



FACTORS INFLUENCING BEHAVIOR USAGE INTENTION TECHNOLOGY AND INNOVATION PRODUCTS FOR HEALTH IN THAILAND

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ABSTRACT

Objective: The purpose of this study is to examine the elements influencing behavior usage intention related to technological and innovative products for health in Thailand.

Theoretical Framework: In the field of medical industry is among those sectors that leverage emerging technologies and innovations to propel future economic growth. It contributes significantly to the improvement of health cares and livelihoods as a result of technological, innovative, and personalized health developments. Its goal is to establish a causality relationship and to check the consistency of the model influencing behavior usage intention and technological and innovative products for health in Thailand.

Method: The study used a mixed method, incorporating qualitative feedbacks from 21 experts and quantitative data from 600 participants in Thailand. Filtering was performed on the data to remove outliers and demonstrates statistical, confirmatory factor analysis, and structural equation modeling.

Results and Conclusion: This study found that health belief, credibility, consumer innovation, attitude to use, and perceived usefulness positively affect behavior usage intention toward technological and innovative products for health. It is established that attitudes to use is one of the strongest indicators of behavior usage intention healthcare technology and innovation utilization, directly and indirectly.

Originality/Value: This research discloses causal elements that impact factors influencing behavior usage intention technology and innovation products for health in Thailand. Developers and marketers can utilize more development tactics to enhance consumers' behavior usage intention in healthcare technology.

Keywords: Intention, Perceived Usefulness, Attitude, Healthcare, Technology.

FATORES QUE INFLUENCIAM O COMPORTAMENTO, INTENÇÃO DE USO, TECNOLOGIA E PRODUTOS DE INOVAÇÃO PARA A SAÚDE NA TAILÂNDIA

RESUMO

Objetivo: O objetivo deste estudo é examinar os elementos que influenciam a intenção de uso do comportamento relacionado a produtos tecnológicos e inovadores para a saúde na Tailândia.

Enquadramento Teórico: No campo da indústria médica está entre os setores que alavancam tecnologias e inovações emergentes para impulsionar o crescimento económico futuro. Contribui significativamente para a melhoria dos cuidados de saúde e dos meios de subsistência como resultado de desenvolvimentos de saúde tecnológicos, inovadores e personalizados. Seu objetivo é estabelecer uma relação de causalidade e verificar a consistência do modelo que influencia a intenção de uso do comportamento e de produtos tecnológicos e inovadores para a saúde na Tailândia.

Método: O estudo utilizou um método misto, incorporando feedbacks qualitativos de 21 especialistas e dados quantitativos de 600 participantes na Tailândia. A filtragem foi realizada nos dados para remover valores discrepantes e demonstra análise fatorial estatística, confirmatória e modelagem de equações estruturais.

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Resultados e Conclusão: Este estudo constatou que a crença na saúde, a credibilidade, a inovação do consumidor, a atitude de uso e a utilidade percebida afetam positivamente a intenção de uso do comportamento em relação a produtos tecnológicos e inovadores para a saúde. Está estabelecido que as atitudes de uso são um dos indicadores mais fortes do comportamento, intenção de uso de tecnologia em saúde e utilização de inovação, direta e indiretamente.

Originalidade/Valor: Esta pesquisa revela elementos causais que impactam fatores que influenciam o comportamento, intenção de uso de tecnologia e produtos inovadores para a saúde na Tailândia. Os desenvolvedores e profissionais de marketing podem utilizar mais táticas de desenvolvimento para melhorar a intenção de uso do comportamento dos consumidores em tecnologia de saúde.

Palavras-chave: Intenção, Utilidade Percebida, Atitude, Saúde, Tecnologia.

FACTORES QUE INFLUYEN EN EL COMPORTAMIENTO INTENCIÓN DE USO TECNOLOGÍA Y PRODUCTOS DE INNOVACIÓN PARA LA SALUD EN TAILANDIA

RESUMEN

Objetivo: El propósito de este estudio es examinar los elementos que influyen en el comportamiento de intención de uso relacionado con productos tecnológicos e innovadores para la salud en Tailandia.

Marco teórico: En el campo de la industria médica, se encuentra uno de esos sectores que aprovechan las tecnologías e innovaciones emergentes para impulsar el crecimiento económico futuro. Contribuye significativamente a la mejora de la atención sanitaria y los medios de vida como resultado de avances sanitarios tecnológicos, innovadores y personalizados. Su objetivo es establecer una relación de causalidad y comprobar la coherencia del modelo que influye en el comportamiento, la intención de uso y los productos tecnológicos e innovadores para la salud en Tailandia.

Método: El estudio utilizó un método mixto, incorporando comentarios cualitativos de 21 expertos y datos cuantitativos de 600 participantes en Tailandia. Se realizó un filtrado de los datos para eliminar valores atípicos y demuestra análisis factorial confirmatorio estadístico y modelado de ecuaciones estructurales.

Resultados y conclusión: Este estudio encontró que la creencia en salud, la credibilidad, la innovación del consumidor, la actitud de uso y la utilidad percibida afectan positivamente el comportamiento de intención de uso hacia productos tecnológicos e innovadores para la salud. Se establece que las actitudes hacia el uso son uno de los indicadores más fuertes del comportamiento, intención de uso, utilización de tecnología e innovación en salud, directa e indirectamente.

Originalidad/Valor: Esta investigación revela elementos causales que impactan los factores que influyen en el comportamiento, la intención de uso, la tecnología y los productos de innovación para la salud en Tailandia. Los desarrolladores y especialistas en marketing pueden utilizar más táticas de desarrollo para mejorar la intención de uso del comportamiento de los consumidores en la tecnología sanitaria.

Palabras clave: Intención, Utilidad percibida, Actitud, Salud, Tecnología.

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1 INTRODUCTION

The global healthcare industry is extremely economically significant to the entire world, as it has a huge market value and is consistently growing on an annual percentage basis. The expansion of the healthcare economy is influenced by the adoption of innovative and state-of-



the-art technologies in healthcare processes. In this sector, the convergence of digital technologies, data analytics, and connectivity facilitates organizational-wide range of information encompassing health. In the context of “Health 4.0” refers to the process of transforming healthcare systems by incorporating digital technologies and innovations at every level of the delivery of health services. It is a progression that is by the ideas of Industry 4.0, which emphasizes the utilization of digital technology to improve the procedures, services, and treatments that are associated with healthcare. In the framework of Health 4.0, there is an emphasis placed on making use of all of the digital technologies that are currently accessible to enhance the functioning of healthcare procedures, medical services, and treatments. When it comes to optimizing the delivery of healthcare, IoT, AI, Big Data Analytics, and Telemedicine are often used.

