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ORIGINAL ARTICLE

DETERMINANTS OF NATIONAL DIGITAL IDENTITY VERIFICATION PLATFORM ACCEPTANCE AMONG YOUNG INVESTORS IN MALAYSIA

Pavitira Manogaran[1], Teoh Ai Ping[1*]

[1]Graduate School of Business, Universiti Sains Malaysia, 11800 Pulau Pinang, Malaysia

ABSTRACT – This study aims to investigate the determinants of NDIV platform acceptance among young investors in Malaysia within the context of protection motivation theory and uncertainty reduction theory. The study proposed a conceptual model comprising five hypotheses tested using structural equation modelling-partial least squares. Data was collected through an online questionnaire survey from 361 young investors in Malaysia. The results show that acceptance of the NDIV platform is directly influenced by perceived severity, response efficacy, self-efficacy, and transparency. This study extended the protection motivation theory by incorporating uncertainty reduction theory to strengthen the predictions of NDIV platform acceptance among young investors in Malaysia. The study brought meaning by filling the theoretical, empirical, and methodological gaps in the body of knowledge. This research contributes to the administrators, regulators, industry practitioners, and government to improve the platforms' strategies and increase citizen engagement conclusions.

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INTRODUCTION

Malaysia saw a significant increase in cyberattacks, particularly in the investment sector. MyCERT statistics showed that cyberattacks increased over the past four years, a concerning development (MyCERT, 2022). Through the adoption of the national digital identity verification (NDIV) platform to lay a solid cybersecurity foundation, there were successful attempts to address this issue in other nations. In Malaysia, accepting such a system was still debatable (OECD, 2019). Malaysians lacked an official digital identity to verify and authenticate themselves in the digital domain to engage in online activities. They remained vulnerable to cyberattacks even with MyKad and other government initiatives (Gomes, 2021).

MyKad, the inaugural identity card for Malaysians, was introduced to address identity challenges and improve cybersecurity. However, reports of identity theft and data tampering continued. Many Malaysians lost money due to investment fraud (Lunn, 2021). When past researchers examined MyKad, the public expressed concerns about its privacy hazards and criticised its lack of public transparency (Kee, Nee, Beng, and Fun, 2012). The MyKad demonstrated that Malaysia was progressing in developing digital identity technologies (Yeow and Miller, 2005), but it was insufficient for the digitalisation that was taking place. MyKad transaction usage has been limited thus far (Martinus, 2022). This was where the NDIV platform came in, not to replace MyKad but to complement its features and build a safe environment in the digital space.

As hard as cyberattacks hit young investors (Zhe, 2017), the pandemic's aftermath added to the misery by causing unemployment, layoffs, income problems, and an increase in living costs for young people (Aun and Zhang, 2021). However, the increase in new Bursa accounts (The Edge Market, 2020) compelled the Securities Commission to make sure that this urgent interest of young investors was effectively catered to in terms of a secure digital verification platform to prevent identity theft and cyberattacks (Securities Commission, 2020).

For four reasons, examining the acceptance of the NDIV platform, specifically among young investors in Malaysia, was prompt. First, this population was incredibly tech-savvy and was aware of digital signatures and identification verification (Chong, Ong, and Tan, 2021). Secondly, above and beyond all considerations, Bursa Malaysia had a remarkable number of youthful investors using digital platforms for investment activities (Aruna, 2017).

Additionally, compared to older investors, younger investors were more vulnerable to cyberattacks (Zhe, 2017). Implementing a classified platform was best served by concentrating on a particularly tech-savvy group, as previous public rollouts of such systems, namely, MySejahtera and Gerak Malaysia, had a low adoption rate when implemented in the general public (Lunn, 2021). The cyberattacks had to be resolved, as Microsoft (2018) predicted it could cost the economy MYR 49.15 billion. This would affect the nation's gross domestic product (GDP) and the digital economy.

Past studies incorporated perceived severity, perceived vulnerability, response efficacy, and self-efficacy to study the acceptance of new technology similar to the NDIV platform context (Sun et al., 2013; Rahi et al., 2021). The role of transparency was understudied but showed significance in technology acceptance studies. The importance of transparency

*CORRESPONDING AUTHOR | Teoh Ai Ping | ✉ apteoh@usm.my

was noticeable in several incidents in Malaysia, where the government first launched MyKad, followed by the mobile applications to curb the Coronavirus 2019 Disease (COVID-19) pandemic (Aiman, 2020; Hafiqah, 2020; Koya, 2020).

By enhancing the existing MyKad identity system and developing an NDIV platform, Malaysia can create development through accurate and advanced identification. Hence, this study proposed and tested a research model that illustrated the determinants of NDIV platform acceptance among young investors in Malaysia. The following was the research objective of the study.

