors
(Andrews et al., 2014)	To investigate public attitudes towards the promotion of personally controlled electronic health records (PCEHR) in Australia.	Theory of planned behavior model (TPB)	Statistical Package for the Social Sciences (SPSS)	Customs in society Perceived Utility Attitude Compatibility and perceived ease of usage Considered danger Concealed worth rely on Controllability Privacy concerns Behavioral Web-self efficacy intention
(Chau & Hu, 2002)	To look at how Hong Kong physicians are using telemedicine technologies.	Technology acceptance model (TAM), Theory of planned behavior (TPB)	Lisrel	Personal standards Control of conduct and attitudes Considered utility Behavioral objective Perceived usability
(Chen et al., 2022)	To examine the sustained adoption and acceptance of telemedicine in Taiwan post-COVID-19 pandemic.	Technology acceptance model (TAM), Theory of planned behavior (TPB)	Partial least square (PLS)	Behavior as perceived control Normative standards of attitude Sense of usability Intention behind behavior Seen utility persistent use patterns
(El-Yafouri et al., 2022)	To understand the determinants of Electronic Medical Records (EMR) physician adoption and policymaking in enhancing uptake and data exchange among healthcare providers in the United States.	Theory of planned behavior (TPB), Technology acceptance model (TAM), Diffusion of innovation theory (DOI)	Statistical Package for the Social Sciences (SPSS)	Benefits seen by the industry Understanding Perceived Usability Financial aptitude Attitude Perceived utility Benefits of Workflow Comparative progress Behavioral control as perceived Personal standards Intentional behavior
(Gallardo et al., 2024)	To look at how older Filipinos want to utilize telemedicine and how important it is that they initially trusted	Theory of planned behavior (TPB)	Partial least square (PLS)	subjective standards Viewpoint: Perceived control over conduct Initial confidence Behavioral objective
(Guo et al., 2022)	To explore the connection between patients' attitudes toward privacy protection and their readiness to provide information Electronic Health Records (EHRs) in China.	The health belief model and the theory of planned behavior (TPB)	Partial least square (PLS)	Social rewards Attitude Perceived behavioral control Severity of the disease Sensitivity of health information Positive past experiences Chronic diseases Gender Age Level of education Behavioral intention
(Hsieh, 2015)	To present a theoretical framework that elucidates physicians' intentions to utilize an EMR exchange system in Taiwan.	Decomposed theory of planned behavior (TPB)	Partial least square (PLS)	Perceived usability Harmony Considered utility Belief Subjective standard influence of the government Behavioral control as perceived

				Self-assurance Interpersonal impact enabling conditions Situational normality Structural assurance Institutional trust Perceived risk Behavioral intention
(Huang et al., 2022)	To examine the factors linked to downloading and using the app, alongside understanding user awareness, perceptions, and potential enhancements for the app in Hong Kong.	Theory of planned behavior (TPB), Technology acceptance model (TAM)	Statistical Package for the Social Sciences (SPSS)	Ability to see usefulness Students' perceived ease of use and technological acceptance may vary by age. Managed behavior Behavioral intention Personal standards
(Jianxun et al., 2021)	To experimentally examine how institutional constraints (coercive, normative, and mimetic) affect Ghanaian attitudes and adoption intentions toward electronic health records.	Institutional theory, Theory of planned behavior (TPB)	Analysis of Moment Structures (AMOS)	Coercive pressures Normative pressures Mimetic pressures Attitude Organaizational culture Behavioral intention
(Ma et al., 2016)	To explore the motivators behind nurses' commitment to safeguarding privacy in electronic medical records in Taiwan.	Decomposed Theory of Planned Behavior (DTPB)	Partial least square (PLS)	Perceived utility peer impact Thought viewed protection as being simple Accord Positivity favorable circumstances Greater impact Personality Subjective standard Intention behind behavior Behavior as perceived control
(Pikkemaat et al., 2021)	To investigate primary care physicians' intentions towards telemedicine adoption in Sweden.	Theory of planned behavior (TPB)	Statistical Package for the Social Sciences (SPSS)	Perspective Individual norm Behavior control that is perceived (self-efficacy) Controllability, or perceived control over the conduct Intention behind behavior
(Ramírez-Correa et al., 2020)	To offer superior explanatory capacity for telemedicine adoption in Brazil.	Theory of planned behavior (TPB), Technology acceptance model (TAM)	Consistent partial least squares path modeling (PLSc), robust PLSc	Perceived to be simple to use Mentality Viewed utility subjective standard The objective of behavior Perceived management of behavior
(Ramírez-Rivas et al., 2021)	To investigate how flexibility affects telemedicine's acceptability in Brazil	Theory of planned behavior (TPB)	Partial least square (PLS)	Attitude Perceived behavioral control Social norms PlasticityBehavioral intention
(Rantanen et al., 2021)	To investigate Finnish prisoners' attitudes towards digital health care and social welfare services and their adoption in Finland.	Theory of planned behavior (TPB)	Statistical Package for the Social Sciences (SPSS)	Individual norm Perspective Behavioral control is seen as reliable Intention behind behavior