The goal of the concept known as “Health 4.0” is to make use of digital technology to improve the management of healthcare, individualized medication, and the practice of preventive care. These includes the intelligent utilization of health data for decision-making, disease prediction, and the provision of health care services that are both exact and tailored. The term emphasizes the all-encompassing incorporation of digital technologies into the healthcare industry.

Advancements in technology and innovation have introduced a variety of innovative products that are reshaping the healthcare landscape, both locally and globally. These products have had a significant impact on improving access to health information and efficient healthcare services. They encompass various technologies, such as mobile health applications, wearable devices, telemedicine platforms, and remote monitoring systems (Phulkari et al., 2022). Healthcare wearable technology encourages physical activity, provides health and fitness statistics, and delivers individualized information to inspire users to achieve a healthy lifestyle (Zhang et al., 2017). Wearable technology in the healthcare industry is typically regarded to be an electronic technology that is built into items that people can wear on their bodies (Tehrani & Michael, 2014). Some examples of wearable technology that are used in health care and medicine include Google Glass, the iWatch, Fitbit, and the Mi Band wristband. (Chan et al., 2012; Zhang et al., 2017). Within the next five years, it is anticipated that the market for wearable technology in the healthcare industry will be more than double. (MedTech Impact of Wellness, 2018), Considering that it is projected to have a value of 58.3 billion dollars by the year 2025, it is believed that wearable technology (HealthWorks Collective, 2018), will be widely accepted as one of the most important technological advancements and innovations that



will be implemented in the future to improve the efficiency of medical processes and to reduce the expenses associated with medical treatment and healthcare. (Li et al., 2016)

Following the results of Doyle et al. (2022), concerning utilizing these technologies and innovations to achieve health goals, many aspects affect people's behavior. These variables include health beliefs, perceived credibility, attitude toward usage, perceived usefulness, customer innovation, and intention to use. Although these determinants have been studied individually in previous research, a thorough evaluation of their interrelationships and aggregate impact on behavior is required (Takisha et al., 2019). Since they integrate technological qualities with health characteristics, technology and innovative gadgets in the healthcare business help track real-time user health data to enhance healthcare (Chan et al., 2012). One instance of a technology that allows users to screen their health status in real time is the use of wristbands which can monitor their conditions when they are sleeping, including their pulse rates, and the distance they have walked are all examples of things that can be monitored during this process. The users are provided with the reference they require to undertake activities that will improve their health by studying and managing their real-time data (Li et al., 2016).

This study examines behavioral intention to use technology and innovation for health that gains an understanding of intentional use of behavior. Specifically, the study will concentrate on examining the correlation between this distinct factor and to have a comprehensive comprehension of consumer behavior about the usage intention of technology and innovation in healthcare that provide meaningful management for healthcare entrepreneurs and developers. The research process is described as follows. First, the researchers will analyze relevant literature to identify research gaps. Secondly, the researchers will present a supportive theoretical framework of the relationship of factors regarding behavioral intention to use technology and innovations. These include health beliefs, customer innovations, perceived credibility, attitude to use, and perceived usefulness that can influence usage behavior intention. Third, the researchers will explain the methodology and data analysis outcomes. Lastly, the researchers will explain theoretical and managerial implications, limits, and future research are discussed last.

2 LITERATURE REVIEW

The research aims to examine the elements influencing behavior to use technological and innovative products for health in Thailand. This research is based on interviews with



specialists and entrepreneurs, and the literature review will provide data for preliminary research on behavior intention to utilize technology and innovation for health.

Consumer Innovation (CIN) is an individual's innate inventive nature about new technology and an internal motivating stimulation (Persaud & Schillo, 2017). Consumer innovativeness is their readiness to test new technology and innovative people like to try new technology and are more likely to utilize it to achieve their aims (Kim et al, 2019). Empirical studies have shown that consumer innovativeness positively affects IT product acceptance (Slade et al, 2015). Research suggests that creative customers can tolerate risks and have stronger intention goals (Zhang et al, 2017; Talukder et al, 2019).

Health Belief (HBI) explains that dedicated people's health adaptation is related to trust. Technology is the key to improving healthcare customer behavior (Zhang et al., 2017). The foregoing advantages boost health, activity, and quality of life (Kim & Chiu, 2019). The researchers used HBI to describe healthcare technology uses and purpose.

Perceived Usefulness (UF) refers to the extent to which a person thinks when utilizing a specific technology that will improve their health outcomes and make activities related to their health more conveniently. When individuals perceive the products as useful, they are more motivated to use them (Davis 1989). When using technology and innovative products for health, perceived usefulness is a crucial factor that affects people's behavior (Alscher et al., 2023). In the technology acceptant model (TAM) framework, UF is hypothesized to be the direct predictor of behavioral intention to use the technology of interest (Park, et al., 2014). Clear communication of the value proposition and tangible benefits of using the products can enhance individuals' perceived usefulness of the products, thereby driving their adoption and usage. Previous studies indicate that UF is positively associated with continuance intention to use the products (Baker-Eveleth & Stone, 2015).

Credibility (CR) is people's perceptions of the extent of perceived privacy and security concerns they have which is a crucial component in determining the level of trust that individuals feel toward the information technology industry (Wang et al., 2003). The perceived credibility of data is useful in evaluating users' health status and the effectiveness of sports-perceived technology. Accuracy is also particularly important in affecting the perceived credibility of healthcare wearable technology. One reason for this is that the accuracy of users' health data is perceived to be particularly important (Korenkova & Hagerfors, 2011). To summarize, privacy protection establishes users' perceptions of the correctness and credibility of the technology they use, which is hypothesized to have a positive correlation with the perceived usefulness of the technology (Kawakami & Parry, 2013). The aforementioned



research indicates that the perception of trustworthiness has a positive impact on the level of acceptability that users have towards IT products and services (Shaw, 2014; Shin, Lee, and Hwang, 2017).