• *To investigate the influence of perceived severity, perceived vulnerability, response efficacy, self-efficacy, and transparency on NDIV platform acceptance among young investors.*

UNDERLYING THEORY

Protection motivation theory (PMT) evolved to a state where individuals confronted with a risky environment trigger threat appraisal and coping appraisal through cognitive mediating processes. PMT consists of two cognitive processes: threat appraisal and coping appraisal. Threat appraisal included intrinsic reward, extrinsic reward, vulnerability, and severity. Coping appraisal included response efficacy, self-efficacy, and response cost (Rogers, 1983). This research aimed to broaden the application of PMT to other theories. Previous research looked at PMT in two ways: focusing on the model as a whole or specific study constructs (Yan et al., 2014). Since no rewards were involved in accepting the NDIV platform because it was a government initiative that would eventually be implemented for all citizens, it was not appropriate to include intrinsic and extrinsic rewards as predictors of the dependent variable. The online verification and digital signature experiences gained by young investors and the complementary platform governed by the government (Zhe, 2017) appeared to rule out response costs as incompatible with this study. Though these variables were widely used to determine acceptance, the results were inconclusive. There were discrepancies between model predictions and empirical findings from previous studies. PMT proposed a multiplicative relationship between threat appraisal and coping appraisal, but this model did not explain how both worked together to influence protection motivation and behaviour (Witte, 1992).

Hence, this paper integrated the uncertainty reduction theory to compensate for the limitations of PMT and is believed to strengthen determining acceptance of the NDIV platform. The uncertainty reduction theory (URT) explains how people interact when unsure about their surroundings (Berger and Calabrese, 1974). Because the NDIV platform was brand new and had yet to be implemented, young investors could not draw on previous experience. The information provided by the government and the committee affiliated with the NDIV platform was extensively relied upon by investors. With transparency from URT, young investors would use passive, active, and interactive information-seeking tactics to learn more about the NDIV platform. Therefore, the study proposed a theoretical framework, as shown in Figure 1, with perceived severity, perceived vulnerability, response efficacy, self-efficacy, and transparency to determine the acceptance of the NDIV platform among young investors in Malaysia.

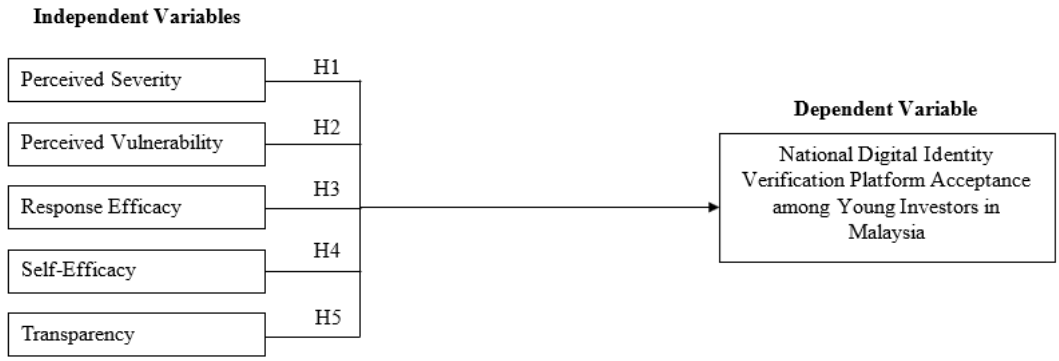

Figure 1. Research Framework.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

NDIV Platform Acceptance

NDIV platform acceptance is the degree to which a person consents to the NDIV platform (Chong et al., 2021). There were several terms for the NDIV platform used in previous research studies, including digital identity (Rivera et al., 2017; Engeness, 2021; Korać et al., 2021; Madon and Schoemaker, 2021; Sule et al., 2021); privacy-preserving authentication technology (Harbach et al., 2013); digital identity system (Mir et al., 2021; Schoemaker et al., 2021); and biometric facial recognition system (Hizam et al., 2021). The different countries had different names for their digital identity verification platform.

The NDIV platform was viewed as beneficial not only to citizens of a country but also to refugees in refugee management (Madon and Schoemaker, 2021; Schoemaker et al., 2021); education; health services, and other social

benefits (Sule et al., 2021); stakeholders and policymakers (Mir et al., 2021); and for better information security in e-learning systems (Korać et al., 2021; Engeness, 2021). The implementation of the NDIV platform showed numerous success stories in the countries it was implemented.

The NDIV platform prompted to replace the shady username and password authentication mechanism, which had become obsolete over time. Unfortunately, the government's efforts to roll out these identities were met with scepticism by citizens. Harbach et al. (2013) discovered that maintaining their privacy was among the most important factors influencing people's acceptance of new authentication systems.

Perceived Severity

Perceived severity is the individual's evaluation of the severity of the repercussions of a threatening event (Sun et al., 2013). Consumers were more likely to adopt modern technology when they were more likely to suffer, which was why perceived severity was found to positively influence intention to adopt healthcare wearable devices (Gao et al., 2015), mobile health services (Zhao et al., 2018), and patient attitudes toward telemedicine health services (Rahi et al., 2021).

However, perceived severity was found not to affect individuals' intentions to use contactless technologies (Li et al., 2021), wearable healthcare technology (Kim and Ho, 2021), or motivation to use e-learning with social media platforms (Peng and Hwang, 2021), and did not significantly influence an individual's intention to use health passbook (Hsieh and Lai, 2020). The adoption of the internet of things in healthcare technology devices was also proven unaffected by perceived severity (Karahoca et al., 2018). It was proposed that the following hypothesis be tested:

H1. Perceived severity positively influences NDIV platform acceptance among young investors.