What are the principal contributions of earlier HIT research work?

Figure 3 displays a comparative analysis of academic publications from developed and developing countries utilizing the TPB in HIT adoption. The graph reveals that publications from developing countries, totalling eight, surpass those from developed countries, which amount to six.

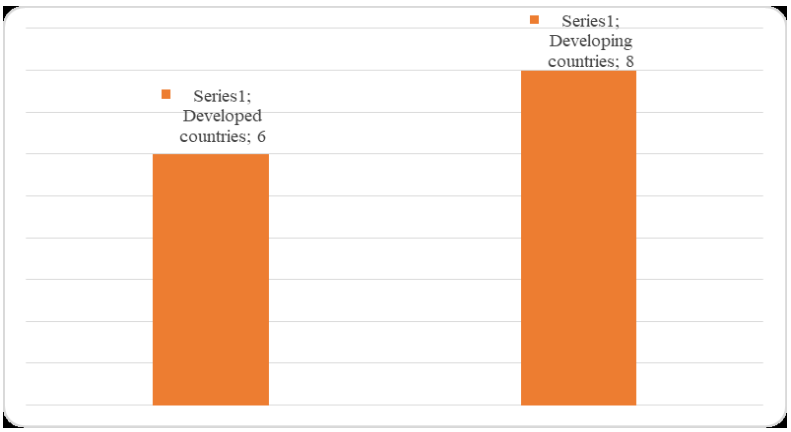

Figure 3. The distribution of articles among developed and developing countries

Second, figure 4 illustrates the annual trends in scholarly research on the application of the TPB in HIT, distinguishing between developed and developing nations. The publication timeline in developed countries spans from 2002 to 2022, with a significant increase observed in 2021 and 2022, indicating a growing interest in recent years. In contrast, research output from developing countries has been consistent since 2015, showing a continuous rise through 2021, 2022, and extending into 2024. This distribution offers several insights. Firstly, there is a noticeable uptick in contributions from both developed and developing countries in the last few years, signifying a heightened interest in the application of TPB within the context of HIT. Secondly, the initiation of research varies by region; developed countries began exploring this area in 2002, whereas developing countries started in 2015, reflecting the different timelines at which TPB became influential in health information system research across these regions. Lastly, the surge in research activity in recent years for both groups might indicate a broader acknowledgment of TPB's relevance or could be a reaction to evolving challenges within HIT that TPB helps address.

