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User Acceptance of Blockchain Video Direct Observation Therapy mHealth App for Tuberculosis Patient Monitoring: A Pre-Implementation Phase Empirical Study

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Abstract

Blockchain-based healthcare applications seem promising in remote patient monitoring. However, factors influencing users' acceptance of blockchain-enabled mHealth apps are poorly understood. This study aimed to develop and empirically test a theoretical model by extending the Unified Theory of Acceptance and Usage of Technology (UTAUT) with perceived benefit and perceived trust from Initial Trust Model (ITM) in understanding the potential users' readiness to adopt blockchain video direct observation therapy (blockchain VDOT) app. This cross-sectional study yielded data from users familiar with tuberculosis and its treatment procedure from Selangor and the federal territory of Kuala Lumpur, Malaysia. A self-administered online questionnaire was designed based on validated measurement scales from past studies. Data from 160 valid samples were analysed using SPSS 27. The results indicated that performance expectancy, effort expectancy, perceived benefit, and perceived trust influence behavioural intention with $p < 0.05$. Facilitating condition does not affect behavioural intention ($p > 0.05$). Besides, p values of moderator age and gender are above 0.05, thus showing no moderation. The key findings showed that users' acceptance of blockchain-based VDOT apps was influenced by the perception of performance expectancy, effort expectancy, facilitating conditions, perceived benefit, and initial trust. The social influence's direct relationship with behavioural intention remains unestablished. Additionally, age and gender did not moderate any direct associations of the framework. The contribution to knowledge and practice, along with study limitations and future research direction, has been included in this study.

Keywords: Blockchain, ITM, Mhealth, Remote Patient Monitoring, Tuberculosis, UTAUT.

Introduction

The COVID-19 pandemic has interrupted regular medical services, particularly for tuberculosis patients under DOT (Direct Observation of Therapy). The pandemic makes it

evident that remote patient monitoring is of utmost importance to continue treating patients without interruption (Hira et al., 2022). The Malaysian government has set the target to implement blockchain technology as an underlying mechanism for healthcare applications by 2030 in the public healthcare setting. Consequently, it is anticipated that blockchain technology-based applications are believed to surge in medical applications, including remote patient monitoring through mobile health (mHealth) apps (Taralunga & Florea, 2021). Video direct observation therapy (VDOT) enables the patient to record their medication intake and send it to for the caregiver reference in real-time, with a time stamp. It is a cost-effective and convenient way of patient monitoring for both the patients and the caregivers. The patients need not travel to the healthcare facility, thus minimizing the risk of others getting infected. Using blockchain as an underlying mechanism to VDOT mHealth app can make the data management decentralized and tamper-proof. However, despite the promising features of technology, its acceptance is contingent on user readiness. Before deploying a blockchain-enabled mHealth app for VDOT (blockchain VDOT) therapy in tuberculosis remote patient monitoring, assessing users' readiness is necessary. Extant studies do not sufficiently predict the factors influencing potential users' VDOT adoption intention among users at the pre-implementation stage. The shortage of empirical knowledge on the acceptability of blockchain VDOT motivated this study. The current study aims to explore the factors influencing users' intention to embrace blockchain VDOT apps in Malaysia to fill the knowledge gap. This study develops a conceptual model extending the Unified Theory of Acceptance and Use of Technology (UTAUT) with two additional variables, initial trust in technology from the Initial Trust Model (ITM) and perceived benefit. Identifying influential factors of users' acceptance of blockchain, VDOT can help policymakers plan technology and strategy development and provide insight for app developers.

The remainder of this paper is as follows; the subsequent section presents a literature review, conceptual framework, and hypothesis development. Next is the methodology, which contains details on the research instrument, data collection and sample. The adjacent section presents the data analysis result, and the discussion following is on limitations and future research direction. The study concludes by highlighting the research contribution.

