

INTENTION TO USE THE INNOVATIVE COVID-19 TECHNOLOGY “THESAFCHECK” SOLUTION

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ABSTRACT

This paper summarizes an explorative study of the design as well as the perceived risk that contributes to users' adoption of an innovative Covid-19 solution technology known as the “TheSafeCheck” in the ASEAN region. The attempt to survey these areas using the stimulus research model is a novel approach focused on adoption factors of this innovative technology as “TheSafecheck” focuses on the novel design and perceived risk. The empirical results from the quantitative analysis suggest that design, perceived risk, perceived usefulness as well as perceived ease of use are significant factors that contribute to users' intention to utilize this novel Covid-19 technology “TheSafecheck” Solution. Companies will be able to utilize this study information for deploying the products and services to meet the users' intention to use the system while also fulfilling their objective of corporate social responsibility.

Keywords: ASEAN, Stimulus Research Model, Users' Intention to use, Innovation, Solution

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INTRODUCTION

According to World Health Organization (WHO, 2020) and (UNESCO, 2020), the acute respiratory outbreaks crisis or known as Novel Coronavirus (Covid-19) has affected a billion people and spread worldwide to more than 200 countries on six continents. This Covid-19 outbreak has exceeded the infection rates and the number of deaths compares to other coronaviruses such as SARS-CoV, MERS-CoV, and Influenza (Liu, Gayle, Wilder-Smith, and Rocklöv, 2020; Peeri, Shrestha, Rahman, Zaki, Tan, Bibi, Haque, 2020). Previous studies (Chinazzi, Davis, Ajelli, Gioannini, Litvinova, Merler, Vespignani, 2020; Smith and Freedman, 2020; Sohrabi, Alsafi, O'Neill, Khan, Kerwan, Al-Jabir, Agha, 2020) have contended that restriction of movement is seen as the best approach to control the spread of infectious diseases to contain this Covid-19 pandemic. According to Fabeil, Pazim, and Langgat, (2020), WHO, (2020), a lot of countries have imposed travel restrictions, social distances, and postponements of events in their respective countries including the ASEAN such as Malaysia, Singapore, Indonesia, Philippines, Thailand, and Vietnam, etc.

The Covid-19 infection and outbreak have also affected the global economy besides the public health major concern. The world has failed to adequately invest in preventive and preparedness measures to mitigate the risks of this outbreak even with the available information on the expected economic and health costs of infectious disease outbreaks (Yamey Schäferhoff, Aars Bloom, Carroll, Chawla, 2019; WHO, 2020; UNESCO, 2020). Service industries such as transportation. Tourism and hospitality have suffered significant losses due to travel restrictions. According to The International Air Transport Association (IATA, 2020), the projection of losses in airline revenue solely from passenger carriage alone is up to \$314 billion. There have been lots of technologies or apps to track Covid-19 globally. However, there isn't yet the technology or app globally available and connected as well as approved by IATA to facility the Covid-19 travel with Covid-19 test results or vaccine taken when and where to facilitate travel. Therefore, this study is to introduce the novel "TheSafeCheck" Solution Technology for the Covid-19 environment to fill this gap. This study focuses on the users-based research orientation such as users' intention to use that is measurable with the adoption of Stimulus Research Model (Source: Lai 2020: 2019: 2018: 2017: 2016: 2014) to enhance the potential of deploying the novel "TheSafeCheck" Solution Technology for Covid-19 environment based on the design and perceived risk. This led to the objective to determine the factors that associate the usage of the "TheSafeCheck" Solution system. The research questions for this study are

- RQ 1.** What is the relationship between the design and perceived usefulness?
- RQ 2.** What is the relationship between the design and perceived ease of use?
- RQ 3.** What is the relationship between design and intention to use?
- RQ 4.** What is the relationship between perceived usefulness and intention to use?
- RQ 5.** What is the relationship between consumers' perceived ease of use and perceived usefulness?
- RQ 6.** What is the relationship between perceived ease of use and intention to use?
- RQ 7.** What is the relationship between perceived risk and intention to use?

Previous research and study of novel technology highlighted that design and perceived risk played a vital role (Lai and Zainal, 2015; Cheah 2011; Trinh, Tran, and Vuong, 2020). Therefore, this study seeks to examine the novel “TheSafeCheck” Solution Technology for Covid-19 environment based on the design that stimulus the perceived ease of use and perceived usefulness. Furthermore, this study explores the relationship between perceived ease of use, perceived usefulness, and perceived risk with users’ intention to use the novel “TheSafeCheck” Solution Technology for Covid-19 environment. The outline of the paper will introduce the overview of the “TheSafeCheck” Solution Technology and Literature Review, research methodology, analysis & discussion, implication, limitation and further research

“THESAFECHECK” SOLUTION TECHNOLOGY FOR COVID-19 AND LITERATURE REVIEW

Overview of “TheSafeCheck”

According to Hamdan, Kassim, and Lai (2021), Troise and Camilleri, (2020), Wang, Wang, Ng, and Brook, (2020), Lai, (2017), and Harrison, Scheela, Lai, Vivekarajah, (2018), the emergence of innovation like “TheSafeCheck” is vital to support the eco-system in this type of situation. The novel Covid-19 technology “TheSafeCheck” Solution offers a service with access to the identity documents of 4.2 billion people from 227 countries, creating the world’s first application that integrates an app with global health/medical databases. There is an immediate and urgent need to harness and bring together all the various technologies and talents to quickly develop this software into a strong, viable solution for the combined multi-trillion travel and hospitality industries that are bleeding incredible losses by the minute. Thus, the “TheSafeCheck” app offers immediate problems with the solution. This is done so by creating the world’s first novel Covid-19 technology “TheSafeCheck” Solution software that integrates an app to global health/medical databases, whilst offering the highest levels of identity security currently available.

The novel Covid-19 technology “TheSafeCheck” Solution system can check and verify Identities in mere seconds and also uncovers deep connections throughout this data by using advanced Artificial Intelligent (AI) functions. The service checks also that the customer took a Coronavirus test, if the check is negative the system generates a Digital Health Declaration) – this DHD can be integrated into any system. The system is also able to record Covid vaccination status. According to Anthony, Rosliza and Lai (2019), this solution “TheSafeCheck” will support the decision-making of the frameworks in the health governance system. Figure 1 below showed how it worked in a COVID-19 Scenario?

Once the user had already done the test of the Covid-19, He/She can just download the novel “TheSafeCheck” Solution technology app. Upon registration, the user can scan passport or IC, etc for identification, and the system will check and verify the identity. After that, the identified person will be connected to the Covid-19 test centralized database of each country where the test was taken to pull the data and generate the digital health certificate that is valid for 15 days. The digital health certificate can be used in many sectors like going back to work, going to the hospital, traveling, boarding a plane, etc. Therefore, this provides convenience to users and authority to verify those who had already done the Covid-19 test easily with the novel “TheSafeCheck” technology solution.

Since there is a new technology so there is a need to research to understand the users' demand, factors that influence this new technology, and support the companies that are going to deploy this type of technology. Thus, the study of this research is being conducted in the ASEAN region.