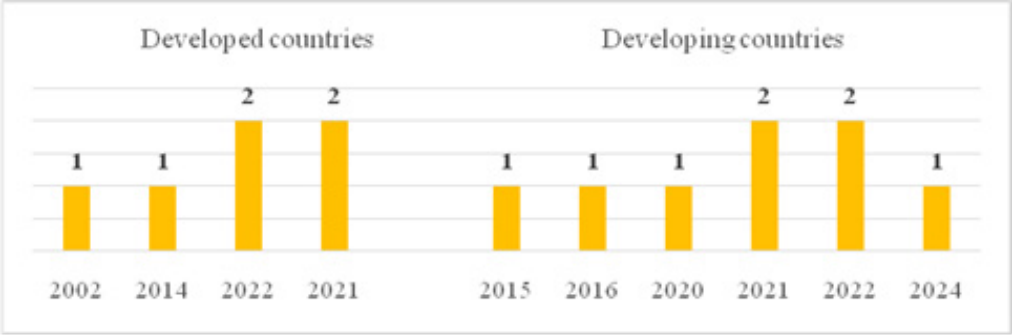

Figure 4. The breakdown of articles by year

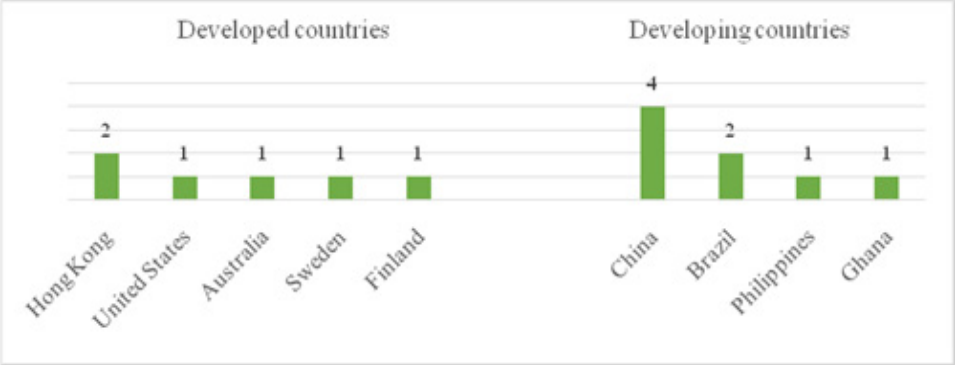

Figure 5. Distribution of articles by country

Thirdly, figure 5 depicts the distribution of publications on HIT, differentiated by the developmental status of the originating countries. Among developed nations, Hong Kong leads with two articles, followed by the United States, Australia, Sweden, and Finland, each contributing one. In the developing world, China emerges as the

leader with four publications, Brazil follows with two, and both the Philippines and Ghana have contributed one each. Notably, China's output surpasses that of other developing nations, highlighting a significant contribution from developing countries compared to their developed counterparts. The notable representation of Hong Kong within the developed category underscores the diverse participation in this academic field.

Fourthly, table 3 summarizes the frequency of various factors used as variables in studies on HIT adoption. The most commonly examined variables include behavioral intention, cited in 15 articles, followed by attitude in 14, perceived behavioral control in 13, and subjective norm in 12. Perceived utility and simplicity of use are both referenced in 8 different articles. These key factors are integral to established theoretical frameworks like the TPB and the TAM, which are frequently applied in technology acceptance and adoption research. These variables encompass practical, social, and psychological dimensions crucial for HIT adoption, guiding system designers and implementers to develop more intuitive systems and adapt their strategies to meet user needs and expectations, thereby fostering successful integration into daily operations.

Table 3. Factors presentation, including the number of studies citing these factors (n=38)

Factor	No. of articles	Factor	No. of articles
Behavioral intention	15	Interpersonal influence	1
Attitude	14	Knowledge	1
Perceived behavioral control	13	Level of education	1
Subjective norm	12	Mimetic pressures	1
Perceived ease of use	8	Normative pressures	1
Perceived usefulness	8	Organizational culture	1
Trust	4	Past positive experiences	1
Compatibility	3	Peer influence	1
Self-efficacy	3	Perceived industry benefits	1
Behavior	2	Perceived value	1
Facilitating conditions	2	Plasticity	1
Perceived risk	2	Privacy concerns	1
Chronic diseases	1	Relative advancement	1
Coercive pressures	1	Situational normality	1
Controllability	1	Social rewards	1
Disease severity	1	Structural assurance	1
Financial ability	1	Superior influence	1
Governmental influence	1	Sustained utilization behavior	1
Health information sensitivity	1	Workflow benefits	1

