



Investigating factors influencing the intention of social media adoption by a perspective of SMEs during COVID-19 pandemic

Received: 27 November 2021

Darlin Apasrawirote¹ and Kritcha Yawised^{2*}

Revised: 23 March 2022

Accepted: 26 April 2022

Abstract

Using 412 respondents based on a questionnaire collected data from Small and Medium Enterprises (SMEs) located at lower Northern of Thailand with the aimed at to figure out the catalyst of Social Media (SM) adoption by SMEs owner-managers—could hopefully predict SM adoption intention. With the great advance of SM technologies coupled with the support of digital technologies can lead to the opportunity for SM to thrive by nascent entrepreneurs. As such, it could transform the business model where family-owned businesses; particularly, the second or third owner generation leverages the empowerment of SM tools by integrating such new technologies with its own legacy system. The goal of this study was to identify and explore the elements that influence SMEs' decisions to use SM as a marketing platform in rural areas. The Unified Theory of Acceptance and Use of Technology (UTAUT-2) with the extension of three new factors, including personal innovativeness, perceived fear, and competitive pressure, was proposed along with the original constructs in the UTAUT-2 model. The empirical findings reveal that competitive pressure, performance expectations, perceived fear, pricing value, and personal innovativeness all have a significant impact on the intention to use and adopt SM, according to the research findings. Hedonic motivation, however, has not revealed a significant impact of such an intention. This research provides theoretical and practical guidance on how SME owners, managers, and policy makers may adopt and implement a strategic plan on SM adoption during the COVID-19 pandemic.

Keywords: Social media, The unified theory of acceptance and use of technology 2, SMEs, Thailand

*Corresponding author: e-mail: Kritchay@nu.ac.th

¹Lecturer, Faculty of Business, Economics, and Communications, Naresuan University. e-mail: Darlina@nu.ac.th

²Lecturer, Faculty of Business, Economics, and Communications, Naresuan University. e-mail: Kritchay@nu.ac.th



Introduction

The importance of SMEs in a developing country's economic growth is critical. Many entrepreneurs were hit by the aforementioned economic slump (Bank of Thailand, 2020), particularly during the COVID-19 hits, resulting in SMEs' needing to expedite new technology adoption to remain competitive in their market (Sharma Sharma & Chaudhary, 2020, pp. 1-2). Previous study has revealed that businesses are attempting to modify their existing business models by adopting new technologies to create innovation such as smart tourism and heritage destination (Wielgos, Homburg & Kuehnl, 202, pp. 1-2). Resilience is necessary for coping with massive disruptions. Resilience is not only flexibility, but the essence of it is the readiness for recovery and adaptation (Hynes et al., 2020, pp. 1-11). Regardless of the COVID-19 scenario, SMEs' perspectives have evolved over time as a result of elements that function as catalysts for altering business models, such as changes in consumer behavior, fast technological advancements, and government policy uncertainty as a result of the outbreak's intensity. As a result, in order to survive the economic recession, SMEs must have a flexible company strategy that can quickly react to changes based on such factors.

Phitsanulok Central Business District (CBD) is one of the regional cities whose SMEs were affected by COVID-19 economic downturn. Adopting new mechanisms for SMEs daily activities, particularly new technology like the complete adoption of SM and its strategy, was one of the primary problems and impediments (Yawised & Apasarawirote, 2021, pp. 126-127). As a result, many SMEs were forced to close stores or cut back on growth plans, but some of those have attempted to take the opportunity to enter new markets by leveraging SM tools and innovative strategic programs to break down barriers. The adoption of SM platforms has increasingly become the norm for supportive marketing practitioners and business entrepreneurs. The central government of Thailand and local governments have launched a master plan of 20-year strategy to upgrade local SMEs by focusing on supporting digital literacy, competences, and skills, with the expectation of being a distribution center for logistics in the lower northern region (OSMP, 2021, pp. 3-7). As such, it is possible that SM engagement by SMEs tends to be inevitable, driven by necessity.