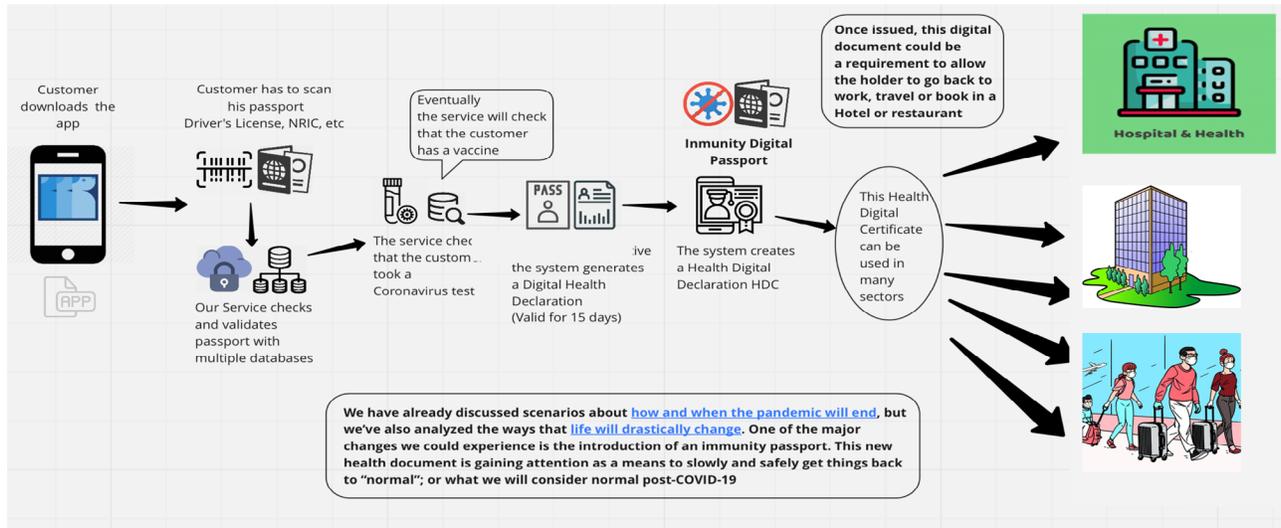


Figure 1. How “TheSafeCheck” Solution work in a Covid-19 scenario? (TheCheck, 2020).

Literature Review

The commonly used models are the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT). Over time, it seems researchers that attempted to add to the model in various contexts and study designs, only reconfirmed various findings of Venkatesh et al. (2003). Holden and Karsh (2010) found that few studies in their literature review evaluated the four moderators inherent to the performance of UTAUT. For example, Dwivedi et al. (2019) aimed to revise the UTAUT via meta-analysis and structural equation modeling of data from 162 earlier studies. They found that attitude statistically significantly predicts intention to use while moderating the effects of the four key factors. However, Dwivedi et al. completely dismissed key findings and the moderators which were proven essential in Venkatesh et al. work. First, Venkatesh et al. found attitude, self-efficacy, and computer anxiety nonsignificant toward predicting user intention; however, each was fully absorbed through performance expectancy and effort expectancy. Second, Venkatesh et al. found the following three contributions of the four important moderators in the UTAUT. First, age, gender, and experience affected the strength of the relationship between performance expectancy and user intention. Second, social influence is affected by all four controlling factors but is nonsignificant without them. Third, facilitating conditions significantly predict usage only when age and experience were accounted for in the examination of that relationship (Venkatesh et al., 2003). According to (Ahmet and Yanartas, 2020; Slade et al., 2015) identify the technology adoption using UTAUT has four key factors which are performance expectancy, effort expectancy, social influence, and facilitating conditions.

Nevertheless, these four factors are not so relevant for this novel “TheSafeCheck” technology that is not yet deployed in the marketplace and this will be driven by the government and industry regulatory at the beginning. Furthermore, UTAUT might be a powerful model due to its parsimonious

structure and higher explanatory power (R^2) but the model did not examine direct effects which might reveal new relationships as well as important factors from the study which were left out by subsuming under the existing predictors only (Bagozzi, 2007 and Lai, 2017). The new direct relationship of design and perceived risk are vital in this study. Therefore, the TAM or extended TAM-like stimulus research model (SRM) is a more relevant type of research model for this study. The norm problems from previous studies are not user friendly, not useful and the risk involved that are related to extended TAM encourages this study (Lai and Zainal, 2015; Lai and Scheele, 2018; Trinh, Tran, and Vuong, 2020; Sungjun Kim and Zemke, 2020). Thus, the factors of design, perceived usefulness, perceived ease of use, and perceived risk in relation to the intention to use the “TheSafeCheck” are being selected for this research (Lai, Toh, and Alkhrabsheh, 2020; Sungjun Kim and Zemke, 2020; Lai and Zainal, 2015).

Davis (1986) who is the author of the Technology Acceptance Model (TAM) has become so popular that it has been cited in most of the research that deals with users’ acceptance of technology (Camilleri, Falzon, 2020, Yu, 2020; Lee, Kozar and Larsen, 2013; Al-alak, and Alnawas, 2010). Based on the TAM Model formed by Venkatesh and Davis (1996), both perceived usefulness and perceived ease of use were found to have a direct influence on behavior intention, thus eliminating the need for the attitude construct. In previous studies in the information system settings, the higher the perceived ease of use of any innovation or system, the higher the perceived usefulness (Davis, 1989; Elkhani, Soltani, & Nazir Ahmad, 2014; Lai, Toh, and Alkhrabsheh, 2020; Tefertiller, 2020; Lai and Tong, 2020). Thus, the perceived usefulness and perceived ease of use are the direct relationships towards users’ intention to use that will be investigated in this study.

The intention to adopt new technology such as the “TheSafeCheck” solution technology depends on the technical “design and functionality” of the platform. Users are looking for apps or platforms that are attractive as well as user-friendly. Devaraj, Fan, and Kohli (2002) and Lai and Scheele (2018) acknowledged that perceived ease of use and usefulness included factors of time-saving and cost-saving that are major measures of the efficiency for electronic retail payment (E-payment) transactions. Davis (1989) and Lai (2014; 2017; 2018) Lai, Toh, and Alkhrabsheh (2020) identified the design features that are directly related to perceived ease of use and perceived usefulness. Sungjun Kim and Zemke (2020), Lin and Hsieh (2006), and Lai and Zainal (2014) noted that consumers enjoyed using their phones as electronic payment (E-payment) and valued the benefits of the design that provided ease of use and usefulness. Thus, the design is an important factor to be studied in this paper.

Perceived risk is defined as consumers’ perceived risk and their own tolerance of risk-taking that influence their financial transaction decision (Chan and Lu, 2004; Lai and Zainal, 2015). Perceived risk suggests the idea that consumers’ may be influenced during the E-payment process by the feelings like anxiety, concern, discomfort, uncertainty, and cognitive dissonance in this research. Mohammad (2008), Cheah (2011), Lai and Zainal (2015) highlighted the importance of risk for E-payment especially the financial risk in the financial industry where the E-PaySIM™ E-payment is also bound by the Bank Negara guidelines.