Finally, figure 6 highlights the prevalence of theoretical frameworks in the literature on health information system adoption. The TPB is particularly prominent, appearing in five articles as a standalone framework and in conjunction with other theories. The integration of TPB with the TAM is notable and featured in four articles. The DTPB is utilized in two articles for a detailed examination of TPB's components. One article combines TPB, TAM, and the Diffusion of Innovation (DOI) theory, offering a comprehensive perspective by incorporating insights from the spread of innovations. Additionally, the conjunction of TPB with the health belief model and Institutional Theory (INST)in separate articles illustrates an interdisciplinary approach to exploring factors influencing adoption. The frequent citation of TPB highlights its central role in understanding and predicting behaviors related to the adoption of HIT. Merging TPB with other models like TAM, DOI, and more reflects an effort to encompass a wide range of determinants, from personal attitudes and perceptions of system usability to wider social and organizational influences. This diversity of theoretical approaches in the literature points to an in-depth exploration of the multifaceted factors affecting the adoption of HIT, underscoring the complex nature of behavioral change in healthcare environments.

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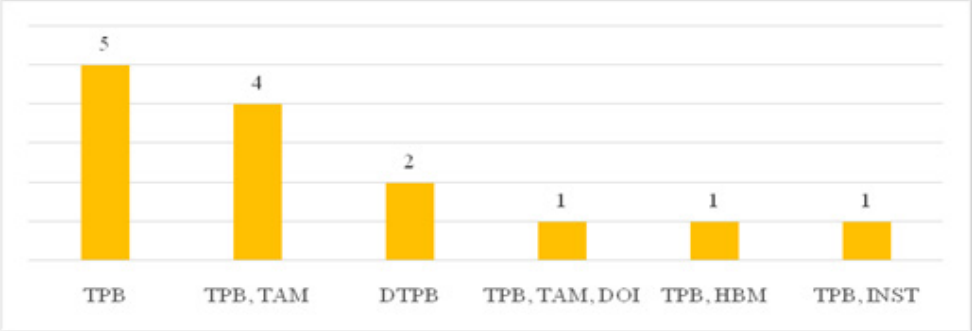

Figure 6. Distribution of articles by theory

What are the elements influencing HIT adoption in different countries?

Through the lens of the TPB, table 4 shows the numerous factors affecting HIT adoption in developed nations. Purpose is affected by subjective standards, perceived behavioural control, and attitude toward the activity, which in turn determines their behavior, according to TPB. The countries in the research recognize subjective norms, attitudes, and perceived behavioural control as essential, underscoring their critical role in HIT adoption. The factor of behavioural intention, central to TPB's premise that intention precedes action, is also widely recognized. Moreover, perceivable utility and usability being included, pivotal to the TAM, in regions like Hong Kong, Australia, and the United States, signifies that HIT adoption extends beyond mere intentionality to encompass system functionality and user-friendliness. Moreover, factors like compatibility, perceived value, perceived risk, trust, privacy concerns, and web-self efficacy suggest a comprehensive approach that includes technological, psychological, and social considerations. In addition, distinctive elements like perceived industry benefits, knowledge, financial ability, workflow benefits, and relative advancement point to the organizational and economic contexts alongside individual behavioral dimensions in HIT adoption. Sweden and Finland's focus on core TPB constructs, with an additional emphasis on trust in Finland, indicates a simpler analytical approach. Conversely, the extensive factor lists in Australia and the United States depict a layered understanding of HIT adoption, integrating multifaceted influences. The factors across these countries strike a balance between behavioral intentions and technological considerations, with nations like Hong Kong and the United States incorporating a blend of personal, behavioral, and technological factors, while Sweden and Finland lean more towards the behavioral aspects as outlined by the traditional TPB theory.