Literature Review, Conceptual Framework and Hypothesis Development

This study considered two underpinning theories: the Unified Theory of Acceptance and Usage of Technology (UTAUT) and the Initial Trust Model (ITM). UTAUT has four individual variables representing individuals' self-interest: performance expectancy, effort expectancy, social influence, facilitating condition and two dependent variables; behavioural intention (BI) and user behaviour (UB). Age, gender, experience, and voluntariness moderate the direct relationships of UTAUT as developed by Venkatesh et al (2003), depicted in Figure 1. ITM suggests initial trust (INT) reflects the pre-use technology trust. INT is "the willingness of an individual to take risks to fulfil a need without prior experience or credible, meaningful information" (Afshan & Sharif, 2016; McKnight et al., 1998).

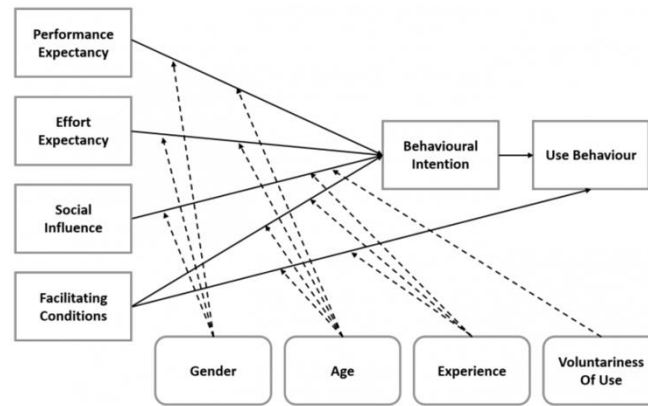


Fig. 1 UTAUT model

This research investigated the acceptance of blockchain technologies among mHealth app users in Malaysia. The UTAUT was therefore extended with INT, and an additional variable, the perceived benefit, was introduced in the study model based on the suggestion and justification derived from past studies (Hira et al., 2021; Harris et al., 2016). The pre-implementation phase study only considers BI as the current investigation. Among four UTAUT moderators, we tested age and gender's moderating influence. As it is a pre-implementation phase study, the users do not have experience using blockchain VDOT; hence, the use intention at his stage is deemed voluntary. Figure 2 presents the theoretical model of this study, which includes two additional individual variables; perceived benefit (PB) and initial trust (INT).

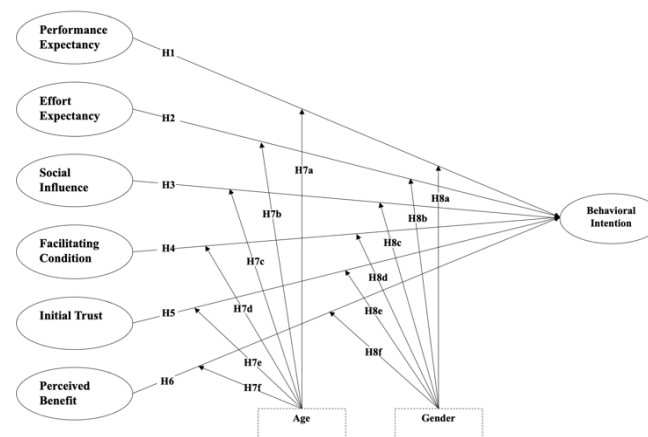


Fig. 2 Theoretical framework

The present investigation considers the below constructs to predict users' behaviour intention to adopt blockchain VDOT app, inspired by UTAUT and ITM from the pieces of literature of technology adoption research domain.

A. Behavioural Intention

Social scientists have examined Behavioural Intention (BI) as a dependent variable for the past thirty years to comprehend users' behavioural intention to conduct a potential behaviour towards technological innovations. Adoption of technology The BI reflects the propensity of a user to accept and utilize a certain system or technology in the future. Copious

frameworks for technology adoption have been created based on the UTAUT hypothesis, which establishes the relationship between BI and technology adoption (Khazaei, 2020).