Consumers view relationships with banking based on trust and how they perceived risk as the banking is acting in their favor (Al-alak and Alnawas, 2010, Lai and Zainal, 2015). Perceived risks are being studied in relation to technology adoption, including credit cards (Trinh, Tran, and Vuong, 2020) e-shopping (Pelaez, Chen and Chen 2019), e-payment (Lai and Scheele, 2018), e-wallet (Lai and Liew, 2021). Perceived risk evokes the notion that users’ may be inspired by being exposed to the “TheSafeCheck” solution technology by the feelings like anxiety, concern, discomfort, uncertainty,

and cognitive dissonance in this research (Lai and Zainal, 2015). Trinh et al (2020), Lai and Scheele (2018), and Cheah (2011) highlighted the importance of risk in the financial industry that can be applied to the “TheSafeCheck” solution technology. Therefore, there is a need to study the impact of perceived risk.

TAM attempts to help researchers and practitioners to identify a particular technology or system that may be acceptable or unacceptable besides providing prediction. Even though TAM has been tested widely with different samples in different situations and proved to be a valid and reliable model explaining information system acceptance and use (Mathieson, 1991; Davis and Venkatesh, 1996; Lai, Toh, and Alkhrabsheh, 2020), many extensions to the TAM have been proposed and tested (Moon and Kim 2001; Venkatesh, Speier and Morris 2002; Henderson and Divett, 2003, Shih, 2004; Chong and Chan, 2012; Lai, 2020: 2018: 2017: 2016: 2014; Lai and Zainal, 2014; Lai and Scheel, 2018; Kerres, 2020; Yu, 2020).

According to Malatjia, Eck, and Zuva (2020), TAM will continue to be accepted and modified according to the successful application of any new technology. Nevertheless, we will focus on and use the extension and adaptation of TAM known as the stimulus research model by Lai (2014, 2016, 2017, 2018, 2019, 2020) in this particular study.

The study aims to investigate the relationships between the intention to use the novel design for “TheSafeCheck” solution factors and perceive ease of use, perceived usefulness, and users’ intention to use. Besides, the study also examines the relationships between perceived usefulness as well as perceived ease of use and users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution. The research model is built upon previous research findings and theoretical achievements. Therefore, based on the stimulus research model (SRM), this study will use the underlining variables shown in Figure 1 to determine the users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution. According to Lai (2014, 2016, 2017, 2018, 2019, 2020), the novel Covid-19 “TheSafeCheck” design is the stimulus that represents the system and features capabilities while, the perceived risk, perceived ease of use, and perceived usefulness are the organism that represents the motivation to use the system that leads to consumers’ respond to use the system. For the purpose of this study, the following hypotheses were posited in figure 2:

- H1a.** Design is positively associated with perceived usefulness.
- H1b.** Design is positively associated with perceived ease of use.
- H1c.** Design is positively associated with users’ intention to use
- H2.** Perceived ease of use is positively associated with perceived usefulness.
- H3.** Perceived usefulness is positively associated with users’ intention to use
- H4.** Perceived ease of use is positively associated with users’ intention to use
- H5.** Perceived risk is negatively associated with users’ intention to use

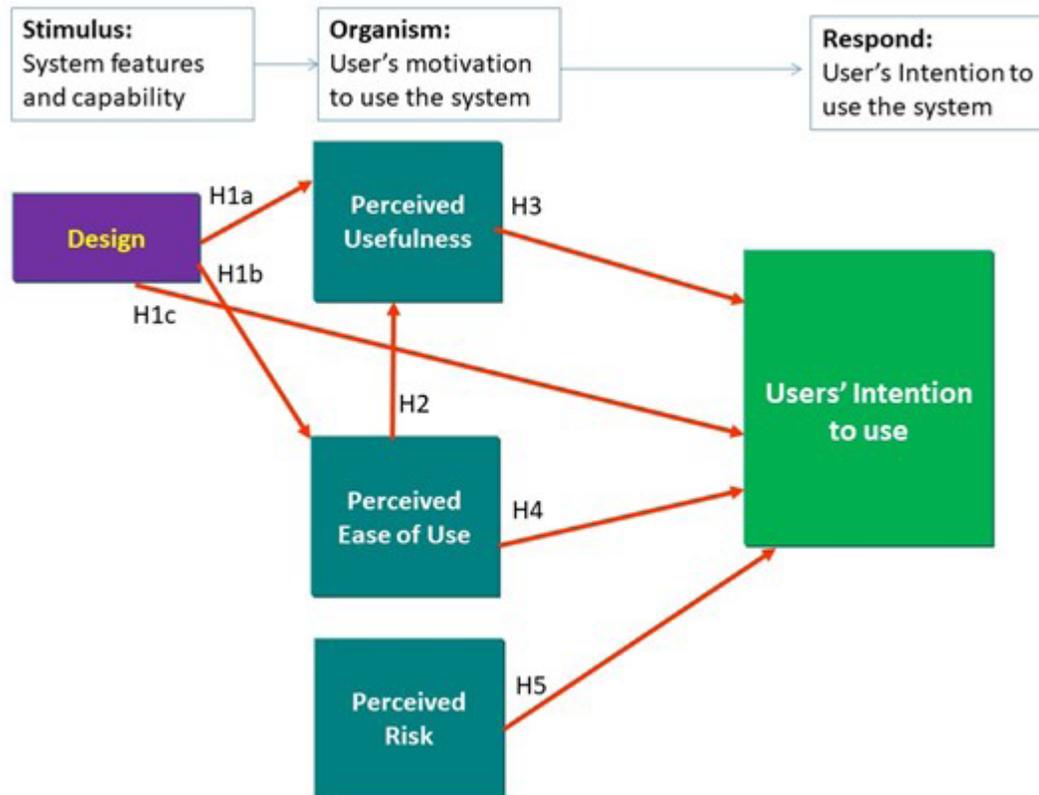


Figure 2. Stimulus Research Model.

Source: Lai, 2014, 2016, 2017, 2018, 2019, 2020.

RESEARCH METHODOLOGY

This study research seeks to examine and attain answers to the proposed research questions guided through a plan is known as a research design (Lai, 2014; 2018; 2020; Saunders, Lewis, and Thornhill, 2012). According to Cooper and Schindler (2008) and Lai (2020), the three types of research designs are exploratory, descriptive, and causal or explanatory. Neuman (2006) and Lai (2019) indicated that exploratory research involved an attempt to explore and generate new ideas and themes that provided the prerequisite for further research. In this study, the relationship between variables of the hypothesized model will be discussed as part of the explanatory research design. As suggested by Churchill, 1979; Sekaran 2003; Bryman and Bell 2007; Lai, 2014; 2016; 2018; 2020; Lai and Zainal, 2014; 2015; the hypotheses were generated after a thorough investigation of the literature and the background information search and the research problems identified. The next stage involves questionnaires design, pilot tests, and data collection. After data collection, the descriptive research design is used for analysis in order to determine the mean, standard deviation, frequencies, and percentages as well as to explain the respondents' characteristics.