Attitude to Use (AU) refers to a person who believes that behavior can be significant or unpleasant. This suggests that an individual's attitude is shaped by their perception of the significance or unpleasantness associated with a particular behavior or activity (Chen et al., 2017). Attitude towards use of a product is a crucial factor in determining behavior as it is influenced by an individual's beliefs of personal and social motivations, which in turn impact their response. It shows that attitude towards usage is a constituent of their personality (Gibson & Sullivan, 2018). An individual's attitude is defined as how they see the results of their actions and one important factor influencing behavior intention is attitude (Chen et al., 2017).

Ajzen (1991) claims that the use of intention is reflects a person's willingness and effort to engage in a particular behavior. Davis (1989) provided a clear definition of usage intention as a metric measurement that quantifies an individual's level of determination to engage in a specific behavior. The probability of technology adoption is predicted by the intention to utilize (Shanmugam et al., 2014) and using and suggesting it to others (Pahnila, Siponen & Zheng 2011). The intention of using a product is a crucial factor in determining the adoption of technology and the resulting behavioral results. The level of user acceptability is frequently associated with an individual's intent, which can be used to forecast their usage behavior (Dinev, Smith & Hart 2013).

2.1 THEORY AND HYPOTHESIS

Methodological techniques include qualitative and quantitative research on factors influencing behavior usage intention technology and innovation products for health in Thailand were studied to produce a structural equation model. The purpose was to demonstrate the causality of CN, HI, AU, CR, UF, and UI. The research hypothesis is as follows:

H1: Consumer Innovation (CN) Has Direct Influence on Perceived Usefulness (UF)

H2: Health Belief (HI) has a direct influence on Perceived Usefulness (UF)

H3: Attitude to Use (AU) has a direct influence on Perceived Usefulness (UF)

H4: Credibility (CR) has a direct influence on Perceived Usefulness (UF)

H5: Attitude to Use (AU) has a direct influence on Usage Intention (UI)

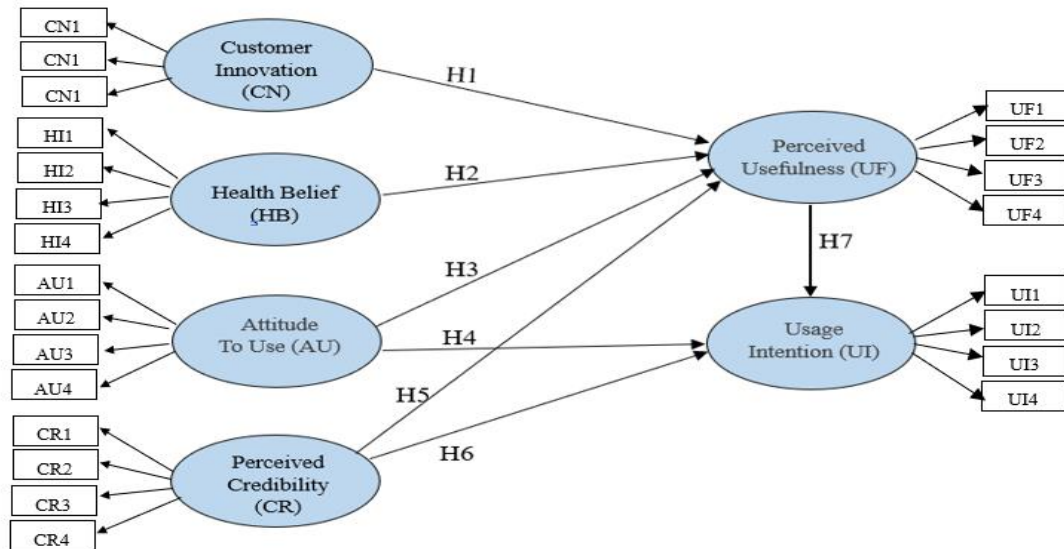
H6: Credibility (CR) has a direct influence on Usage Intention (UI)

H7: Perceived Usefulness (UF) has a direct influence on Usage Intention (UI)



Figure 1

Conceptual framework of the study



Source: Researchers' Analysis

3 METHOD

Structural equations model of behavior usage intention technology and innovation products for health with Rough Set Delphi technique (Chairaksa & Pankham, 2023) by identifying problems, collecting existing literature, and related research questions. Offer opinions to and create questionnaires to send to 21 experts with knowledge of technology, and innovation for health three times using electronic Delphi (e-Delphi). The creation of open-ended questions was sent to experts and proposing other viewpoints, then assessing their original replies and designating them as variables. Finally, closed-ended questions were sent to verify the expert's second answer. Rough Set Delphi technique was used to summarize quality research based on 21 experts' consensus. Following that, the researchers made use of the queries to acquire information from a chain of six hundred online questionnaires that were filled out by individuals who had utilized health technology and innovation products in Thailand. The objective was to bring about a situation in which all individuals were treated in the same manner. The population and sampling were divided into three distinct groups: Section 1 comprises of doctors and nurses (7 individuals); Section 2 consists of professors from the field of science and technology (7 individuals); and Section 3 consists of health technology creative leaders (7 individuals). Therefore, the overall population across all three groups totaled to 21 individuals. The data for this study was collected using an online questionnaire,



which was designed to create a structural equation model of the usage of intention technology and innovation for health in Thailand. The researchers conducted a thorough study and produced a questionnaire consisting of two sections: an open-ended question and a 7-point rating scale. This questionnaire was then distributed to a panel of 21 experts. This study has been reviewed and approved by the Ethics Review Board of Rangsit University in Thailand. The DPE number is RSUERB2022-046.

The collection of data was done when the researchers collected data from online email surveys that were carried out over the course of a period of four months, beginning on January 2023 and ending on April 2023. The researchers employed the Rough Set Delphi Technique for data analysis. The experts made conclusions based on a simplified approach that involved using lower and upper-bound estimations of a dataset to analyze any uncertainty in the data. The following stages were followed that include development of behavior patterns, usage intention innovative and technology, and health products in Thailand. The population is a sample of health technologies and innovations in Thailand and the study sample group was a group consisted of those who make use of health technology and innovation. It has been proposed that the ideal sample size should be within 10–20 times one observed variable (Kline & Rex, 2011). Alternatively, the Hoelter statistic requires that the sample size should be more than 200 (Hoelter, 1983). Both of these suggestions are considered to be appropriate based on the empirical data, and it was determined that the causal relationship model was quite compatible with the data. The model showed that there were 23 observable variables in this investigation, and a sample size of at least four hundred subjects was required. A total of 650 replies were received from the online survey. Following the elimination of replies that were either invalid or incomplete, a total of 600 were kept for the final analysis. Then the researchers analyzed the sample's preliminary data.