B. Performance Expectancy

Users' perception of the extent a technology could improve their performance is called performance expectancy (PE). PE directly impacts BI of VDOT adoption (Hira et al., 2022). Users understanding of blockchain VDOT can be safe and secure means of remote patient monitoring could improve their intention to accept it. Past studies on the mHealth app have examined PE and obtained mixed results (Hira et al., 2022; Khatun, Palas & Ray, 2017). The following hypothesis was formed to investigate PE's influence in the case of the blockchain VDOT app.

H1 PE positively influences BI.

C. Effort Expectancy

Effort expectancy (EE) is users' perception of how much effort the technology would require for them to use it. The lower the effort required, the higher the probability of users adopting it (Hira et al., 2021). If users perceive that the blockchain VDOT app would need minimal effort (easy to use) to use for them to enjoy the improved health service outcomes, they will be inclined to accept the technology. The hypothesis forms are mentioned below.

H2 EE positively influences BI.

D. Social Influence

Social influence (SI) is also called peer influence. SI denotes individuals' perception of their peers expect them to utilize the technology. This opinion of the peer can be positive or negative and directly influence BI (Hira et al., 2021). In the case of blockchain VDOT, users' perception has been hypothesized to have a positive influence because of its potential benefits. We therefore hypothesized as below.

H3 SI positively influences BI.

E. Facilitating Condition

Facilitating conditions (FC) means the individual perception of the support available to use technology (Tavares et al., 2018). One of the barriers to users' acceptance of mHealth applications is their resources to utilize the application, suggesting that users with better conditions to use mHealth technologies would likely intend to adopt blockchain VDOT.

H4 FC positively influences BI.

F. Initial Trust

Initial trust (INT) in technology refers to the trust that forms among users at the pre-interaction phase with it. Since blockchain is a disruptive technology yet to reach maturity as a supporting mechanism to healthcare technology applications, it is important to understand users' trust in it because, in the case of technology, the "no trust, no use" notion applies. Hira et al (2021) posited INT positively influence medical professionals' blockchain Electronic Health Record adoption. Accordingly, we hypothesized as below.

H5 INT positively influences BI.

G. Perceived Benefit

Perceived benefit (PB) is the extent to which a user believes that utilizing the programme will benefit them. Benefits of Blockchain VDOT mHealth apps may include increased information security, time, and expense savings, and eliminating the need to travel to a healthcare provider (Hira et al., 2022). It appears fair that the more benefits users observe, the more likely they are to embrace the application. Research by Harris et al (2016) on consumers' mHealth app installation intent supports the favourable influence of PB. Thus, we propose the following hypothesis.

H6 PB positively influences BI.

H. The Moderating Influence of Age and Gender

Age and gender are the two moderators of the original UTAUT model that this study intends to test in the case of users' blockchain VDOT app adoption intention, which, to the best of our knowledge, is still unknown from the literature. Mobile commerce literature suggests males are more likely to accept technology compared to tend females (mobile commerce) than females. While younger generations are believed to be comfortable with the technology compared to the aged population (Venkatesh et al., 2003). Therefore, we hypothesize the moderation influence of age and gender as below.

H7a Age affects the influence of PE on BI

H7b Age affects the influence of EE on BI

H7c Age affects the influence of SI on BI

H7d Age affects the influence of FC on BI

H7e Age affects the influence of INT on BI

H7f Age affects the influence of PB on BI

H8a Gender affects the influence of PE on BI

H8b Gender affects the influence of EE on BI

H8c Gender affects the influence of SI on BI

H8d Gender affects the influence of FC on BI

H8e Gender affects the influence of INT on BI

H8f Gender affects the influence of PB on BI.