The online survey questionnaire was used as the data collection method for 1 month through an e-mail blast invitation to the database of ASEAN events of 880. The respondents are given the YouTube link to view before they respond to the questionnaires. A total of 220 respondents that

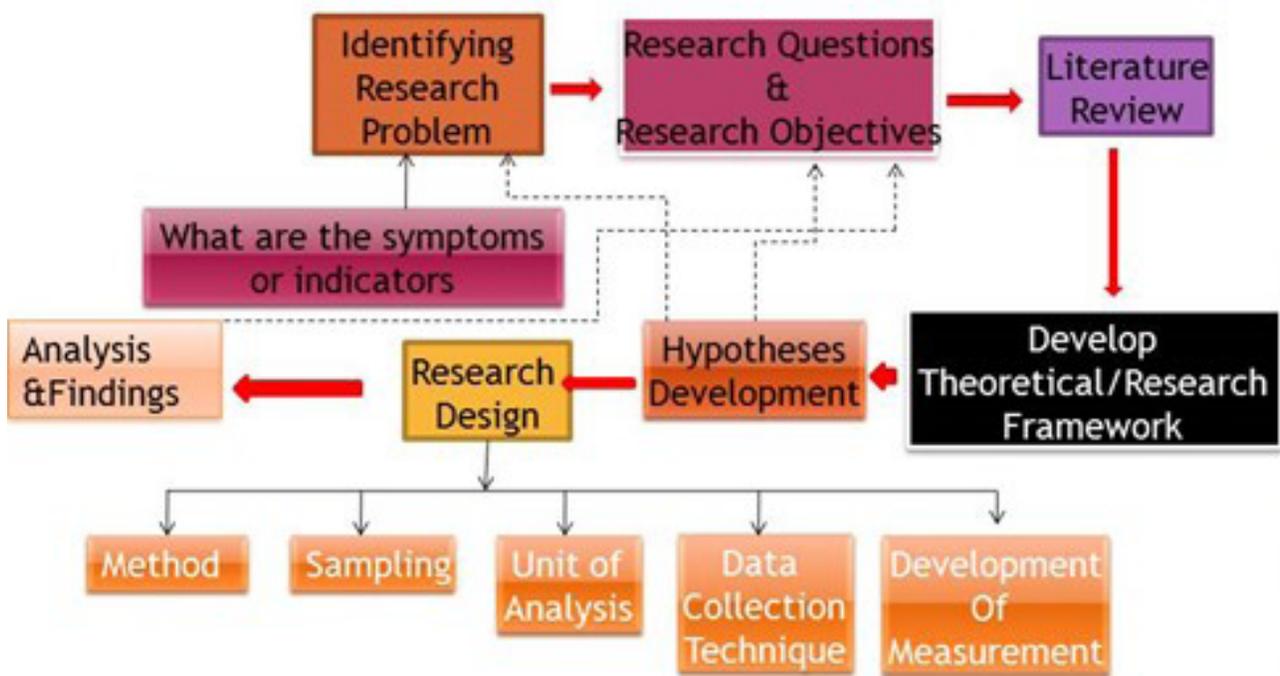


Figure 3. Research Strategy Process.

Source: Churchill, 1979; Sekaran 2003; Bryman and Bell 2007; Lai, 2014, 2016, 2018, 2020; Lai and Zainal, 2014, 2015.

fulfill the pre-set requirements were collected and used for this analysis. The minimum recommended sample size for this study is 200 based on Sekeran (2013). The research managed to collect 220 data (represent a 25% response rate from the database) that are being used here that provided a robust study for this research. In this study, the five-point scales Likert-type of measuring the users' intention to use the novel "TheSafeCheck" technology like 'strongly agree' to 'strongly disagree' was used. When responding to the survey items, participants specify their levels of agreement to a subject given. The five points scale is selected to encourage respondents to make positive or negative choices (Lai, 2020: Cooper, Schindler, and Sun 2008) to produce more emphatic information (Lai, 2020: Oppenheim, 1992). Cronbach's alphas for the variables are as follows: Design (.90), perceived risk (.91), perceived usefulness (.94), perceived ease of use (.92), and consumers' intention to use (.88).

Results (Respondent profile)

The analyses have been done for each variable separately to rendezvous an abridgment of respondents' demographic profiles to get the preliminary information and the feel of the data in this study (Sekaran, 2013). Table 1 showed the respondents' demographic profiles of the survey.

Table 1. Respondent’s profile.

Variable	Frequency (n=220)	Percent (Total 100%)
ASEAN Countries Status		
Developed Countries (Singapore, Brunei)	66	30
Developing Countries (Malaysia, Thailand, Indonesia, Philippines)	134	61
Lesser Developed Countries (Vietnam, Cambodia, Laos, Myanmar)	20	9
Gender		
Male	138	63
Female	82	37
Marital Status		
Single	126	57
Married	94	43
Age		
< 25	60	28
26-40	80	37
41-55	56	25
> 55	24	10
Education		
Secondary/High school	44	20
College/university	138	63
Graduate school	38	17

Source: Lai, 2014, 2016, 2018.

Measurement model

The goodness of fit indices was good and satisfied the requirements with the validity assessment of the Conformity Factor Analysis - CFA model. Chi-Square was 246.74 at $p=0.00$ and df (degree of freedom) was 158. According to Lai (2018) and Tabachnick and Fidell (2007), the relative Chi-Square (χ^2/df) at 2.26 is below the 5.0 required for a good fit. As stated by Hair, Black, Babin, Anderson, and Tatham (2010). In absolute fit indices, the goodness of fit index (GFI) was 0.98, well higher than 0.90 (Hair et al. 2010). The comparative fit index (CFI) was 0.98, above the 0.90 required for a good fit (Hu and Bentler 1999). The root means the square error of approximation (RMSEA) was 0.06, below the 0.08 required for good fit (Lai and Scheele, 2018; Byrne 1998). For the overall measurement model, the results indicated a good fit model.

Structural model

Based on the results of the measurement model, the structural model was examined with the theoretical links as shown in Table 2 with all of the goodness of fit indices that indicate an acceptable model.

The overall structural model shows all paths of standardizing regression weights as shown in Table 3 are statistically significant at the $p \leq 0.001$ and $p \leq 0.01$ level of significance.

Table 2. Goodness-of-fit statistics for measurement model.

Goodness-of-fit Statistics		Level of Acceptance	Index Value
Absolute fit Measures			
Chi-square	X ²	$p > 0.05$	11.958 ($p=0.04$)
Degree of freedom	df	≥ 0	5
Root mean square error of approximation	RMSEA	< 0.08	0.045
The goodness of fit index	GFI	> 0.90	0.996
Incremental fit measures			
Comparative fit index	CFI	> 0.90	0.998
Parsimonious fit measures			
Relative Chi-Square	X ² /df	< 5	2.392

Source: Lai, 2014, 2016, 2018.

Table 3. Standardized regression weights of the structural model.

Hypothesis		Standardized Regression Weights		S.E.	C.R.	P	Results
Hypothesis 1a	PEU	←	D	.039	13.63	***	Significant $p \leq 0.001$
Hypothesis 1b	PU	←	D	.041	3.50	***	Significant $p \leq 0.001$
Hypothesis 1C	I	←	D	.049	3.76	***	Significant $p \leq 0.001$
Hypothesis 2	PU	←	PEU	.036	10.24	***	Significant $p \leq 0.001$
Hypothesis 3	I	←	PU	.050	4.78	***	Significant $p \leq 0.001$
Hypothesis 4	I	←	PEU	.049	4.26	.510	Significant $p \leq 0.05$
Hypothesis 5	I	←	PR	-.047	- 6.36	***	Significant $p \leq 0.001$

Source: Lai, 2014, 2016, 2018.