Table 4. Factors influencing HITadoption using TPB across developed countries

Country	Factors
Hong Kong	The aim of behavior, Personal standard, deemed to be beneficial, regarded as user-friendly, mindset, Student status, age, and Behavioral control as perceived, Acts.
Australia	Perceived value, societal norm, Perspective, Perceived simplicity of usage, Perception of risk, Compatibility, Perceived value, Trust, Controllability, Web-self efficacy, Privacy concerns, Behavioral intention.
United States	Knowledge, perceived utility, perceived advantages to the industry, and attitude of perceived usability, Financial ability, Relative advancement, Workflow benefits, Perceived behavioral control, Behavioral intention, Subjective norms.
Sweden	Subjective norm, Perceived behavioral control, Attitude, Behavioral intention.
Finland	Attitude, confidence, Perceived control over conduct, subjective standard Behavioral Intention.

Table 5, through the lens of the TPB, showcases the diverse factors influencing HIT adoption in developing countries, highlighting a blend of individual, technological, social, and institutional influences. Each country presents a distinct set of factors, mirroring its unique socio-cultural, economic, and healthcare backdrop. The consistent citation of TPB's core constructs across all countries underscores their universal relevance in deciphering HIT adoption in varied contexts, suggesting that fundamental psychological underpinnings of adoption decisions remain constant across different environments. Combining perceived utility, perceived ease of use, and TAM components, with TPB in nations like China and Brazil, acknowledges the significant impact of technology's perceived attributes on adoption. This combination underlines the necessity for HIT to be user-centric and valuable from the users' standpoint, in addition to being socially endorsed and intention-driven. China's comprehensive approach to understanding HIT adoption is seen in its large list of elements, which include continuous use behavior, social benefits, prior good experiences, and diverse influences such as

peer, superior, interpersonal, and governmental. The wide spectrum of acceptance seen in China's healthcare environment may be attributed to several personal, social, and institutional factors. Plasticity in Brazil refers to the necessity of healthcare information technology (HIT) to be flexible and adaptive so that it may properly handle certain healthcare needs and situations. In the Philippines, the idea of first trust emphasizes the necessity of trust as a basic need for the adoption of HIT, maybe implying issues on the credibility and dependability of the services. Together with corporate culture, the inclusion of coercive pressures, normative pressures, and mimetic pressures emphasizes the major part institutional dynamics and society norms play in the adoption of HIT, stressing how external constraints and cultural aspects effect adoption behavior. The underlined features of many nations expose the significant influence of institutional dynamics and socio-cultural elements on the acceptance of Health Information Technology (HIT). Furthermore, it is crucial to underline how societal structures and pressures help to direct the choices about the acceptance of Health Information Technology (HIT). These elements include the global component of subjective norm as well as the peer influence, influence from superiors, and interpersonal influence in China. The complexity and variety of the problem highlight the importance of adding a wide range of aspects into study on the adoption of health information technology in underdeveloped countries. The inclusion of TPB into other theoretical models and the study of context-specific variables point to the complexity of the adoption of HIT impacted by a mix of human, technical, social, and institutional aspects. This underlines the need of using flexible plans that fit these many variables to effectively encourage HIT acceptance in underdeveloped countries.

Table 5. Factors influencing HIT adoption using TPB across developing countries

Country	Factors
China	Attitude, Perceived behavioral control, Subjective norm, Perceived usefulness, Behavioral intention, Perceived ease of use, Sustained utilization behavior, Past positive experiences, Social rewards, Disease severity, Chronic diseases, Gender, Age, Health information sensitivity, Level of education, Compatibility, Superior influence, Peer influence, Facilitating conditions, Self-efficacy, Interpersonal influence, Governmental influence, Situational normality, Institutional trust, Structural assurance, Perceived risk.
Brazil	Perceived to be beneficial, Personal standard, regarded as intuitive, attitude, The objective of behavior, Behavioral control as perceived, Flexibility.
Philippines	Subjective norm, Attitude, Initial trust, Behavioral intention, Perceived behavioral control.
Ghana	Coercive pressures, Normative pressures, Mimetic pressures, Attitude, Organizational culture, Behavioral intention.