Perceived Vulnerability

Perceived vulnerability is the individual's evaluation of the probability of menacing events (Sun et al., 2013). When people were more likely to be subjected to a relevant threat and their vulnerability to the risky scenario was recognised, they were more likely to adapt to threat-prevention technologies (Sun et al., 2013; Rahi et al., 2021; Gao et al., 2015). According to Zhao et al. (2018), perceived vulnerability positively impacted mobile health services. Contactless technologies were also influenced by perceived vulnerability (Li et al., 2021), and an individual's propensity to utilise a health passbook was favourably influenced (Hsieh and Lai, 2020).

However, the perceived vulnerability was found insignificant when negatively associated with using online medical records. The intention to use wearable activity trackers (Kim and Ho, 2021), motivation to use e-learning with social media platforms (Peng and Hwang, 2021), and the internet of things in healthcare technology products (Karahoca et al., 2018) did not influence the adoption. The intention was insignificant when tested and negatively associated with using online medical records (Mukhopadhyay et al., 2019). As a result, the following hypothesis was proposed:

H2. Perceived vulnerability positively influences NDIV platform acceptance among young investors.

Response Efficacy

Response efficacy is the individual's belief in the advantage obtained from their actions (Sun et al., 2013). Response efficacy was demonstrated to benefit the adoption of digital technology if it convinced the user of its effectiveness to the extent that it can lessen dangers (Sun et al., 2013; Rahi et al., 2021). Users' attitudes and continuous desire to use medical health apps were favourably connected with perceived ease of use of mobile health services' acceptance towards mobile health services' adoption intention (Zhang et al., 2017), and users' attitudes and continuous intention to use medical health applications (Luo et al., 2021). Response efficacy significantly impacted the intention to use and intention to continue using warning applications (Fischer-Preßler et al., 2021). It was proposed that the following hypothesis be tested:

H3. Response efficacy positively influences NDIV platform acceptance among young investors.

Self-Efficacy

Self-efficacy is the individual's capability and perception of their abilities to overcome or accomplish a behaviour (Sun et al., 2013). Self-efficacy was proven to be positively associated with technology acceptance when the user felt confident in their capacity to understand and use technology (Sun et al., 2013). Individuals who believed in their ability to perform a behaviour to neutralise a threat were proven to benefit from their long-term intention to use e-wallets (Daragmeh et al., 2021). Consumers' adoption of wearable technology in healthcare (Gao et al., 2015), motivation to utilise e-learning with social media platforms (Peng and Hwang, 2021), and an individual's intention to use health passbooks (Hsieh and Lai, 2020) have all been proven to be positively influenced by self-efficacy.

Self-efficacy was positively associated with the perceived ease of use of mobile health services acceptance (Zhang et al., 2017), influences consumers' intention to use self-driving cars (Du et al., 2021), and users' attitudes and continued intention to use medical health applications (Luo et al., 2021). However, computer self-efficacy indirectly affected attitude

due to the intention to embrace telemedicine health services (Rahi et al., 2021). As a result, the following hypothesis was proposed:

H4. Self-efficacy positively influences NDIV platform acceptance among young investors.

Transparency

Transparency is the extent to which an individual can clearly understand something used (Venkatesh et al., 2016). Transparency was demonstrated to have a beneficial and significant impact on the intention to utilise cryptocurrency (Miraz et al., 2022) and local government services (Hartanto and Siregar, 2021). Furthermore, it was discovered to be a significant predictor of digital identity acceptance (Tsap et al., 2020). The intention to use contact tracing programs was positively influenced by three characteristics of transparency: disclosure, clarity, and accuracy (Oldeweme et al., 2021). It was proposed that the following hypothesis be tested:

H5. Transparency positively influences NDIV platform acceptance among young investors.

METHODOLOGY

This paper used a deductive approach to test 5 hypotheses. This study employed an online questionnaire survey using a 7-point Likert scale (attached in Appendix). The measurement instruments were adapted from past researchers (Sun et al., 2013; Venkatesh et al., 2016; Chong et al., 2021). Demographic questions included gender, education, occupation, and years of investing. Data were analysed quantitatively using the IBM SPSS Statistics 26 and SmartPLS 3.2.9 software. The target population of the study was young Malaysian investors. In this case, the sampling frame of young investors was unavailable due to restrictions from Bursa Malaysia, which resulted in the study choosing a non-probability sampling technique. The critical case purposive sampling method was chosen as collecting data from the entire target population was not an option, and the study focus was crucial (Saunders et al., 2019). The unit of analysis was at the individual level. Five inclusion and exclusion questions were included in the questionnaire to obtain the right sample to achieve the study's objective.

FINDINGS AND DISCUSSION

Table 1 shows the confirmatory factor analysis. All the variables had an average variance extracted result more significant than 0.5 and the composite reliability greater than 0.7 (Ramayah et al., 2018), indicating suitability for further hypothesis testing.

Table 1. Confirmatory Factor Analysis.