Note: *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

Hypothesis 1a Design has a relationship with perceived ease of use.

This hypothesis suggests that design as an exogenous factor provides a significant contribution to perceived ease of use as an endogenous factor. Thus, hypothesis 1a is supported by the data. In this case, the novel design “TheSafeCheck” technology has a significant relationship with perceived ease of use.

Hypothesis 1b Design has a direct relationship with Perceived usefulness.

This hypothesis suggests that design as an exogenous factor provides a significant contribution to perceived usefulness as an endogenous factor. Therefore, hypothesis 1b is supported by the data. In this case, the novel design “TheSafeCheck” technology has a significant relationship with perceived usefulness.

Hypothesis 1C Design has a direct relationship with users’ intention to use.

The results show that design has a strong direct relationship with users’ intention to use the novel “TheSafeCheck” technology system at Critical Ratio C.R=14.38 and $p=0.00$ ($p<0.001$). In this case, the higher the design support the greater the intention to use the novel “TheSafeCheck” technology.

Hypothesis 2 Perceived ease of use has a relationship with perceived usefulness.

The results of Structural Equation Modelling (SEM) show that the standardized regression weight of the structural path between perceived ease of use and perceived usefulness is positive and significant, in which critical ratio C.R=17.75 and $p=0.00$ ($p<0.001$). In this case, the higher the perceived ease of use support the greater the perceived usefulness of the novel “TheSafeCheck” technology.

Hypothesis 3 Perceived usefulness is positively associated with users’ intention to use.

The hypothesis shows that perceived usefulness has a significant relationship with users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution with explanatory power R^2 of 78.

Hypothesis 4 Perceived ease of use is positively associated with users’ intention to use.

The hypothesis showed that perceived ease of use has a significant relationship with users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution with explanatory power R^2 of 69.

Hypothesis 5 Perceived risk is negatively associated with users’ intention to use.

The hypothesis showed that perceived ease of use has a significant relationship with users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution with explanatory power R^2 of -43

ANALYSIS AND DISCUSSIONS

The mediating effect (Lai, 2014; 2018 and Lai, Toh, and Alkhrabsheh, 2020) of the value on the relationship between the predictors of stimulus and intention to use is assessed through finding the effects of the indirect effects of the model. According to Hayes and Preacher (2014), the indirect effects were attained by the individual indirect effects of the corresponding standard deviation. A mediating effect is created when a third variable/construct intervenes between two other related constructs. A mediator specifies how (or the mechanism by which) a given effect occurs (Baron and Kenny, 1986; James and Brett, 1984; Lai, 2014; 2020; Lai and Scheele, 2018). Shadish and Sweeny (1991) and Lai, (2020: 2018; 2016; 2014; Lai, Toh, and Alkhrabsheh, 2020) state that an independent variable will have causality influences on the mediator which then, in turn, causes the outcome.

SEM analysis showed a significant positive relationship between perceived ease of use and perceived usefulness and it was the strongest predictor of usefulness with path coefficient=0.67. Consistent with the previous studies, perceived usefulness was found to be predicted by perceived ease of use (Davis et al., 1989; Henderson and Divett, 2003; Lai and Zainal, 2015). When users perceived the novel Covid-19 “TheSafeCheck” technology solution as the ease of use, their perception is the novel Covid-19 “TheSafeCheck” technology solution is useful too. The design shows a significant relationship between perceived ease of use and perceived usefulness that are almost the same. Perceived ease of use is vital for example complex systems like the novel Covid-19 “TheSafeCheck” technology solution and the suggestion list can be found in Lai (2018) and Sun and Zhang, (2006). Therefore, for complex systems like the novel Covid-19 “TheSafeCheck” technology solution and the companies planning to implement the novel Covid-19 “TheSafeCheck” technology solution may look at perceived ease of use and may use it as the mediator to enhance perceived usefulness and users’ intention to use. The results showed that design had a positive significant relationship with perceived usefulness and perceived ease of use and users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution was supported by previous studies by (Muniruddeen, 2007; Shen, 2012; Lai, 2018:2016:2014; Lai and Scheele, 2018; Lai, Toh, and Alkhrabsheh, 2020). Thus, the design could be mediated by both perceived usefulness and perceived ease of use as well as direct relationship users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution.

The result of structural equation modeling (SEM) established that there is a positive and significant relationship between design and consumers’ intention to use based on hypothesis 1C supported by the research data in which standardized regression estimate $\beta = .51$, 14.38 and $p=0.00$ ($p<0.001$). It can be suggested that the higher the design of using the novel Covid-19 “TheSafeCheck” technology solution, the higher the users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution. Hypothesis 1C concluded and validated existing studies (Wang, Wang, Lin, and Tang, 2020; Lai, 2016:2014; Chong and Chan, 2012). Thus, hypothesis 1C for the novel Covid-19 “TheSafeCheck” technology solution is confirmed. This result further implied that design was an important element of users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution, as were the perceived usefulness and perceived ease of use.

Perceived Risk has been a major concern but the standard regression weight of 52% is considered medium and needs to be observed as an important factor. Therefore, the decision-making team of the companies providing the novel Covid-19 “TheSafeCheck” technology solution needs to look into providing solutions to address the risk as well. To reduce the perceptions of perceived risk, the novel Covid-19 “TheSafeCheck” technology solution suppliers can organize talk to educate consumers on how to safeguard the novel Covid-19 “TheSafeCheck” technology solution with the additional security and privacy features. Furthermore, addressing the risk factor will increase the users’ trust and confidence that leading to the intention to use the novel Covid-19 “TheSafeCheck” technology solution.

The explanatory power R^2 scores of users’ intention to use by perceived usefulness, perceived ease of use, design, and perceived risk variables are .55. According to Cohen (1998) and Lai (2018), the explanatory power R^2 scores were decoded as small ($\geq .01$), medium ($\geq .09$), or large ($\geq .25$). Thus, the results showed that the single platform E-payment system has a very high perception of usefulness and ease of use and moderate to high consumers’ intention to use by the consumers’ respondents. Thus, the users’ intention to use is considered very well with 55% of users’ intention to use the novel Covid-19 “TheSafeCheck” technology solution in this study.

There have been increasing studies of the factors influencing technology acceptance especially in the area of Covid-19 tracking solution lately but not on the novel Covid-19 “TheSafeCheck” technology solution. Furthermore, this research has extended perceived risk and design as the extended main contributor to the technology adoption theoretical research model. Specifically, as far as the researcher is aware, factors that contribute to the finding in accepting the novel Covid-19 “TheSafeCheck” technology solution have not yet attracted the interest of the research community. Therefore, this research breaks new ground within technology acceptance literature due to this research validated the factors of the well-established theory of the TAM and the more recent Stimulus Research Model (SRM) in this context and its practical applications.