DISCUSSION

This research on HIT adoption, through the TPB lens, showcases a rich and varied contribution from both developed and developing countries. A comparative analysis indicates that developing countries, with eight studies, have a slightly higher output than their developed counterparts, which have contributed six studies. This suggests a significant interest, and potentially a greater necessity, to investigate HIT adoption in regions facing more acute healthcare challenges. Temporally, the literature from developed countries initiated around 2002, with a resurgence of publications noted in 2021 and 2022. Research from developing countries began to accelerate in 2015, displaying consistent growth and a pronounced interest up to 2024. Geographically, the studies show Hong Kong leading among developed countries with two publications, followed by the United States, Australia, Sweden, and Finland, each contributing one. China dominates the developing world with four publications; Brazil follows with two; the Philippines and Ghana each contribute one to the total. This emphasizes China's central influence on the direction of research in developing countries and the worldwide use of TPB in HIT adoption studies across diverse healthcare systems. Analysis of influencing elements in HIT adoption shows a constant concentration on important TPB components as behavioral intention, perceived behavioral control, attitude, and subjective norm throughout the studies. This consistency supports TPB's great relevance and general application. In many research, the combination of TAM's apparent simplicity of use and perceived value points to a whole strategy that respects both behavioral intents and HIT's technical characteristics. From demographic components to societal and institutional impacts, the diversity of elements reflects the complex nature of HIT adoption, transcending simple behavioral models to incorporate a great range of determinants. TPB's basic importance in clarifying HIT adoption behaviors is highlighted in the literature both alone and in concert with theories such as TAM. Combining TPB with various theoretical models such the DOI, HBM, and INST shows an interdisciplinary attempt to capture the intricate dynamics of HIT adoption. < This theoretical variety emphasizes the many facets of adoption behaviors and the need of thorough models able to include a wide range of factors. Finally, the growing corpus of TPB-based HIT adoption research,

especially the notable increase in contributions from both developed and developing countries in recent years, signifies a broad recognition of HIT' crucial impact on healthcare improvement. The array of identified factors across various contexts points to the importance of tailored adoption strategies that account for the complex interplay of individual, technological, social, and institutional factors.

CONCLUSIONS

The objective of this research was to thoroughly examine the literature to identify the main factors influencing HIT adoption through the lens of the TPB and to pinpoint research gaps. It emerged that no prior studies have applied TPB to explore HIT adoption in Arab countries, highlighting a significant research void. Additionally, an imbalance was noted, with research from developing countries, particularly China, overshadowing that from developed nations. The recent surge in research interest during 2021 and 2022 indicates that newer challenges and developments in HIT adoption may not have been fully captured in earlier studies. This calls for further exploration into the dynamic aspects of HIT adoption in the context of rapid technological advancements and changing healthcare environments. In addition, the fundamental TPB constructs attitude, subjective norm, perceived behavioral control, and behavioral intention are widely recognized. The heterogeneity of the extra variables that have been included in different research, however, points to a disjointed knowledge of HIT adoption. Studies carried out in underdeveloped nations often include a wider range of variables, such as structural assurance and interpersonal impact. As a result, research projects carried out in industrialized nations have to look at a wider range of factors. There is a noticeable lack of attention to emotional and psychological factors, such as trust, privacy, and security concerns, in the literature that primarily focuses on the practical, social, and technological aspects of HIT adoption, as noted by Abu-Shanab et al. (2012), Al-Momani & Ramayah (2023b), Al-Shanableh et al. (2024), and Alzyoud et al. (2024). These variables should be given more thought as they may have a big impact on the adoption process. In summary, recent research has used the Structural Equation Modeling-Artificial Neural Network (SEM-ANN) technique, which is a major methodological improvement. This hybrid strategy aims to expand understanding of the research topic (Scott & Walczak, 2009), validate SEM results (Al-Momani, 2023b; Rehman et al., 2022), and enhance decision-making (Ooi et al., 2018; Wan et al., 2022). It is suggested that dual-stage SEM-ANN analysis be used to improve the depth and robustness of insights gained from future research on HIT adoption utilizing TPB.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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