4 RESULTS

4.1 RESPONDENTS' PROFILE

The demographic distribution of the participants by age showed that the majority of 43.33% falls within the 30-50 years age group, followed by 31.67% of 50 years and up and those under 30 years constitute 25%. This distribution suggests that individuals in the middle age bracket are intrigued by health technology and innovation. In Gender Representation, the sample is mostly composed of females, making up 35.83% and men account for 33.33% of the



participants, while individuals of other genders make up 30.83%. In terms of marital status, 42.67% of the respondents are married, 40.50% are single, and 16.83% are widowed or divorced. This data suggests that married people are intentionally using the product in healthcare. When it comes to education, the majority of participants hold a Bachelor's degree (48.67%), followed by those with an undergraduate level of education (31.33%). Participants with a postgraduate make up 20.00%. For monthly income, most participants (34%) earn between 30,001-45,000 baht, 28% make 15,001–30,000 baht, those earning above 45,001 baht comprise 24%, less than 15,000 baht, 13.33%. This income distribution implies that most health technology and innovation product customers are middle-income, demonstrating affordability and access. The demographic distribution of the participants by age of 43.33% falls within the 30-50 years age group, followed by 31.67% of 50 years and up. Those under 30 years constitute 25%. The demographic distribution of the participants by types of technology and innovation for Health promotion is 43.17% followed by innovation to wear 35.33% and portable innovation 21.50%. Innovation for use in the house has been utilized by 43.17 percent under technology and innovation 35.33% of the innovation to wear, and 21.50% of examination and treatment. Occasional apply creation of innovation and technology to health 40.67% use daily 32.50 percent and use only when symptoms present 26.83%.

4.2 CONFIRMATORY FACTOR ANALYSIS

The measurement models were put through a confirmatory factor analysis (CFA) to determine whether or not the observable variables accurately reflected the latent variables. This was done to examine the validity and reliability of the measurement models. Construction reliability (CR) and average variance extraction (AVE) were utilized to carry out a trustworthy evaluation. $AVE > 0.50$ and $CR > 0.70$ consisted of the dependability baseline ratings that had been established (Ferdinand, 2002; Haryono and Wardoyo, 2013; Sarjono and Yulianita, 2019).

Table 1

Correlation value of observed variables of Consumer Innovation (CN)

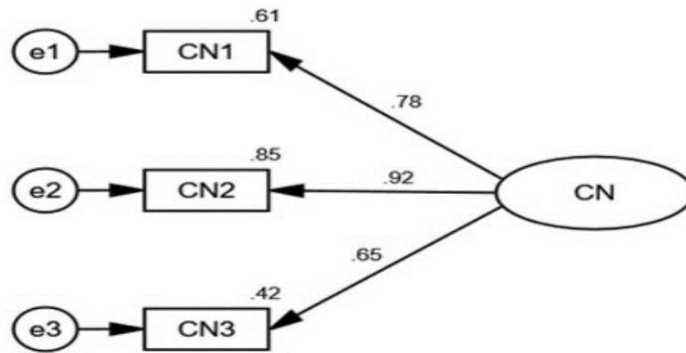
Observed Variables	Correlation Value		
	CN1	CN2	CN3
CN1	1.00		
CN2	0.72**	1.00	
CN3	0.51**	0.60**	1.00

Source: Author (2024)



Figure 2

Measurement model of Consumer Innovation



Chi-square (df) = .108 (1) :P value (≥ 0.05) = .743; CMIN/df (≤ 2) = .108; AGFI (≥ 0.9) = .999; GFI (≥ 0.9) = 1.000; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.001; TLI (≥ 0.9) = 1.004; RMSEA (≤ 0.08) = .000; RMR (≤ 0.08) = .015; SRMR (≤ 0.08) = .003; Hoelter (> 200) = 21364
 Source: Author (2024)

Table 2

Composite reliability and average variance extraction of Consumer Innovation (CN)

Latent Variables	AVE	CR	Observed Variables	Standard Component Weight	R ²
Consumer Innovation	0.60	0.83	You always love to experiment with new health products and innovations. (CN1)	0.78	0.61
			You're the first one in a group of friends to buy a newly launched healthcare technology and innovation. (CN2)	0.92	0.85
			You're always buying new technology and health innovations that are being launched regularly. (CN3)	0.65	0.42

Source: Author (2024)

Table 3

Correlation value of observed variables of Health Belief (HI)

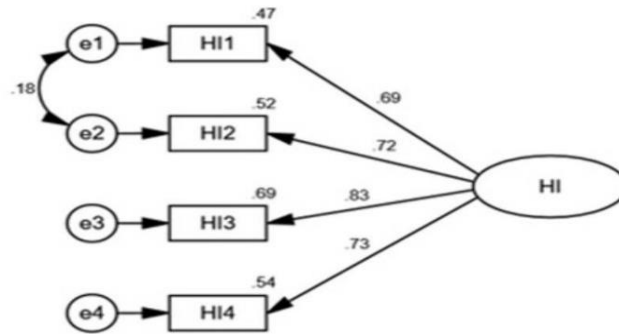
Observed Variables	Correlation Value			
	HI1	HI2	HI3	HI4
HI1	1.00			
HI2	0.59**	1.00		
HI3	0.57**	0.60**	1.00	
HI4	0.51**	0.53**	0.61**	1.00

Source: Author (2024)



Figure 3

Measurement Model of Health Belief



Chi-square (df) = .274 (1); P value (≥ 0.05) = .600; CMIN/df (≤ 2) = .274; AGFI (≥ 0.9) = .998; GFI (≥ 0.9) = 1.000; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.001; TLI (≥ 0.9) = 1.005; RMSEA (≤ 0.08) = .000; RMR (≤ 0.08) = .004; SRMR (≤ 0.08) = .003; Hoelter (> 200) = 8384
 Source: Author (2024)

Table 4

Composite reliability and average variance extraction of Health Beliefs (HI)