Construct	Items	Loading	AVE	CR
Acceptance	AC1	0.893	0.737	0.944
	AC2	0.895		
	AC3	0.852		
	AC4	0.874		
	AC5	0.786		
	AC6	0.845		
Perceived Severity	PS1	0.915	0.719	0.884
	PS2	0.817		
	PS3	0.807		
Perceived Vulnerability	PV1	0.851	0.815	0.930
	PV2	0.903		
	PV3	0.953		
Response Efficacy	RE1	0.862	0.757	0.903
	RE2	0.909		
	RE3	0.838		
Self- Efficacy	SE1	0.953	0.830	0.936
	SE2	0.883		
	SE3	0.896		
Transparency	TY1	0.829	0.574	0.835
	TY2	0.905		
	TY3	0.788		
	TY4	0.411		

As displayed in Table 2, all the values passed both the HTMT.90 (Gold et al. 2001) and HTMT.85 (Kline, 2011) thresholds, indicating that discriminant validity is accepted in this study.

Table 2. Confirmatory Factor Analysis.

	AC	PS	PV	RE	SE	TY
AC						
PS	0.597					
PV	0.433	0.672				
RE	0.657	0.597	0.526			
SE	0.775	0.519	0.409	0.637		
TY	0.580	0.605	0.558	0.552	0.599	

Table 3 shows that four out of five hypotheses supported the structural model of this investigation. Based on the one-tailed test, the t-value was considered significant if the critical value was more than 1.64 (Hair et al., 2017).

Table 3. Hypothesis Testing Results.

H	Relationships	Std Beta	Std Error	T Statistics	p-value	5.0%	95.0%	Decision
H1	PS -> AC	0.311	0.049	6.364*	0.000*	0.235	0.391	✓
H2	PV -> AC	-0.068	0.047	1.400	0.165	-0.142	0.012	✗
H3	RE -> AC	0.117	0.062	1.896*	0.041*	0.012	0.218	✓
H4	SE -> AC	0.467	0.050	9.368*	0.000*	0.391	0.557	✓
H5	TY -> AC	0.136	0.049	2.737*	0.006*	0.050	0.212	✓

Perceived severity was found to have a significant positive relationship with acceptance (t-value=6.364>1.64, β=0.311, p-value=0.000<0.05). H1 was accepted. According to previous research, perceived severity had a beneficial impact on technology uptake (Baber, 2021; Daragmeh et al., 2021; Gao et al., 2015; Guo et al., 2015; Holmes and Ophoff, 2019; Pang et al., 2021; Rad et al., 2021; Rahi et al., 2021; Vassilikopoulou et al., 2018; Zhao et al., 2018). The findings of this study showed that perceived severity had a favourable impact on NDIV platform acceptance among young investors; this finding was consistent with previous research and the PMT model. According to Sun et al. (2013), acceptance is more likely when a person recognises the gravity of their situation. Rather than being a cyberattack victims and suffering irreversible financial losses, the young investors chose to accept the NDIV platform to avoid the threat. They understood the gravity and repercussions of cyberattacks. The recently published SC Malaysia annual report 2021 also mentioned that young investors in Malaysia used to have a high-risk appetite in search of greater investment returns. However, after the pandemic outbreak, the numbers came down to only three percent (Khuen, 2022), which clearly showed that young investors were afraid of the severity of cyberattacks. The key takeaway from this is that the marketing team working on the NDIV platform project must plan for and raise awareness of the pitfalls to avoid in the event of a cyberattack, which is one of the reasons for people's acceptance when they understand the severity of an event and have a way to avoid it.

The perceived vulnerability was found to have no significant relationship with acceptance (t-value=1.400<1.64, β=-0.068, p-value=0.165>0.05). The finding refuted the assertion that when individuals are aware of their vulnerability to a threat, they are more willing to accept solutions to protect themselves (Sun et al., 2013; Rahi et al., 2021; Gao et al., 2015). While prior research found a beneficial impact on acceptance (Daragmeh et al., 2021; Guo et al., 2015; Holmes and Ophoff, 2019; Hsieh and Lai, 2020; Li et al., 2021; Pang et al., 2021; Rad et al., 2021; Zhao et al., 2018), the findings of this study showed insignificance, which was backed up by other researchers (Kim and Ho, 2021; Peng and Hwang, 2021; Karahoca et al., 2018; Mukhopadhyay et al., 2019). The H2 was not supported in this study, which added the latest information to the existing PMT model. The findings cast doubt on the prevailing assumption, concluding that young investors were aware of their security and data privacy. Young investors believed that they were not vulnerable to cyberattacks. Being vulnerable did not seem to be a big motivator for young investors to accept the NDIV platform. It could be due to the uncertain investing conditions that investors were familiar with, where it was a high-risk sector, and these individuals were aware of their vulnerability to these events. The fact that individuals participated in online investment schemes despite the possibility of being scammed demonstrated their readiness to be vulnerable with caution (Khuen, 2022). The key takeaway is that the Malaysian government should constantly teach and educate its citizens to be cyber-smart, just like how the Estonians were taught by their government. Solving the root cause of vulnerable devices and personal details is the first step to avoiding cyberattacks (Wei, 2019).