Managerial Implication

The outbreak of the Covid-19 virus globally and the need to have a better solution to tackle this Covid amicable encourages the development of novel solutions like “TheSafeCheck”. This type of solution “TheSafeCheck” will support the decision-making of the frameworks in the health governance system (Anthony, Rosliza, and Lai, 2019). With the emerging of the novel Covid-19 “TheSafeCheck” technology solution, many companies are facing important issues concerning their users’ technology acceptance. Since users play the important role in companies’ bottom line, companies need to take into consideration of users’ points of view concerning their intention to use the novel Covid-19 “TheSafeCheck” technology solution. The research findings have many managerial implications for different industries as well as countries in different regions.

Ahn, Ryu, and Han, (2004) and Lai (2018: 2016: 2014) acknowledged the importance of the novel Covid-19 “TheSafeCheck” technology solution with the need to present good design and perceived risk (Yu, 2020; Lai and Zainal, 2015: Cheah, 2011: Mohammad, 2008). Therefore, perceived risk components become an important factor that cannot be ignored. Another challenge is to keep the users satisfied and loyal through innovation (e.g., to have one (1) single platform of the results that can be viewed by relevant parties globally recognized by IATA) that provides convenience in terms of ease to use and usefulness. Thus, this study provides valuable insight into users’ perspectives about the novel Covid-19 “TheSafeCheck” technology solution as well as the potential of having an innovative solution in one single platform for the convenient access of information by relevant parties during and after the Covid.

Respondents in this study like to use the novel Covid-19 “TheSafeCheck” technology solution because they don’t need to travel to the place where they took their swap or blood test for the result report that can be deployed to them on their mobile phone and show it to the immigration. Thus, the novel Covid-19 “TheSafeCheck” technology solution is believed to enhance their results reporting that can be shared globally with the approval of IATA for travelers. The novel Covid-19 “TheSafeCheck” technology solution is useful and easy to use that provides operational efficiency and reliability that can be seen through productivity. The novel Covid-19 “TheSafeCheck” technology solution have the convenience benefits that attract users and allow users to have control of their choices, usage anytime and anywhere on the move, to be used to solve the emergency need of Covid-19 test result report that can come with the level 5 standard security features (Lai, 2016: 2014). Therefore, marketers and management of companies providing the novel Covid-19 “TheSafeCheck” technology solution should give precedence to the motives because respondents choose to use the novel Covid-19 “TheSafeCheck” technology solution. The information here can be used to support the novel Covid-19 “TheSafeCheck” technology solution deployment that is environmentally friendly

by reducing carbon footprint through reduction of paper printing reports and increased unnecessary travel increase the burning of gasoline. Furthermore, there will be more people going to use the novel Covid-19 “TheSafeCheck” technology solution that help to create a more social-environment green job (Lai and Scheele 2018).

The study results provide the information needed for the development of new products and services caring for the social environment by promoting the novel Covid-19 “TheSafeCheck” technology solution that will create new businesses for a green job in the single platform E-payment environment (Lai, 2019). Companies will be able to utilize the study information for developing products and services that meet the users’ novel Covid-19 “TheSafeCheck” technology solution while also fulfilling their objective of corporate social responsibility (CSR). Therefore, with the novel Covid-19 “TheSafeCheck” technology solution, the solutions able to be deployed straightforwardly and further practical paradigms and benefits can be found in the articles “SMART LIVING for SMART CITIES @ the palm of your hand” and SMART HEALTHCARE @ the palm of our hand” (Lai, 2016; Lai, 2015).

Even after the Covid-19 situation, this solution will be useful for the travel industry just like the “yellow fever” jab that requires carrying the “Yellow jab card” when traveling to a certain location in South America or Africa. Therefore, the “TheSafeCheck” technology solution is not only capable to be used for Covid-19 but also other requirements. This is not just a solution for Covid-19 but also for other diseases that require the vaccine to travel to certain countries with a potential outbreak. Previously, this type of disease volume is not that high and the technology is not justifiable for the industry. Nevertheless, the high transmission rate of Covid-19 has caused havoc to the travel industry has to demand this type of “TheSafeCheck” technology solution.

Limitation, further research, and conclusion

The limitation of using an online survey questionnaire is reaching target respondents who have Internet or mobile data access only. The data also represents the ASEAN context and might not be relevant in another region. This is interesting research that should be conducted in other regions to sync the travel access of the technology. According to (Lee and Shin, 2019; Shi, Wang, Xing, Xu, 2020) users with less confidence and exposure will resist adopting and working with the new technology. The data was collected at one point in time and may change over time due to greater experience and advancement of the novel Covid-19 “TheSafeCheck” technology solution. Thus, future research should be expanded to non-internet users using a traditional survey method where information can assist the company to target non-Internet users. Furthermore, this data only focuses on those who will be traveling. Future research should also look at the possibility of confirmed clusters of outbreaks and others. This study can be replicated in another region as well and use a longitudinal study to examine the novel Covid-19 “TheSafeCheck” technology solution and users’ intention to use it at various points of time. As this study was conducted before the final solution was released, the solution is currently being used tested with the airlines in just a few countries mainly developed countries with one only in ASEAN. Therefore, further research is required.

In conclusion, the research results from this study suggest that the design of the novel Covid-19 “TheSafeCheck” technology solution can lead to an increase in the usage of users’ intention to use this technology. Thus, the design is vital and needs to be taken into consideration when designing a novel Covid-19 “TheSafeCheck” technology solution to increase the users’ intention to use. It is noted that the designed stimulus of the novel Covid-19 “TheSafeCheck” technology solution should

include convenience while providing security to reduce the risk that supports the motivation of ease of use and usefulness of the novel Covid-19 “TheSafeCheck” technology solution that can lead to users’ intention to use this technology. The management implication that offers the practical implication should be taken into account when deploying the novel Covid-19 “TheSafeCheck” technology solution while supporting climate change in creating a green job environment. Let this paper shed light to encourage companies to design and implement technology that is environmentally friendly as well. According to Hamdan, Kassim, and Lai (2021) entrepreneurship and mobile services (Calvo-Porrall, and Otero-Prada, 2020) are complementors in increasing innovation success (Winter, Battisti, Burström, and Luukkainen, 2018). Thus, further research in these areas will be good.