Instrument, data collection and sample

This quantitative study commenced questioner administrated cross-sectional data collection. The unit of analysis for this study is individuals (users). The questionnaire had two sections, A on demographic profile – age, gender, ethnicity, income, and B had 21 items. The items were adopted and adapted from past studies and only altered in terms of wordings to suit the study context. Five-point Likert scale, "1=strongly disagree" to "5=strongly agree", was used to collect the responses. The PE, EE, SI, FC, and BI items were adopted and adapted from (Tavares et al., 2018). Items for INT Afshan & Sharif (2016); Kamal et al (2020) and PB Harris et al (2016) were derived from past studies added in, Appendix A, Table V.

The users above 18 years old with user experience of the mHealth mobile app were deemed suitable. Users from Selangor and the Federal Territory of Malaysia were considered for data gathering because over thirty per cent of the total mobile phone users are from these two densely populated locations (Quoquab et al., 2018). The data collection occurred while the COVID-19 pandemic measures were persisting. Therefore, we implied a convenience method

using a floating questionnaire to readily reachable respondents. Researchers proceeded to places where individual mobility restrictions were allowed, such as shopping malls, university campuses, and medical centres and requested respondents to participate in this study voluntarily. Due to safe distancing measures, budget and time shortage, the random sampling process was unmanageable. As per the guideline of (Hair et al., 1998). in the calculation of sample size number of items can be multiplied five times, which resulted in 105 because this study includes 21 items ($21 \times 5=105$). We distributed 300 questionnaires and received 176 (65.67%). After the screening, 160 (53.33%) were found usable, above the targeted sample size, and thus used for data analysis through SPSS 27. The data analysis included reliability, factor, correlation, and regression analysis.

The descriptive analysis of respondents' characteristics is exhibited in Table I. Among 160 respondents, 54.4% were female, while 45.6% were male. They were mostly between the age group of 40-49 (30.6%). Regarding ethnicity, most of the respondents belong to the Malay (45.6%) ethnic group, and most respondents were from the income group of eight to ten thousand (42.5%).

TABLE I
Demographic Summary of Respondents

Classification	Number of responses	Percentage
Gender		
Male	73	45.6
Female	87	54.4
Age		
18 – 29	31	19.4
30 – 39	45	28.1
40 – 49	49	30.6
50 – 59	35	21.9
Ethnicity		
Malay	73	45.6
Chinese	33	20.6
Indian	30	18.8
Others	24	15.0
Monthly Income (Ringgit Malaysia)		
Below 3000	7	4.40
3000 to 5000	23	14.4
5000 to 8000	56	35.0
8000 to 10000	68	42.5
10000 and above	6	3.80

Data Analysis and results

Factor analysis demonstrated the Bartlett spherical value significance was $p \leq 0.05$ meaning that the correlation matrix is significantly different from the identity matrix. The Kaiser–Meyer–Olkin (KMO) value ≥ 0.60 means the factor has been extracted at an expected level. Cronbach alpha ≥ 0.7 indicates that the items are reasonably close as a group, while items' factor loading ≥ 0.5 is acceptable. Data presented in Table III indicates that all the cut-offs are met. On the other hand, Table III shows Pearson's correlation findings. The load factor

should be more than 0.50 or greater than 0.70 if stricter criteria are used (Hair et al., 2003). In this study model, all variables' values are above 0.50, while most components exceed 0.70. In all instances, each item is loaded into its construction ($p < .01$). Therefore, based on the data presented in Table II and Table III, the reliability, discriminant, and convergent validity of all constructs of this study have been established.