Latent Variances	AVE	CR	Observed Variables	Standard Component Weight	R ²
Health Belief	0.56	0.83	You believe that the use of technology and health innovations highlights the risk of a disease. (HI1)	0.69	0.47
			You believe that the use of technology and health innovations can help track the symptoms of a disease. (HI2)	0.72	0.52
			You believe that the use of technology and health innovations can prevent primary diseases. (HI3)	0.83	0.69
			You believe that the use of technology and health innovations will improve your health. (HI4)	0.73	0.54

Source: Author (2024)

Table 5

Correlation value of observed variables of Attitudes to Use (AU)

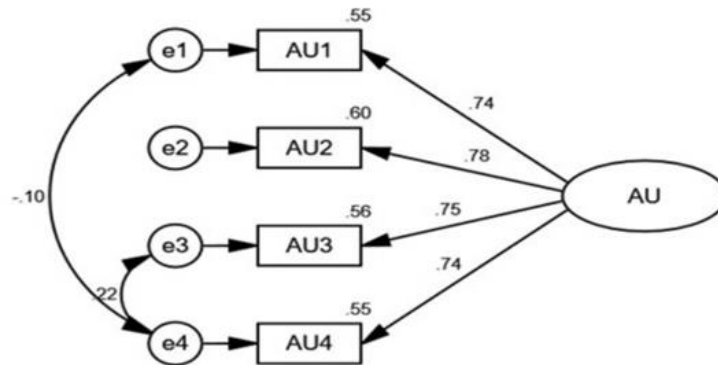
Observed Variables	Correlation Value			
	AU1	AU2	AU3	AU4
AU1	1.00			
AU2	0.57**	1.00		
AU3	0.55**	0.58**	1.00	
AU4	0.50**	0.57**	0.65**	1.00

Source: Author (2024)



Figure 4

Measurement Model of Attitude to Use



Chi-square (df) = .096 (1); P value (≥ 0.05) = .757; CMIN/df (≤ 2) = .096; AGFI (≥ 0.9) = .999; GFI (≥ 0.9) = 1.000; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.001; TLI (≥ 0.9) = 1.006; RMSEA (≤ 0.08) = .000; RMR (≤ 0.08) = .013; SRMR (≤ 0.08) = .003; Hoelter (> 200) = 24080

Source: Author (2024)

Table 6

Composite reliability and average variance extraction of Attitude to Use (AU)

Latent Variances	AVE	CR	Observed Variables	Standard Component Weight	R ²
Attitude to Use	0.57	0.84	You're always satisfied when you're using technology and innovation for your health. (AU1)	0.74	0.55
			You're not worried about possible side effects when you're using technology and innovation for your health. (AU2)	0.78	0.60
			You're confident that technology and health innovations will improve your health. (AU3)	0.75	0.56
			You're confident that technology and health innovations can be applied in your daily lives. (AU4)	0.74	0.55

Source: Author (2024)

Table 7

Correlation value of observed variables of Credibility (CR)

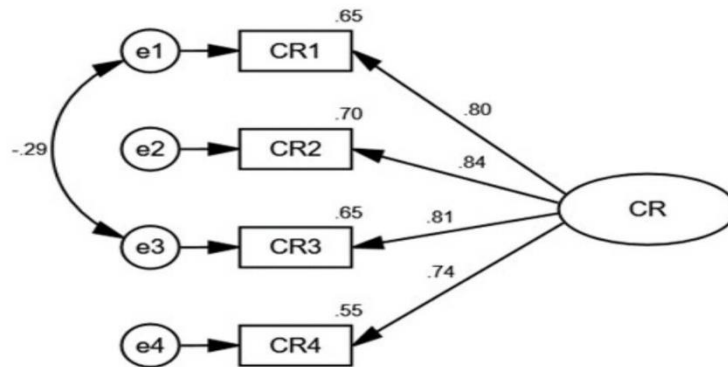
Observed Variables	Correlation Value			
	CR1	CR2	CR3	CR4
CR1	1.00			
CR2	0.68**	1.00		
CR3	0.55**	0.67**	1.00	
CR4	0.59**	0.62**	0.61**	1.00

Source: Author (2024)



Figure 5

Measurement Model of Credibility



Chi-square (df) = 1.173 (1); P value (≥ 0.05) = .279; CMIN/df (≤ 2) = 1.173; AGFI (≥ 0.9) = .990; GFI (≥ 0.9) = .999; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.000; TLI (≥ 0.9) = .999; RMSEA (≤ 0.08) = .017; RMR (≤ 0.08) = .008; SRMR (≤ 0.08) = .006; Hoelter (> 200) = 1962

Source: Author (2024)

Table 8

Composite reliability and average variance extraction of Credibility (CR)

Latent Variances	AVE	CR	Observed Variables	Standard Component Weight	R ²
Credibility	0.64	0.88	You think that technology and health innovations accurately reflect health information. (CR1)	0.80	0.65
			You think that technology and healthcare innovations create confidence in healthcare. (CR2)	0.84	0.70
			You think that technology and health innovations are accurately represented. (CR3)	0.81	0.65
			You think that technology and health innovations are showing reliable tests. (CR4)	0.74	0.55

Source: Author (2024)

Table 9

Correlation value of observed variables of Perceived Usefulness (UF)

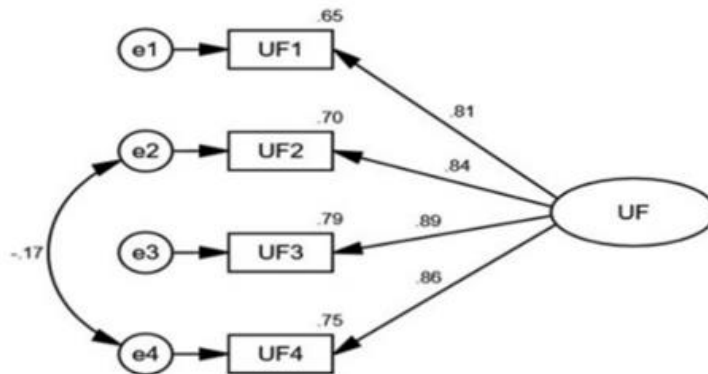
Observed Variables	Correlation Value			
	UF1	UF2	UF3	UF4
UF1	1.00			
UF2	0.68**	1.00		
UF3	0.72**	0.74**	1.00	
UF4	0.69**	0.68**	0.77**	1.00

Source: Author (2024)