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REFERENCES

- Ahmet A, Yanartaş, M (2020), An analysis on the unified theory of acceptance and use of technology theory (UTAUT): Acceptance of electronic document management system (EDMS), *Computers in Human Behavior Reports*, Volume 2
- Ahn, T., Ryu, S., and Han, I. (2004) “The impact of the online and offline features on the user acceptance of internet shopping malls”. *Electronic Commerce Research and Applications*, 3 (4), 405-420.
- Al-alak, B. A. and Alnawas, I. (2010) “Evaluating the effect of marketing activities on relationship quality in the banking sector.” *International Journal of Marketing Studies*, 21, 78–91.
- Anthony NTR, Rosliza A. M, Lai P C (2019). The Literature Review of the Governance Frameworks in Health System. *Journal of Public Administration and Governance* 9 (3), 252-260.
- Bagozzi, R.P. (2007) The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift. *Journal of the Association for Information Systems*, 8, 244-254.
- Baron, R. M. and Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations, *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Byrne, B. M. (1998) *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*. New Jersey: Lawrence Erlbaum Associates.
- Calvo-Porrall, C. and Otero-Prada, L. (2020), “A profile of mobile service users in a mature market: from uninvolved pragmatics to potential switchers”, *Spanish Journal of Marketing – ESIC*,
- Camilleri, M. A, Falzon, L, (2020), Understanding motivations to use online streaming services: integrating the technology acceptance model (TAM) and the uses and gratifications theory (UGT), *Spanish Journal of Marketing – ESIC, Emerald*, 24, 1-21.
- Cheah, K. L. (2011) “Payment Systems in Malaysia, Payment Systems Policy Department”, Bank Negara Malaysia.
- Chinazzi, M., Davis, J. T., Ajelli, M., Gioannini, C., Litvinova, M., Merler, S., Vespignani, A. (2020). The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak. *Science*, 368(6489), 395–400. <https://doi.org/10.1126/science.aba9757>

- Chong, A. Y. L., and Chan, F. T. S. (2012) Understanding the acceptance of RFID in the HealthCare industry: Extending the TAM model. *Decision-making for supply chain integration: supply chain integration*, p. 105-122. London; New York: Springer.
- Cohen, P.N. (1998) "Black concentration effects on black-white and gender inequality: Multilevel analysis for US metropolitan areas". *Social Forces*, 77(1), 207–229.
- Cooper, D. R., and Schindler, P. S., (2008) *Business research methods* (10th ed.). New York: McGraw-Hill. .
- Davis, F.D. (1986) A technology acceptance model for empirically testing new end-user information systems: Theory and results. Massachusetts, United States: Sloan School of Management, Massachusetts Institute of Technology.
- Davis, F. D. (1989) "Perceived usefulness, perceived ease of use, and user acceptance of information technology." *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., and V. Venkatesh. (1996) "A critical assessment of potential measurement biases in the technology acceptance model: Three experiments Internet." *J. Human-Comput. Stud.* 45 19–45.
- Devaraj, S., Fan, M., & Kohli, R. (2002). Antecedents of B2C channel satisfaction and preference: Validating e-commerce metrics. *Information Systems Research*, 13(3), 316–333. doi:10.1287/isre.13.3.316.77
- Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Information Systems Frontiers*, 21(3), 719–734.
- Elkhani, N, Soltani, S. & Nazir Ahmad, M. (2014), "The effects of transformational leadership and ERP system self-efficacy on ERP system usage", *Journal of Enterprise Information Management*, Vol. 27 Iss 6 pp. 759-785.
- Fabeil, N. F., Pazim, K. H., & Langgat, J. (2020). The Impact of Covid-19 Pandemic Crisis on Micro-Enterprises: Entrepreneurs' Perspective on Business Continuity and Recovery Strategy. *Journal of Economics and Business*, 3(2).
- Hair, J., Black, W., Babin, B. Y. A., Anderson, R., & Tatham, R. (2010). *Multivariate Data Analysis* (7th ed.). New Jersey: Pearson Prentice Hall.
- Hamdan N. H, Kassim S. H, Lai, P C, (2021), The COVID-19 Pandemic crisis on micro-entrepreneurs in Malaysia: Impact and mitigation approaches. *Journal of Global Business and Social Entrepreneurship (GBSE)* 7 (20), 52-64.
- Harrison, R., Scheela, W, P C, Lai, Vivekarajah, S. (2018) Beyond institutional voids and the middle income trap? The emerging business angel market in Malaysia, *Asia Pacific Journal of Management*. 1-27.
- Hayes, A. F. & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, 67, 451-470.
- Henderson, R. and Divett., M., J. "Perceived usefulness, ease of use and electronic supermarket use." *International Journal of Human-Computer Studies*, 59, 383-395. (2003).
- Holden, R. J., & Karsh, B. T. (2010). The Technology Acceptance Model: Its past and its future in health care. In *Journal of Biomedical Informatics* (Vol. 43, Issue 1, pp. 159–172).
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
- International Air Transport Association. (2020) IATA Economics' Chart of the Week: return to air travel expected to be slow. In: *IATA Economics Report 2020*. Available online at: <https://www.iata.org/en/iata-repository/publications/economic-reports/return-to-air-travel-expected-to-be-slow> (Access 15th May 2020).

- James, L. R. and Brett, J. M. (1984), Mediators, Moderators, and Tests for Mediation, *Journal of Applied Psychology*, 69(2), 307-321.
- Kerres, M (2020), Against all odds: education in Germany coping with Covid-19, *Postdigital Sci. Edu.* pp. 1-5.
- Lai, P. C. (2015) SMART LIVING for SMART CITIES @ the palm of your hand, ResearchAsia.
- Lai, P. C. (2016) SMART HEALTHCARE @ the palm of our hand, ResearchAsia.
- Lai, P. C. (2018), Single platform E-payment Consumers’ intention to use. *Journal of Information Technology Management*. 29 (2), 22-28.
- Lai, P. C., (2018), Research, Innovation and Development Strategic Planning for Intellectual Property Management, *Economic Alternatives*. 12 (3), 303-310.
- Lai, P. C., (2019) Factors That Influence the tourists’ or Potential Tourists’ Intention to Visit and the Contribution to the Corporate Social Responsibility Strategy for Eco-Tourism. *International Journal of Tourism and Hospitality Management in the Digital Age*. 3 (2) 1-21.
- Lai, P. C. (2020). Intention to use a drug reminder app: a case study of diabetics and high blood pressure patients *SAGE Research Methods Cases*. <https://dx.doi.org/10.4135/9781529744767>
- Lai P. C. & Zainal A. A., (2015). Consumers’ Intention to Use a Single Platform E-Payment System: A Study Among Malaysian Internet and Mobile Banking Users. *Journal of Internet Banking and Commerce*. (20) (1) 1-13.
- Lai P. C. & Zainal A.A, (2015). Perceived Risk as an Extension to TAM Model: Consumers’ Intention To Use A Single Platform E-Payment. *Australia Journal Basic and Applied Science*, 9(2): 323-330.
- Lai P C, Scheela, W, (2018) Convergence of technology in the E-commerce World and Venture Capital Landscape: South East Asia, *Global Entrepreneurship and New Venture Creation in the Sharing Economy*. IGI-Global, 149-168.
- Lai, P. C., Lim, C S, (2019), The Effects of Efficiency, Design and Enjoyment on Single Platform E-payment *Research in Business and Management* 6 (2), 19-34.
- Lai, P. C., Toh, E. B. H. & Alkhrabsheh, A. A. (2020), Empirical Study of Single Platform E-Payment in South East Asia, *Strategies and Tools for Managing Connected Consumers*, 252-278.
- Lai, P. C., & Liew, E. J. (2021). Towards a Cashless Society: The Effects of Perceived Convenience and Security on Gamified Mobile Payment Platform Adoption. *Australasian Journal of Information Systems*, 25. <https://doi.org/10.3127/ajis.v25i0.2809>
- Lai, P C, Tong, D L, (2022) An Artificial Intelligence-Based Approach to Model User Behavior on the Adoption of E-Payment. *Handbook of Research on Social Impacts of E-Payment and Blockchain*. 1-15, IGI Global.
- Lee, Y., Kozar, K. A., and Larsen, K. R. T. (2003) “The technology acceptance model; past, present and future.” *Communication of AIS*, 12 (50), 752-780.
- Lee, W., & Shin, S. (2019). An Empirical Study of Consumer Adoption of Internet of Things Services. *International Journal of Engineering and Technology Innovation*.
- Lin, J. and Hsieh, P., (2006). The role of technology readiness in customers’ perception and adoption of selfservice technologies, *International Journal of Service Industry Management*, 17, 497-517.
- Liu, Y., Gayle, A. A., Wilder-Smith, A., & Rocklöv, J. (2020). The reproductive number of COVID-19 is higher compared to SARS coronavirus. *Journal of Travel Medicine*, 27(2), 1–6. <https://doi.org/10.1093/jtm/taaa021>