Response efficacy was found to have a significant positive relationship with acceptance (t-value=1.896>1.64, β=0.117, p-value=0.041<0.05). H3 was accepted. Response efficacy was discovered to persuade users of a technology's ability to lessen threats, influencing adoption and acceptance (Sun et al., 2013; Rahi et al., 2021). Most healthcare technologies have also proven high response efficacy (Zhang et al., 2017; Luo et al., 2021). The findings of this study

were in line with previous research findings (Guo et al., 2015; Holmes and Ophoff, 2019; Rad et al., 2021; Thrasher et al., 2016). According to Fischer-Preßler et al. (2021), believing that technology helped solve a user's problem persuaded the user to accept it. An article from Forbes reported that people embrace technology, especially when they believe it makes their lives and jobs easier and safer (Juetten, 2020). This was relatable with the study's findings that young investors believe the NDIV platform solves problems and is an effective solution to cyberattacks, resulting in their acceptance.

Self-efficacy was found to have a significant positive relationship with acceptance (t-value=9.368>1.64, β=0.467, p-value=0.000<0.05). H4 was accepted. According to previous studies, users who were confident in their ability to learn, competent while using technology, and had faith in their capacities to execute, inherited high self-efficacy, which influenced acceptance (Sun et al., 2013; Daragmeh et al., 2021). Many innovative technologies have been discovered to benefit from self-efficacy (Du et al., 2021; Gao et al., 2015; Guo et al., 2015; Holmes and Ophoff, 2019; Hsieh and Lai, 2020; Li et al., 2021; Luo et al., 2021; Peng and Hwang, 2021; Rad et al., 2021; Thrasher et al., 2016; Zhang et al., 2017). H4 was supported because the data suggested that self-efficacy influenced NDIV platform acceptance among young investors, which was consistent with previous research findings. The result added to the PMT model's current evidence. Overall, the young investors appeared confident in their ability to use the NDIV platform. They believed it was simple to use, that they had what it took and that using the NDIV platform required minimal work. This was most likely due to their previous experience, digital signatures, and online verification (Chong et al., 2021). Because the study's target population consisted of young, tech-savvy investors, learning to utilise a new platform was a breeze.

Transparency was found to have a significant positive relationship with acceptance (t-value=2.737>1.64, β=0.136, p-value=0.006<0.05). H5 was accepted. This research found a link between transparency and NDIV platform adoption among young investors, and H5 was approved, confirming the theory and as per past studies (Hartanto and Siregar, 2021; Oldeweme et al., 2021; Tsap et al., 2020; Venkatesh et al., 2016). When combined with PMT variables, this study added to the current data offered by URT by providing new insight into the relationship between transparency and acceptance. Disclosure, clarity, and truth led to acceptance; therefore, a transparent information system was essential for citizen engagement (Oldeweme et al., 2021; Miraz et al., 2022). The data helped to clarify why young investors in this study believed the NDIV platform's operating procedures would be transparent. They were confident that the government would offer vital information about how the platform operates and accept comments from its users, ensuring that the NDIV platform functions in both directions and develops a positive relationship with its users. The result was also following industry insights where transparency was an important element based on the experience of the implementation of MyKad, MySejahtera, and government-related applications (Hafiqah, 2020; Koya, 2020; Aiman, 2020).

IMPLICATIONS

This research addressed three gaps: empirical, theoretical and methodological in the body of knowledge. The study examined how little URT was used to assess acceptance. Past studies have made significant contributions to discussing the PMT model as a stand-alone theory and in conjunction with other well-known theories such as the technology acceptance model, unified theory of acceptance and use of technology, theory of planned behaviour, and diffusion of innovation theory. The integration of both theories: protection motivation theory and uncertainty reduction theory, provided a strong and novel theoretical foundation and added to the study's uniqueness, as previous works had not done so. Each theory had its role, and its supporting variables had a major impact on NDIV platform acceptance among young investors. The study also looked into the PMT model's missing role of transparency. Transparency was emphasised as a critical component of new technologies. This created a strong research model for predicting acceptance, as transparency contributed to the framework. Methodologically, there was not much literature in the field because the NDIV platform was still new and would not be implemented until 2024. This study discovered a lack of quantitative methods while analysing literature closely related to the NDIV platform setting. The study used an online questionnaire survey method to bridge the methodological gap, and the data were analysed quantitatively.

Practically, the Malaysian Communication and Multimedia Commission (MCMC) can now address the primary challenges identified in the national digital identification framework. Users' lack of technological understanding, high adoption and implementation costs, lack of technology maturity, and difficulties adopting modern technology are only a few. Knowing that young investors have a high response efficacy and self-efficacy level when using the NDIV platform, MCMC may want to consider starting with young investors before pushing it onto the older generation. Policymakers must ensure that law and order are based on the most up-to-date technologies to safeguard people's best interests. If MCMC and policymakers can build a robust cybersecurity foundation and achieve citizen involvement, the government and private financial companies can increase operational efficiency, quality of online services, and customer experience. These businesses will also be able to save money and time by using fewer counter transactions and longer waiting times. Lastly, Malaysian citizens would profit the most from this research. With this platform's effective implementation, citizens can do their verification and transactions online without queueing at service providers' virtual counters.

CONCLUSION, LIMITATION, AND FUTURE DIRECTION

This research studied NDIV platform acceptance among young investors in Malaysia. It was an attempt to explain the factors behind NDIV platform acceptance. The study developed a research model based on the protection motivation theory and uncertainty reduction theory. Perceived severity, response efficacy, self-efficacy, and transparency were positive predictors of NDIV platform acceptance. This study bridged the empirical, theoretical, and methodological gaps. The study benefitted the administrators, regulators, industry practitioners, governments, and society. Due to limited

literature in a similar context and time constraints, this study served as a foundation for future researchers to explore the NDIV platform in other populations, variables, and methodological contexts. The outcomes of the study concluded that the NDIV platform, upon implementation, will help solve the cyberattacks in Malaysia and build robust cybersecurity for the country's digital efforts.