According to the report of the Phitsanulok Chamber of Commerce, over the past year during the COVID-19 hits, the number of new SMEs registering for digital technology-based firms, such as e-Commerce, e-Payment, and e-Delivery, has been steadily expanding (CGD, 2021, pp. 1-22). This trend indicates that local SMEs are increasingly investing in their SM channels and sophisticated systems. In line with previous empirical studies, the intention of SM adoption by local SMEs could stem from impulsive factors where many scholars pointed out the performance expectancy, effort expectancy, price value, and arousal (García-Milon et al., 2021, pp. 3-4; Qasem, 2021, pp. 5) including perceived threat or fear (Wnuk, Oleksy, & Maison., 2020, pp. 1-16) and personal innovativeness (Kim, Kim, & Hwang, 2021, pp. 102758). However, no empirical investigation, particularly in the context of COVID-19, was investigated and tested towards the



intention of SME' leaders in the lower northern region of Thailand to adopt SM. Filling this research gap will provide insight and information for new entrepreneurs and current SME owner-managers, allowing for a better knowledge of crucial factors that may drive them to engage in SM through the proficient executing and crafting of their strategy. This study established the Unified Theory of Acceptance and Use of Technology 2 (UTAUT-2) (Venkatesh, Thong, & Xu, 2012, pp. 157), as a theoretically-based background to address the practical and theoretical gaps in understanding the factors that drive SME owners to adopt and invest in more SM systems during the COVID-19 incidents. Based on aforementioned, the research objectives include.

Research Objective

1.To propose factors, influence the intention of SM adoption in the context of local SMEs during COVID-19 pandemic.

2.To investigate the relationship of the factors towards the intention of SM adoption in the context of local SMEs during COVID-19 pandemic.

Scope of the Research

The presents study focuses on the rural SMEs located at Phitsanulok province that already employed SM for business purposes. The selection criteria of participants and the method of data collection are provided at the methodology section.

This section of this study follows: First, theoretical background and hypotheses development are defined in literature review section followed by research design is explained in the section of methodology. Second, analysis section is presented and described based on descriptive statistics and Structural Equation Modeling (SEM) analysis. Third, a discussion of the results is provided in discussion section. Finally, conclusions together with limitations and future research direction are suggested at the end.

Conceptual framework

Based on aforementioned and proposed hypotheses, all constructs of this research include Adoption, Intention to Use (IU), Performance Expectancy (PE), Personal Innovativeness (PI), Effort expectancy (EE), Hedonic Motivation (HM), Price Value (PV), Perceived Fear (PF), and Competitive Pressure (CP) as shown in **Figure 1** In this study, Adoption is hypothesized to be affected by IU; and also, PE, EE, HM, PV, PI, PF and CP, are hypothesized to have impacted towards the IU. In addition, ADT is hypothesized to be affected by PE, PI, PF and CP directly also. The original construct, including social influence, facilitating conditions, and habit of UTAUT-2, was excluded from the proposed conceptual model as in the present study, Competitive Pressure (CP) combined those variables as competitive force components that shape usage technologies and intention. **Figure 1** shows a proposed conceptual model.