TABLE II
Factor loading, Cronbach's Alpha and KMO

Construct and item code	Factor loading ≥ 0.5	Cronbach's Alpha ≥ 0.7	KMO ≥ 0.60
Performance Expectancy		0.850	0.775
PE1	.684		
PE2	.688		
PE3	.674		
Effort Expectancy		0.767	0.867
EE1	.736		
EE2	.708		
EE3	.531		
Social Influence		0.943	0.763
SI1	.867		
SI2	.841		
SI3	.853		
Facilitating Condition		0.909	0.872
FC1	.825		
FC2	.829		
FC3	.877		
Perceived Benefit		0.890	0.779
PB1	.659		
PB2	.692		
PB3	.652		
Initial Trust		0.914	0.804
INT1	.847		
INT2	.808		
INT3	.822		
Behavioural Intention		0.840	0.889
BI1	.615		
BI2	.734		
BI3	.653		

TABLE III

Pearson's Correlation

	PE	EE	SI	FC	INT	PB	BI
PE	1						
EE	.749**	1					
SI	.607**	.574**	1				
FC	.519**	.521**	.527**	1			
INT	.646**	.609**	.474**	.421**	1		
PB	.788**	.750**	.574**	.589**	.690**	1	
BI	.855**	.787**	.572**	.607**	.724**	.878**	1

**Correlation is significant at the 0.01 level (2-tailed).

Hypothesis test through multiple regression analysis, results of p-values must be ≤ 0.05 to support the hypothesis. Based on Table IV, five (PE, EE, FC, INT, and PB) out of six direct relationships positively influence the BI to adopt the blockchain VDOT app, while only SI exhibits no effect with a p -value of 0.186. Furthermore, multiple regression with Age and Gender as moderating factors. None exhibit a significant positive impact on any of the construct's direct relationships to BI.

Hence, it is empirically evident that PE ($\beta=0.339, p=0.000$), EE ($\beta=0.139, p=0.005$), FC ($\beta=0.103, p=0.004$), INT ($\beta=0.140, p=0.001$), and PB ($\beta=0.379, p=0.000$) positively influence BI with $p \leq 0.05$, supporting hypotheses H1, H2, H4, H5, and H6, respectively. Hypothesis 3 had been rejected ($\beta=-0.053, p=0.186$), and the direct relationship between SI and BI was not confirmed. None of the moderating hypotheses; H7a, H7b, H7c, H7d, H7e, H7f on moderating influence of age and H8a, H8b, H8c, H8d, H8e, H8f were confirmed with p values above 0.05. Hence, it can be stated that age and gender do not play any moderating role in the relationship between individual variables and BI in this study model.

TABLE IV

Multiple regression analysis findings on the hypothesis

	Path	β value	P value	Result
H1	PE→BI	0.339	0.000	Supported
H2	EE→BI	0.139	0.005	Supported
H3	SI→BI	-0.053	0.186	Rejected
H4	FC→BI	0.103	0.004	Supported
H5	INT→BI	0.140	0.001	Supported
H6	PB→BI	0.379	0.000	Supported
H7a	PE→Age→BI	-0.110	0.749	Rejected
H7b	EE→Age→BI	-0.275	0.517	Rejected
H7c	SI→Age→BI	-0.376	0.173	Rejected
H7d	FC→Age→BI	-0.551	0.114	Rejected
H7e	INT→Age→BI	-0.197	0.541	Rejected
H7f	PB→Age→BI	0.337	0.203	Rejected
H8a	PE→Gd→BI	-0.110	0.749	Rejected
H8b	EE→Gd→BI	-0.275	0.517	Rejected
H8c	SI→Gd→BI	-0.376	0.173	Rejected
H8d	FC→Gd→BI	-0.551	0.114	Rejected
H8e	INT→Gd→BI	-0.197	0.541	Rejected
H8f	PB→Gd→BI	0.337	0.203	Rejected

* Behavioural intention (BI), effort expectancy (EE), facilitating condition (FC), Gender (Gd), initial trust (INT), perceived benefit (PB), Performance expectancy (PE), social influence (SI)