- Malatjia, W. J, Eck, R. V, Zuva, T, (2020), Understanding the usage, Modifications, Limitations and Criticisms of Technology Acceptance Model (TAM). *Adv. Sci. Technol. Eng. Syst. J.* 5(6), 113-117.
- Muniruddeen, L. (2007) “An Examination of Individual’s Perceived Security and Privacy of the Internet in Malaysia and the Influence of This on Their Intention to Use E-Commerce: Using An Extension of the Technology Acceptance Model,” *Journal of Internet Banking and Commerce*, 12(3), 1–26.
- Mathieson, K. (1991) “Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior.” *Information Systems Research*, 2(3), 173-191.
- Moon, J., & Kim, Y. (2001). Extending the TAM for a world wide web context. *Journal of Information & Management Science*, 27(1), 15–22.
- Oppenheim, A. N. (1992). *Questionnaire, design, interviewing and attitude measurement*. London: Pinter Pub Ltd.
- Peeri, N. C., Shrestha, N., Rahman, M. S., Zaki, R., Tan, Z., Bibi, S., Haque, U. (2020). The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: what lessons have we learned? *International Journal of Epidemiology*.
- Pelaez, A., Chen, C., Chen, Y.X. and Pelaez, A. (2019), “Effects of perceived risk on intention to purchase: a meta-analysis”, *Journal of Computer Information Systems*, Vol. 59 No. 1, pp. 73-84.
- Sekaran, U. & Bougie, R. (2013), *Research Methods for Business: A Skill-Building Approach*. 7th ed. U. S. A.: John Wiley and Sons, Inc.
- Shadish, W. R., and Sweeney, R. B. (1991). Mediators and Moderators in Meta-Analysis: There’s a Reason We Don’t Let Dodo Birds Tell Us Which Psychotherapies Should Have Prizes, *Journal of Consulting and Clinical Psychology*, 59, 883–893.
- Shen, J., (2012). “Social Comparison, Social Presence, and Enjoyment in the acceptance of Social Shopping Websites”. *Journal of Electronic Commerce Research*, 13 (3), 198-212.
- Shih, H. P. (2004) “Extended technology acceptance model of Internet utilization behavior,” *Information and Management*, 41(6), 719–729.
- Slade, E. L., Dwivedi, Y. K., Piercy, N. C., & Williams, M. D. (2015). Modeling Consumers’ Adoption Intentions of Remote Mobile Payments in the United Kingdom: Extending UTAUT with Innovativeness, Risk, and Trust. *Psychology and Marketing*.
- Smith, W., & Freedman, D. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old- style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, 27(2), taaa020.
- Sohrabi, C., Alsafi, Z., O’Neill, N., Khan, M., Kerwan, A., Al-Jabir, A. Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*, 76(February), 71–76. <https://doi.org/10.1016/j.ijsu.2020.02.034>
- Sun, H., and Zhang, P. (2006) “Causal Relationships between Perceived Enjoyment and Perceived Ease of Use: An Alternative Approach 1,” *Journal of the Association for Information Systems*, 7(9), 618–645.
- Sungjun J, Kim J. S. & Zemke D M V (2020) Effects of Social Influence and Perceived Enjoyment on Kiosk Acceptance: A Moderating Role of Gender, *International Journal of Hospitality & Tourism Administration*.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. Boston: Pearson Education Inc.
- Tefertiller, A. (2020), “Cable cord-cutting and streaming adoption: advertising avoidance and technology acceptance in television innovation”, *Telematics and Informatics*, Vol. 51, doi: 10.1016/j.tele.2020.101416.

- TheCheck, (2020). How “TheSafeCheck” Solution work in a Covid-19 scenario?
- Trinh, H.N., Tran, H.H. and Vuong, D.H.Q. (2020), “Determinants of consumers’ intention to use credit card: a perspective of multifaceted perceived risk”, *Asian Journal of Economics and Banking*, Vol. 4 No. 3, pp. 105-120.
- Troise, C. and Camilleri, M.A. (2020), “The use of digital media for marketing, CSR communication and stakeholder engagement”, in Camilleri, M.A. (Ed.), *Strategic Corporate Communication in the Digital Age*, Emerald, Bingley.
- UNESCO. (2020) Covid-19 Educational Disruption and Response.
- Venkatesh, V., Speier, C., and Morris, M. (2002) “User acceptance enablers in individual decision-making about technology: Toward an integrated model,” *Decision Sciences*, 33(2), 297–316.
- 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.
- Wang et al., C.J. Wang, C.Y. Ng, R.H. Brook (2020). Response to COVID-19 in Taiwan: big data analytics, new technology, and proactive testing, *JAMA*, 323 (14) (2020), pp. 1341-1342.
- Wang, Y. S., Wang, Y. M., Lin, H. H., and Tang, T. I. (2003) “Determinants of user acceptance of internet banking: An empirical study,” *International Journal of Service Industry Management*, 14(5), 501–519
- WHO (2019). World Health Organization (2019), Global Preparedness Monitoring Board. *A world at Risk: Annual Report on Global Preparedness for Health Emergencies*. Geneva.
- WHO (2020). World Health Organisation (2020). Coronavirus disease (Covid-2019) situation reports. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>
- Winter, J, Battisti, S, Burström, T, and Luukkainen, S (2018), Exploring the Success Factors of Mobile Business Ecosystems, *International Journal of Innovation and Technology Management*. Vol. 15, No. 03, 1850026
- Wortley, D. J., Lai, P. C., (2017) The Impact of Disruptive Enabling Technologies on Creative Education, 3rd International Conference on Creative Education, Mar 3-4.
- Yamey G, Schäferhoff M, Aars OK, Bloom B, Carroll D, Chawla M, et al. (2017) Financing of international collective action for epidemic and pandemic preparedness. *Lancet Global Health*. 5:e742–4.
- Yu, Z. (2020). Extending the Learning Technology Acceptance Model of WeChat by Adding New Psychological Constructs. *Journal of Educational Computing Research*, 58(6), 1121–1143.
- Zhao, j. Wang, J. (2020) Health Advertising on Short-Video Social Media: A Study on User Attitudes Based on the Extended Technology Acceptance Model. *Int. J. Environ. Res. Public Health*, 17, 1501; doi:10.3390/ijerph17051501