Figure 6

Measurement Model of Perceived Usefulness



Chi-square (df)= .243 (1); P value (≥ 0.05) = .622; CMIN/df (≤ 2) = .243; AGFI (≥ 0.9) = .998; GFI (≥ 0.9) = 1.000; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.000; TLI (≥ 0.9) = 1.003; RMSEA (≤ 0.08) = .000; RMR (≤ 0.08) = .004; SRMR (≤ 0.08) = .002; Hoelter (> 200) = 9466

Source: Author (2024)

Table 10

Composite Reliability and Average Variance Extraction of Perceived Usefulness (UF)

Latent Variances	AVE	CR	Observed Variables	Standard Component Weight	R ²
Perceived Usefulness	0.52	0.91	You think that health technology and innovation can help you with your health care goals. (UF1)	0.81	0.65
			You think that the use of technology and health innovations improves your quality of life. (UF2)	0.84	0.70
			You think that technology and healthcare innovations give you a good healthcare discipline. (UF3)	0.89	0.79
			You think that the use of health technology and innovation reduces the cost of health care. (UF4)	0.86	0.75

Source: Author (2024)

Table 11

Correlation value of observed variables of Usage Intention (UI)

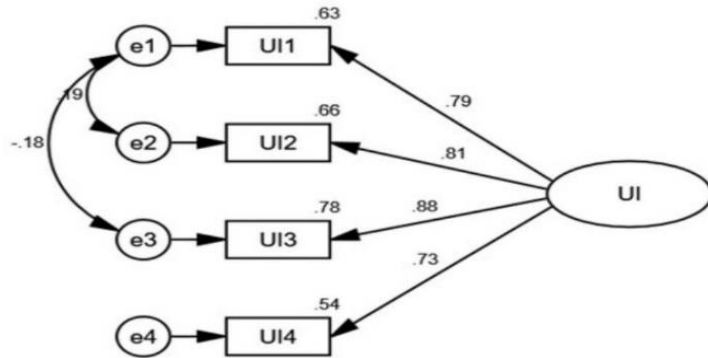
Observed Variables	Correlation Value			
	UI1	UI2	UI3	UI4
UI1	1.00			
UI2	0.71**	1.00		
UI3	0.65**	0.71**	1.00	
UI4	0.58**	0.59**	0.64**	1.00

Source: Author (2024)



Figure 7

Measurement Model of Usage Intention



Chi-square (df) = .105 (1); P value (≥ 0.05) = .746; CMIN/df (≤ 2) = .105; AGFI (≥ 0.9) = .999; GFI (≥ 0.9) = 1.000; CFI (≥ 0.9) = 1.000; IFI (≥ 0.9) = 1.001; TLI (≥ 0.9) = 1.004; RMSEA (≤ 0.08) = .000; RMR (≤ 0.08) = .004; SRMR (≤ 0.08) = .002; Hoelter (> 200) = 21894

Source: Author (2024)

Table 12

Composite reliability and average variance extraction of Usage Intention (UI)

Latent Variances	AVE	CR	Observed Variables	Standard Component Weight	R ²
Usage Intention	0.65	0.88	You intend to use technology and health innovations whenever you have the opportunity. (UI1)	0.79	0.63
			You intend to use technology and health innovations on a daily basis. (UI2)	0.81	0.66
			You intend to continue to use technology and innovation for your health in the future. (UI3)	0.88	0.78
			You intend to introduce people to health technology and innovation. (UI4)	0.73	0.54

Source: Author (2024)

4.3 CORRELATION VALUE BETWEEN LATENT VARIABLES

Table 13

Correlation coefficients between latent variable (under the diagonal) in Behaviors Usage Intention

Constructs	CN	HI	AU	CR	UF	UI
Consumer Innovation (CN)	1.00					
Health Belief (HI)	0.62**	1.00				
Attitude to Use (AU)	0.63**	0.51**	1.00			
Credibility (CR)	0.65**	0.62**	0.63**	1.00		
Perceived Usefulness (UF)	0.60**	0.59**	0.79**	0.63**	1.00	
Usage Intention (UI)	0.48**	0.49**	0.57**	0.54**	0.51**	1.00

KMO: Measure of Sampling Adequacy = 0.867

Bartlett's Test of Sphericity: Approx. Chi-Square = 2057.124, df = 15, p = 0.000

Source: Author (2024)

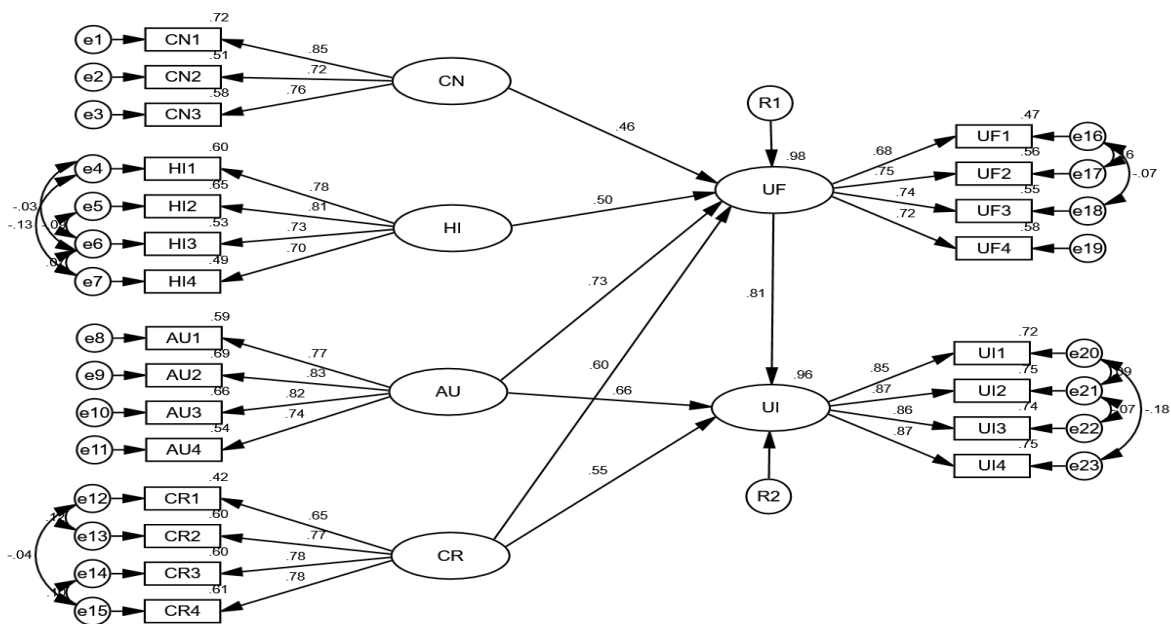


Table 13 shows that there are elements of a normal connection that may be seen in the correlation that exists between the latent variables. The range of its value that was observed was between 0.48 and 0.79.