Discussion

PE positively influence BI at a significant level as the $p=0.000$. Therefore, the direct influence of PE on BI is reasonably strong, which is like past studies finding (Khazaei, 2020; Venkatesh et al., 2003). SI or peer influence's impact on BI is not confirmed in this study, same as Khatun, Palas and Ray (2017) and contradicting the finding of (Khazaei, 2020). The reason could be blockchain VDOT use is directly linked to realizing its usefulness; if the users feel it's important for them to use, they will use it independent of peer influence. FC's positive impact on BI is also supported by (Afshan and Sharif, 2016). study result. The finding confirms that proper facility presence will enhance users' blockchain VDOT adoption intention. INT is another important construct, found to have a significant positive ($p=0.000$) influence on BI articulating; the higher the initial technology trust a user forms, will be strongly inclined towards blockchain VDOT apps; this finding is in line with a past study of (Afshan and Sharif, 2016). PB, consistent with Harris et al (2016) result, demonstrates that if users realize the benefit of blockchain VDOT enhances it, their willingness to embark on the technology will increase. In addition, age and gender's moderation impact in this study was not confirmed. The results are consistent with prior investigations (Daniali et al., 2022; Ekayanti, 2018), and contradictory to (Venkatesh et al., 2003). However, the absence of variation in finding depending on gender and age differences could be linked to the nature of the respondents. Respondents have experience using other mHealth apps and had been related to TB patients in the past, resulting in gender and age-similar findings.

Limitation and Future Research Direction

This study has a few limitations that further research is suggested to consider overcoming. First, the sample size was small; a larger sample size can modify the finding. Second, according to the user's geographical belongings, the perception towards technology may vary. Technology adoption pattern changes depending on the phase of technology deployment; pre-adoption, adoption and post-adoption phase studies are therefore needed. Besides, integrating self-determined motivation factors with UTAUT in understanding users' readiness to adopt blockchain based health applications could be a valuable contribution. This study can be the foundation for similar studies in other geographical locations of Malaysia or developing country contexts.

Conclusion

As blockchain is a new concept, and to researchers' knowledge, a study on the blockchain VDOT mHealth app has not been conducted yet. This empirical study, therefore, fills the knowledge gap. UTAUT variables have not been sufficiently tested in a blockchain-based health application context. The present study has made a valuable contribution by examining UTAUT factors in explaining users' readiness for blockchain-enabled mobile app. It explores moderating the influence of age and gender on the direct relationship of the model. Empirical insights from findings indicate that performance expectancy, effort expectancy, facilitating condition, initial trust and perceived benefit will positively impact user intention. Age and gender do not condition patients' behavior intention to use the blockchain VDOT mHealth app. The policymakers need to set policy keeping in consideration that perceived benefit and initial trust building are of utmost importance. At the same time, the user's self-interest in performance expectancy and effort expectancy must be considered while designing and developing the app. The user needs to be sufficiently aware of the benefit of this blockchain VDOT.

References

- Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. *Telematics and Informatics*, 33(2), 370-387.
- Hira, A. F., Khalid, H., Abdul Rasid, S. Z., & Alam, M. M. (2021). A Conceptual Framework to Investigate Health Professionals' Blockchain Technology Adoption Readiness in Malaysia. *Open International Journal of Informatics*, 9 (Special Issue 2), 58-66. Retrieved from <https://oiji.utm.my/index.php/oiji/article/view/147>
- Daniali, S. M., Barykin, S. E., Zendejdel, M., Kalinina, O. V., Kulibanova, V. V., Teor, T. R., Ilyina, I. A., Alekseeva, N. S., Lisin, A., Moiseev, N., & Senjyu, T. (2022). Exploring UTAUT Model in Mobile 4.5 G Service: Moderating Social-Economic Effects of Gender and Awareness. *Social Sciences*, 11(5), 187. <https://doi.org/10.3390/socsci11050187>
- Ekayanti, S. R. (2018). UTAUT in Communication Technology of Learning Management System. In *2018 International Conference on Advanced Computer Science and Information Systems (ICACSIS)* (pp. 253-258). IEEE. <https://doi.org/10.1109/ICACSIS.2018.8618172>
- Hair, J. F. Jr., Babin, B., Money, A. H., & Samouel, P. (2003). *Essential of business research methods*. John Wiley & Sons: United States of America.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5, No. 3, pp. 207-219). Upper Saddle River, NJ: Prentice Hall.