REFERENCES

Aiman, A. (2020). *Making MySejahtera compulsory raises privacy concerns, says expert*. Available at: https://www.freemalaysiatoday.com/category/nation/2020/08/19/making-mysejahtera-compulsory-raises-privacy-connectivity-concerns-say-experts/

Aruna, P. (2017). *More young investors entering into Malaysian market*. Available at: https://www.thestar.com.my/business/business-news/2017/05/03/young-investors/

Aun, L. H. and Zhang, K. (2021). *The COVID-19 recession: Rough times for young Malaysians*. Available at: https://www.malaysianow.com/opinion/2021/09/09/the-covid-19-recession-rough-times-for-young-Malaysians/

Baber, H. (2021). Modelling the acceptance of e-learning during the pandemic of COVID-19: A study of South Korea. The *International Journal of Management Education*, Vol.19 No. 2, 100503.

Berger, C. R., and Calabrese, R. J. (1974). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, Vol. 1 No. 2, 99-112.

Chong, L. L., Ong, H. B., and Tan, S. H. (2021). Acceptability of mobile stock trading application: A study of young investors in Malaysia. *Technology in Society*, Vol. 64, 10149.

Daragmeh, A., Sági, J., and Zéman, Z. (2021). Continuous intention to use e-wallet in the context of the COVID-19 pandemic. *Market, and Complexity*, Vol. 7 No. 2,132-155.

Du, H., Zhu, G., and Zheng, J. (2021). Why travelers trust and accept self-driving cars: An empirical study. *Travel Behaviour and Society*, Vol. 22 No. 1, 1-9.

Engeness, I. (2021). Developing teachers' digital identity: Towards the pedagogic design principles of digital environments to enhance students' learning in the 21st century. *European Journal of Teacher Education*, Vol. 44 No. 1, 96-114.

Fischer-Preßler, D., Bonaretti, D., and Fischbach, K. (2021). A protection-motivation perspective to explain intention to use and continue to use mobile warning systems. *Business and Information Systems Engineering*, Vol. 64 No. 2, 1-16.

Gao, Y., Li, H., and Luo, Y. (2015). An empirical study of wearable technology acceptance in healthcare. I*ndustrial Management and Data Systems*, Vol. 115 No. 9, 1704-1723

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organisational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185-214.

Gomes, V. (2021). *Adoption of national digital identity more timely than ever*. Available at: https://www.theedgemarkets.com/article/adoption-national-digital-identity-more-timely-ever

Guo, X., Han, X., Zhang, X., Dang, Y., and Chen, C. (2015). Investigating m-health acceptance from a protection motivation theory perspective: Gender and age differences. *Telemedicine and e-Health*, Vol. 21 No. 8, 661-669.

Hafiqah, M. (2020). *Netizens concern over data privacy on Gerak Malaysia*. Available at: https://themalaysianreserve.com/2020/04/28/netizens-concern-over-data-privacy-on-gerak-Malaysia/

Hair, J. F., Hult, T. M., Ringle, C. M., and Sarstedt, M. (2017).*A Primer On Partial Least Square Structural Equation Modeling (PLS-SEM)*. Sage Publications, Thousand Oaks.

Harbach, M., Fahl, S., Rieger, M., and Smith, M. (2013). On the acceptance of privacy-preserving authentication technology: the curious case of national identity cards. In *International Symposium on Privacy Enhancing Technologies Symposium*, Springer, Berlin, Heidelberg, 245-264.

Hartanto, D., and Siregar, S. M. (2021). Determinants of overall public trust in local government: Meditation of government response to COVID-19 in Indonesian context. *Transforming Government: People, Process and Policy*, Vol. 15 No. 2, 261-274.

Hizam, S. M., Ahmed, W., Fahad, M., Akter, H., Sentosa, I., and Ali, J. (2021). User behaviour assessment towards biometric facial recognition system: A SEM-neural network approach. *arXiv preprint arXiv*, Vol. 2106, 03371.

Holmes, M., and Ophoff, J. (2019). Online security behaviour: Factors influencing intention to adopt two-factor authentication. In *14th International Conference on Cyber Warfare and Security, Academic Conferences and Publishing International Limited*, Stellenbosch, pp. 123-132.

Hsieh, P. J., and Lai, H. M. (2020). Exploring peoples intentions to use the health passbook in self-management: An extension of the technology acceptance and health behaviour theoretical perspectives in health literacy. *Technological Forecasting and Social Change*, Vol. 161, 120328.

Juetten. M. (2020). *Adopting Technology*. Available at: https://www.forbes.com/sites/maryjuetten/2020/02/04/adopting-technology/?sh=702c07911511

Karahoca, A., Karahoca, D., and Aksöz, M. (2018). Examining intention to adopt to internet of things in healthcare technology products. *Kybernetes*, Vol. 47 No. 4, 742-770.