4.4 THE RESULT OF THE DEVELOPMENT OF THE CAUSAL RELATIONSHIP MODEL

Figure 8

Structural equation model of factors influencing behavior usage intention technology and innovation products for health



Chi-square (df)= 207.814 (133); P value (≥ 0.05) = .000; CMIN/df (≤ 2) = 1.563; AGFI (≥ 0.9) = .940; GFI (≥ 0.9) = .971; CFI (≥ 0.9) = .992; IFI (≥ 0.9) = .992; TLI (≥ 0.9) = .985; RMSEA (≤ 0.08) = .031; RMR (≤ 0.08) = .054; SRMR (≤ 0.08) = .062; Hoelter (> 200) = 464

Source: Author (2024)

Table 14

Standardizes the coefficient of influence in the structural equation model of behavior usage intention

Dependent variable	R ²	CN	HI	AU	CR	UF
Perceived Usefulness	0.98	0.46*	0.50**	0.73**	0.60**	-
Behavior Usage Intention	0.96	-	-	0.66**	0.55**	0.81*

Source: Author (2024)



Table 15

The accuracy index of the structural equation model has behavior usage intention

Index	Criteria	Results	Interpretation
1. χ^2 with significant level	$P > 0.05$	0.309	Passed
2. Chi-square: χ^2 / df	< 2.00	1.07	Passed
3. AGFI	≥ 0.90	0.95	Passed
4. GFI	≥ 0.90	0.98	Passed
5. CFI	≥ 0.90	0.99	Passed
6. IFI	≥ 0.90	0.99	Passed
7. TLI	≥ 0.90	0.99	Passed
8. RMSEA	< 0.08	0.01	Passed
9. RMR	< 0.08	0.05	Passed
10. SRMR	< 0.08	0.04	Passed
11 Hoelter	> 200	711	Passed

Source: Author (2024)

The researchers assessed normalcy using skewness and kurtosis. Skewness was -0.14 to 0.76 and kurtosis -0.07 to 0.62. Normal data had skewness between -2 and +2 and kurtosis between -7 and +7 (George & Mallery, 2019; Hair Jr et al., 2010).

The structural equation models an impact on behavior usage intention technology and innovation products for influences between model variables utilizing influence analysis with latent variables and Goodness of Fit Statistics with significant level ($p > 0.05$), χ^2/df (< 2.00) RMSEA (< 0.05), GFI (≥ 0.90), AGFI (≥ 0.90), IFI (≥ 0.90), CFI (≥ 0.90), RMR (< 0.08) and SRMR (< 0.08), which can be found in Figure 8 and Table 14-15. This is explained by the model's consistency with the empirical data. The harmony index met all the specified criteria and the chi-squared value demonstrated statistical significance $\chi^2/df=1.07$, GFI=0.98, AGFI=0.95, IFI=0.99 CFI=0.99, RMR=0.05, SRMR=0.04 and RMSEA=0.01. All causal factors in the model have an impact on behavior usage intention technology and innovation products for health can jointly explain the variance of factors affecting Behavior intention. Overall, the harmonization test indices suggest a harmonious fitting of observed data to the postulated model. This provides confidence in the model's ability to explain the relationships among the variables in the study.



Table 16

Hypotheses Analysis

Hypotheses	Coef.	t-test	Results
H1: Consumer Innovation (CN) Has Direct Influence on Perceived Usefulness (UF)	0.25	8.82	Support
H2: Health Belief (HI) has a direct influence on Perceived Usefulness (UF)	0.11	9.09	Support
H3: Attitude to Use (AU) has a direct influence on Perceived Usefulness (UF)	0.73	10.98	Support
H4: Credibility (CR) has a direct influence on Perceived Usefulness (UF)	0.00	11.79	Support
H5: Attitude to Use (AU) has a direct influence on Usage Intention (UI)	0.32	10.77	Support
H6: Credibility (CR) has a direct influence on Usage Intention (UI)	0.22	9.03	Support
H7: Perceived Usefulness (UF) has a direct influence on Usage Intention (UI)	0.25	11.10	Support

Source: Author (2024)

5 DISCUSSION

The study’s findings showed the interplay among variables about consumer usage behavior of healthcare innovation and technology users. This has numerous theoretical ramifications, as it exposes the determinants that motivate consumers to embrace healthcare innovations and technologies. Technology offers distinct advantages through the enhancement of consumer healthcare (Kim & Shin, 2015). These studies enhance the existing body of knowledge by investigating the effects of consumer innovations, health beliefs, and credibility perceptions about the benefits of healthcare technology and innovation and their use intentions. Based on the findings, it was determined that the usage intention behavior of health technology and innovation in Thailand is directly driven by perceived usefulness, with a size effect of 0.96. Utilizing health technology and innovation may assist in accomplishing healthcare objectives. When quality of life is improved it has resulted in improved healthcare discipline. The result of the use of health technology and innovation has shown that the cost of healthcare is decreased. Additionally, Credibility and attitude had a direct influence of 0.55 and 0.66 on intention, respectively. Attitude toward technology correlates with a greater intention to utilize it (Tella & Olasina, 2014; Juhri & Dewi, 2017). It was also indirectly impacted by perceived usefulness to intention, which was significantly associated with health beliefs, reliabilities, consumer innovation factors, and attitudes toward intent (0.46, 0.50, 0.60, and 0.73, respectively at a significance level of 0.01. This observation demonstrates that the intention of consumers to continue utilizing technology and innovations for health in the future is directly influenced by



the perceived utility factor. Intention to use health technologies and innovations daily, intend to do so whenever the occasion arises, and intend to introduce others to such innovations and technologies are all variables that can be adequately represented by perceived usefulness. It has been shown that personal technology serves as a tool to increase the intention to use, making it simpler to carry out the activity.