- Hira, F. A., Khalid, H., Shashikala, A., & Moshiul, A. M. (2022). Factors of Video Directly Observed Therapy Adoption in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 12(1), 971–982. <http://dx.doi.org/10.6007/IJARBSS/v12-i1/11977>
- Harris, M. A., Brookshire, R., & Chin, A. G. (2016). Identifying factors influencing consumers' intent to install mobile applications. *International Journal of Information Management*, 36(3), 441-450. <https://doi.org/10.1016/j.ijinfomgt.2016.02.004>
- Kamal, S. A., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technology in Society*, 60, 101212. <https://doi.org/10.1016/j.techsoc.2019.101212>
- Khatun, F., Palas, M. J. U., & Ray, P. K. (2017). Using the unified theory of acceptance and use of technology model to analyze cloud-based mHealth service for primary care. *Digital Medicine*, 3(2), 69. https://doi.org/10.4103/digm.digm_21_17
- Khazaei, H. (2020). Integrating cognitive antecedents to UTAUT model to explain adoption of blockchain technology among Malaysian SMEs. *JOIV: International Journal on Informatics Visualization*, 4(2), 85-90. <http://dx.doi.org/10.30630/joiv.4.2.362>
- McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *Academy of Management review*, 23(3), 473-490. <https://doi.org/10.5465/amr.1998.926622>
- Quoquab, F., Mohammad, J., Yasin, N. M., and Abdullah, N. L. (2018), "Antecedents of switching intention in the mobile telecommunications industry: A partial least square approach", *Asia Pacific Journal of Marketing and Logistics*, Vol. 30 No. 4, pp. 1087-1111. <https://doi.org/10.1108/APJML-06-2017-0121>
- Taralunga, D. D., & Florea, B. C. (2021). A blockchain-enabled framework for mhealth systems. *Sensors*, 21(8), 2828. <https://doi.org/10.3390/s21082828>
- Tavares, J., Goulao, A., & Oliveira, T. (2018). Electronic health record portals adoption: empirical model based on UTAUT2. *Informatics for Health and Social Care*, 43(2), 109-125. <https://doi.org/10.1080/17538157.2017.1363759>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478. <https://doi.org/10.2307/30036540>

Appendix

TABLE V

Measurement Items

Variable	Items
Performance Expectancy	Using blockchain VDOT app will support critical aspects of my healthcare.
	Using blockchain VDOT app will enhance my effectiveness in managing my healthcare
	Overall, blockchain VDOT app will be useful in managing my healthcare.
Effort Expectancy	Learning how to use blockchain VDOT app will be easy for me
	My interaction with blockchain VDOT app will be clear and understandable
	It will be easy for me to become skilful at using blockchain VDOT app
Social Influence	People who are important to me will think that I should use blockchain VDOT App
	People who influence my behavior will think that I should use blockchain VDOT app
	People whose opinions that I value will prefer that I use blockchain VDOT app
Facilitating Conditions	I have the resources necessary to use blockchain VDOT app
	I have the knowledge necessary to use blockchain VDOT app
	blockchain VDOT app will be compatible with other technologies I use
Initial Trust	blockchain VDOT app seems secure
	blockchain VDOT app seems reliable
	I feel satisfied and confident that I will be able to rely on the benefits of blockchain VDOT app
Perceived Benefit	blockchain VDOT app can make my life easier
	blockchain VDOT app can give me enjoyment
	blockchain VDOT app can save me time
Behavioral Intention	I intend to use blockchain VDOT app when it is available
	I think I would use blockchain VDOT app in the next 6 months
	I plan to use blockchain VDOT app frequently