Kee, Y. A., Nee, Y. C., Beng, L. Y., and Fun, T. S. (2012). Security issues on identity card in Malaysia. *International Journal of Engineering and Technology*, Vol. 4 No. 5, 617-621.

Khuen, L. W. (2022). *Implications of soaring inflation on unit trust fund industry*. Available at: https://www.theedgemarkets.com/article/implications-soaring-inflation-unit-trust-fund-industry

Kim, T. B., and Ho, C. T. (2021). Validating the moderating role of age in multi-perspective acceptance model of wearable healthcare technology. *Telematics and Informatics*, Vol. 61, 101603.

Kline, R. B. (2011). Convergence of structural equation modeling and multilevel modeling. In R. B. Kline, *The Sage Handbook of Innovation in Social Research Methods* (pp. 562-589). Thousand Oaks: Sage Publication.

Korać, D., Damjanović, B., and Simić, D. (2021). A model of digital identity for better information security in e-learning systems. *The Journal of Supercomputing*, Vol. 78 No. 7, 1-30.

Koya, Z. (2020). *Malaysians give mixed reactions to Gerak Malaysia app*. Available at: https://www.thestar.com.my/news/nation/2020/04/26/Malaysians-give-mixed-reactions-to-gerak-Malaysia-app

Li, X., Yuen, K. F., Wang, X., and Wong, Y. D. (2021). Contactless technologies adoption during the coronavirus pandemic: A combined technology acceptance and health belief perspective. *Technology Analysis and Strategic Management*, Vol. 33 No. 1, 1-14.

Lunn, E. (2021). *Young people and men targeted by social media investment scammers*. Available at: https://www.yourmoney.com/investing/young-people-and-men-targeted-by-social-media-investment-scammers/

Luo, Y., Wang, G., Li, Y., and Ye, Q. (2021). Examining protection motivation and network externality perspective regarding the continued intention to use m-health apps. *International Journal of Environmental Research and Public Health*, Vol. 18 No. 11, 5684.

Madon, S., and Schoemaker, E. (2021). Digital identity as a platform for improving refugee management. I*nformation Systems Journal*, Vol. 31 No. 6, 929-953.

Martinus, M. (2022). Smart City and Privacy Concerns During COVID-19: Lessons from Singapore, Malaysia, and Indonesia. *Smart Cities in Asia*, Springer, Singapore, 33-47.

Microsoft. (2018). *Securing the modern enterprise in a digital world*. Available at: https://news.microsoft.com/apac/features/cybersecurity-in-asia/

Mir, U., Kar, A. K., and Gupta, M. P. (2021). AI-enabled digital identity inputs for stakeholders and policymakers. *Journal of Science and Technology Policy Management*, Vol. 12 No. 3, 1-28.

Miraz, M. H., Hasan, M. T., Rekabder, M. S., and Akhter, R. (2022). Trust, transaction transparency, volatility, facilitating condition, performance expectancy towards cryptocurrency adoption through intention to use. *Journal of Management Information and Decision Sciences*, Vol. 25 No 1S, 1-20.

Mukhopadhyay, S., Basak, R., Carpenter, D., and Reithel, B. J. (2019). Patient use of online medical records: An application of technology acceptance framework. *Information and Computer Security*, Vol. 28 No.1, 97-115.

MyCERT. (2022). *Reported incidents based on general incident classification statistics 2022*. Available at: https://www.mycert.org.my/portal/statistics-content?menu=b75e037d-6ee3-4d11-8169-66677d694932andid=574bf33f-7291-4b6e-bb61-9adcf6a6259c

OECD. (2019). *Digital government in Chile digital identity*. OECD Publishing, Paris.

Oldeweme, A., Märtins, J., Westmattelmann, D., and Schewe, G. (2021). The role of transparency, trust, and social influence on uncertainty reduction in times of pandemics: Empirical study on the adoption of COVID-19 tracing apps. *Journal of Medical Internet*, Vol. 23 No. 2, e25893.

Pang, Q., Meng, H., Fang, M., Xing, J., and Yao, J. (2021). Social distancing, health concerns, and digitally empowered consumption behaviour under COVID-19: A study on livestream shopping technology. *Frontiers in Public Health*, Vol. 9, 748048.

Peng, M. H., and Hwang, H. G. (2021). An empirical study to explore the adoption of e-learning social media platform in Taiwan: An integrated conceptual adoption framework based on technology acceptance model and technology threat avoidance theory. *Sustainability*, Vol. 13 No. 17, 9946.

Rad, R. E., Mohseni, S., Takhti, H. K., Azad, M. H., Shahabi, N., Aghamolaei, T., and Norozian, F. (2021). Application of the protection motivation theory for predicting COVID-19 preventive behaviours in Hormozgan, Iran: A cross-sectional study. *BMC Public Health*, Vol. 21 No. 1, 1-11.

Rahi, S., Khan, M. M., and Alghizzawi, M. (2021). Factors influencing the adoption of telemedicine health services during COVID-19 pandemic crisis: An integrative research model. *Enterprise Information Systems*, Vol. 15 No. 6, 769-793.

Ramayah, T., Cheah, J., Chuah, F., Ting, H., and Memon, M. A. (2018). *Partial least squares structural equation modeling (PLS-SEM) using SmartPLS 3.0: An updated guide and practical guide to statistical analysis (2nd ed.)*. Pearson, Kuala Lumpur, Malaysia.