It has been shown that personal technology has become a tool for intensifying the adoption intention to use, thus resulting in easier actual behavior (Li, Wu, Gao & Shi 2016). So, it is accepted that an individual's intention to utilize is a predictive indicator of the chance that they had intention to make use of technology (Shanmugam et al., 2014).

Credibility significantly influences the usage intention of healthcare technology and innovation by providing a reliable and precise assessment, which enhances consumer trust in healthcare quality. The study shows that the consistent measurement effect and presentation have the greatest influence on perceived credibility. A primary objective is to alleviate customer's anxiety stemming from concerns about mishandling their health as a result of inaccurate data provided by such technologies (Marakhimov & Joo 2017).

The study found that attitude has a direct bearing on the intention to utilize technology and innovative healthcare. Perceived usefulness to consumers is an enhancement to their belief to attain excellence in life. The findings indicate that perceived utility influences adoption intention to use their positively (Park & Kim, 2013). Customers do not have to worry about their health, they are content with the products they use, and they have the assurance that technological advancements and developments in the field of health may be utilized in a way that is beneficial to their everyday lives. This is consistent with the findings of research that demonstrates that attitudes are behavior determinants. Linking personal motivations perceived, whether positive or negative, that impact a reaction to someone or something. This suggests that the concept of attitude is an element of a person's personality (Gibson & Sullivan, 2018). According to the findings, intentions are positively affected by all of the above variables. The research suggests that perceived benefits have a significant influence on behavioral intent to use healthcare technologies and innovations positively. In line with the research, electronic health records reveal that attitudes toward its use have a positive relationship of perceived benefits with intentional behavior (Kowitlawalu et al., 2015).



6 CONCLUSIONS

In light of the promising advancements and innovations in healthcare technology, it is crucial to comprehend consumers' perceptions and behavioral intentions regarding healthcare technology products. This understanding is instrumental in enhancing healthcare efficiency and reducing costs, as it directly impacts the utilization of healthcare technology. This research illuminates the process by which users form behavioral intentions regarding healthcare technology products. As a result, developers and managers can implement more effective business development strategies to strengthen users' behavioral intentions in healthcare tech merchandise.

These are the findings of the data evaluation. The researcher conducted a statistical analysis to assess the correctness and the index of item objective congruence (IOC) approach to the reliability of surveys. The questionnaire was evaluated by specialists and determined to have a consistency index ranging from 0.67 to 1.00. Subsequently, the researchers conducted a confidence assessment by examining the discriminating power of the questionnaire using Cronbach's alpha coefficient, which ranged from 0.82 to 0.91. The threshold is set above 0.70 to indicate that the instruments utilized in the research are reliable. The researchers gather study information from individuals in Thailand who have used technology and innovative health items by having them complete online questionnaires. After creating a Google form questionnaire and collecting responses from 600 participants, the data was then analyzed descriptively using percentage and frequency calculations. Skewness, mean, standard deviation, and kurtosis. Confirmatory factor analysis (CFA) revealed relationships between Endogenous and exogenous latent variables.

The constituents of Consumer Innovation (CN) comprise three observed factors with AVE = 0.60 and CR = 0.83. There is a standard component for observed variable weightiness from 0.65-0.78. The constituents of Health Belief (HI) comprise four observed factors with AVE = 0.56 and CR = 0.83. There is a standard component for observed variable weightiness from 0.69-0.83. The constituents of Attitude to Use (AU) comprise four observed factors with AVE = 0.57 and CR = 0.84. There is a standard component for observed variable weightiness from 0.74-0.78. The constituents of Credibility (CR) comprise four observed factors with AVE = 0.64 and CR = 0.88. There is a standard component for observed variable weightiness from 0.69-0.83. The constituents of Perceived Usefulness (UF) comprise four observed factors with AVE = 0.52 and CR = 0.91. There is a standard component for observed variable weightiness from 0.69-0.83.



The researchers subsequently examined the structural equation model of influencing factors. A behavior usage intention technology and innovation product for health was discovered to be accurate because the constructed model aligns with empirical evidence. The harmony index met all criteria, and the chi-square value was statistically significant. $\chi^2/df = 1.563$, GFI = 0.97, AGFI = 0.94, NFI = 0.99, CFI = 0.99, RMR = 0.05, SRMR = 0.06 and RMSEA = 0.03. Each causal variable within the model exerts an influence on behavior usage intention technology and innovation products for health and can explain the variance of factors influencing collective behavior usage intention technology and innovation products for health (R^2) was 96 percent. All six causes variables selected to be imported into the model influenced the effects of behavior usage intention technology and innovation products for health. Finally, the researchers have provided a summary of the findings from the structural equation model of the effect-influencing factors' hypothesis test behavior usage intention technology and innovation products for health. It concerned the consistency of the six assumptions, and it was determined that each of the six assumptions exhibited statistical significance was in agreement with the empirical data. This was in light of recent scholarly discoveries derived from research.

New approaches to addressing health-related concerns have become available as a result of the development of cutting-edge technologies and applications. As a result, the purpose of this research was to identify the elements that influence individual's behavior and intention about the implementation of healthcare technology and innovation and to prioritize and anticipate those factors (Nasir & Yurder, 2015). The numerous managerial impacts that were acquired from this study might be referred to by marketers and developers to encourage technological advancement and innovation in the healthcare industry. An important conclusion is that perceived usefulness, attitude, and credibility plays a significant part in determining their behavior, as well as their intentions about the utilization of healthcare technology and innovation. Consequently, marketers are obligated to prioritize the accurate elucidation of the advantages that technology provides, encompassing functionalities such as wellness tracking, fitness monitoring, and exercise routine measurement (Kim & Chiu, 2018).

Future research should explore iteration in different nations, as the current study was limited to Thailand and its findings may not be universally relevant. We suggest conducting comparable studies in other places with varying cultures to enable meaningful comparisons. Even though this study has provided insightful findings regarding consumers' utilization intention and behavior, it should be noted that additional research is required to resolve this discrepancy (Talukder et al., 2019).



Individuals who have integrated a health application into their daily routines or are considering doing so can benefit from these insights, which offer a structured approach to aid in their decision-making process. The results of this study provide an abundance of practical insights for practitioners, developers, and providers. Individuals who have integrated a health application into their daily routines or are considering doing so can benefit from these insights, which offer a structured approach to aid in the decision-making process. In addition, this research provides a possible opportunity for businesses to modify the characteristics of their new products to increase the rate of intention and positively received feedback.

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