Rivera, R., Robledo, J. G., Larios, V. M., and Avalos, J. M. (2017). How digital identity on blockchain can contribute in a smart city environment", in *International Smart Cities Conference*, IEEE, Wuxi, 1-4.

Rogers, R. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protected motivation. J. Cacioppo, and R. Petty, *Social Psychophysiology: A Sourcebook*, Guilford Press, New York, 153-176.

Saunders, M., Lewis, P., and Thornhill, A. (2019). *Research Methods for Business Students 8th Edition*. Pearson Education, Harlow.

Schoemaker, E., Baslan, D., Pon, B., and Dell, N. (2021). Identity at the margins: Data justice and refugee experiences with digital identity systems in Lebanon, Jordan, and Uganda. *Information Technology for Development*, Vol. 27 No. 1, 13-36.

Securities Commision. (2020). *Annual report.* Securities Commission Malaysia, Kuala Lumpur.

Sule, M. J., Zennaro, M., and Thomas, G. (2021). Cybersecurity through the lens of digital identity and data protection: Issues and trends. *Technology in Society*, Vol. 67, 101734.

Sun, Y., Wang, N., Guo, X., and Peng, Z. (2013). Understanding the acceptance of mobile health services: A comparison and integration of alternative models. *Journal of Electronic Commerce Research*, Vol. 14 No. 2, 183-200.

Sun, Y., Wang, N., Guo, X., and Peng, Z. (2013). Understanding the acceptance of mobile health services: A comparison and integration of alternative models. *Journal of Electronic Commerce Research*, Vol. 14 No. 2, 183-200.

The Edge Market. (2020). *New CDS accounts opened in January to July soared 125% to 218,000 Bursa*. Available at: https://www.theedgemarkets.com/article/new-cds-accounts-opened-january-july-soared-125-218000-%E2%80%94-bursa

Thrasher, J. F., Swayampakala, K., Borland, R., Nagelhout, G., Yong, H. H., Hammond, D., and Hardin, J. (2016). Influences of self-efficacy, response efficacy, and reactance on responses to cigarette health warnings: A longitudinal study of adult smokers in Australia and Canada. *Health Communication*, Vol. 31 No. 12, 517-1526.

Tsap, V., Lips, S., and Draheim, D. (2020). Analysing eID public acceptance and user preferences for current authentication options in Estonia. In *International Conference on Electronic Government and the Information Systems Perspective*, Springer, Bratislava, pp.159-179.

Vassilikopoulou, A., Lepetsos, A., and Siomkos, G. (2018). Crises through the consumer lens: The role of trust, blame and risk. *Journal of Consumer Marketing*, Vol. 35 No. 10, 1-11.

Venkatesh, V., Thong, J. Y., Chan, F. K., and Hu, P. J. (2016). Managing citizens' uncertainty in e-government services: The mediating and moderating roles of transparency and trust. *Information Systems Research*, Vol. 27 No. 1, 87-111.

Wei, S. L. (2019. *In Estonia, 99% of public services are online*. Available at: https://themalaysianreserve.com/2019/10/15/in-estonia-99-of-public-services-are-online/

Witte. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, Vol. 59 No.

4, 329-349.
Yan, Y., Jacques-Tiura, A. J., Chen, X., Xie, N., Chen, J., Yang, N., and MacDonell, K. K. (2014). Application of the protection motivation theory in predicting cigarette smoking among adolescents in China. *Addictive Behaviours*, Vol. 39 No. 1, 181-188.
Zhang, X., Han, X., Dang, Y., Meng, F., Guo, X., and Lin, J. (2017). User acceptance of mobile health services from users' perspectives: The role of self-efficacy and response-efficacy in technology acceptance. *Informatics for Health and Social Care*, Vol. 42 No. 2,194-206.
Zhao, Y., Ni, Q., and Zhou, R. (2018). What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. *International Journal of Information Management*, Vol. 43 No. 1, pp.342-350
Zhe, K. S. (2017). *Cover story: Detecting cryptocurrency scams*. Available at: https://www.theedgemarkets.com/article/cover-story-detecting-cryptocurrency-scams

CONFLICT OF INTEREST

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AUTHORS' BIOGRAPHY

Author's Full Name: Assoc. Prof. Ts. Dr. Teoh Ai Ping
Author's Email: apteoh@usm.my
Author Professional Bio: Associate Professor Ts. Dr. Teoh Ai Ping holds the qualifications of Doctor of Business Administration, Master of Science in Information Technology, and Bachelor of Accountancy (Hons.). She is also a Certified Risk and Compliance Management Professional (US) and Professional Technologist (Cyber Security Technology). Dr. Teoh has been actively involved as visiting lecturer and invited speaker internationally, as well as published research articles, authored books and online courses in her areas of specialisation.

Author's Full Name: Pavitira Manogaran
Author's Email: pavitiramano@student.usm.my
Author Professional Bio: Pavitira Manogaran is a PhD student at the Graduate School of Business, Universiti Sains Malaysia. She received her Master of Business Administration from the Universiti Sains Malaysia. Her research interests include business information technology, business information systems and digital identities.