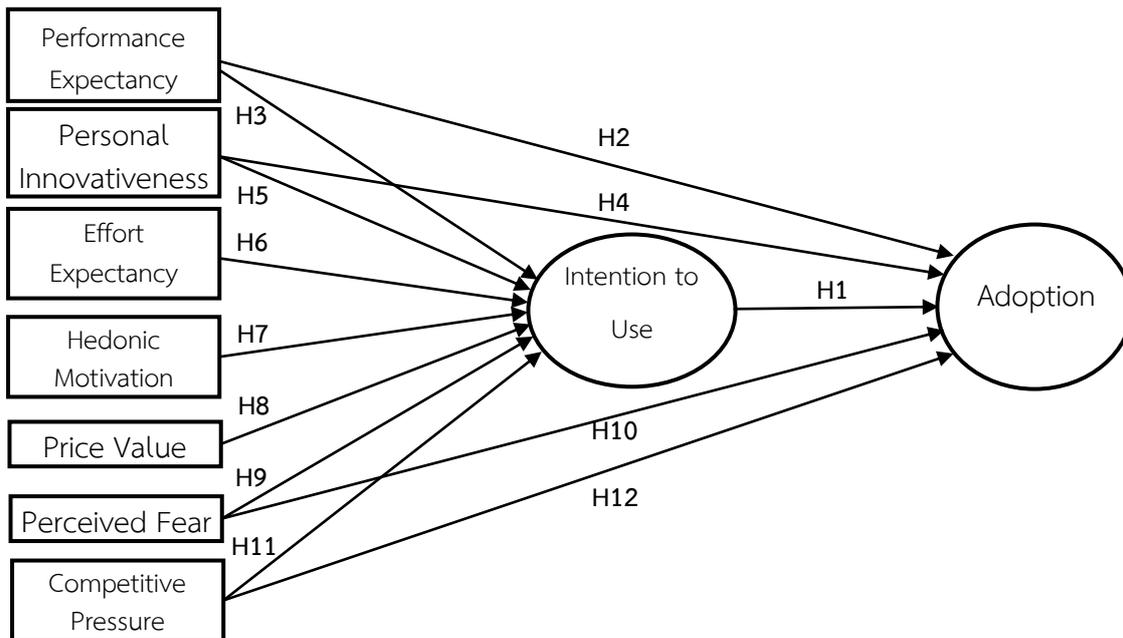


Figure 1: A proposed conceptual model

Literature review

The implications of Social media (SM) in SMEs

Social media has been defined “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content” (Kaplan & Haenlein, 2010, pp. 61). It enables online and service platforms to help SMEs with alternative business models (called as social commerce), enabling SMEs to reach into a big pool of potential and current customers at relatively low cost (Chatterjee & Kumar Kar, 2020, pp.1-8; Öztamur & Karakadılar, 2014, pp. 511-520). Previous studies indicated that many businesses employ SM marketing on an ad hoc basis without a formal strategic plan (Yawised et al., 2017, pp. 222). The use of SM is considered marketing tools to boost their brand awareness and sales. With the COVID-19 pandemic, particularly brick-and-mortar retail shops began setting up digital shops or use existing online marketplace to keep up their sales (Ogunjimi et al., 2021, pp. 121118). Some are archiving services online with a variety of SM channels usage, but some are not. The spread of SM growth and digital technology in the forms of mobile applications, have enabled the brick and mortar SMEs to leverage the flexibility and convenience offered by SM channels, websites or even mobile applications to reinforce their business operation leading to the emergence of click and mortar business models and maximizing public health safety, through both digital and physical touchless commercial adaptations (Ogunjimi et al., 2021, pp. 121118; Sigley, 2020, pp.1-4). Consequently, some established SMEs and new entrepreneurs tend to transform their business model from store retail to fully online retail in the near future. Also, SMEs with resilience planning tend not to cut frontline costs—but they will invest in additional training



by leveraging SM tools to acquire more opportunities and enrich their business. Thus, the intention of SM adoption is deemed to be influenced by a number of business characteristics, organizational, environmental, technological, and individual factors (Bellalouna, 2021, pp. 400; Mulier et al., 2021, pp. 1-15) whereas, SM adoption is not easy in terms of strategic alignment and compatibility of resources where it involves the breadth and depth of such technology usage. The impulsive factors influencing intention behavior have been ongoingly evolved and hypotheses have been introduced. Thus, the proposed factors below are expected to affect SM adoption by SME businesses also.

Theoretical background

Venkatesh et al., (2012, pp. 157) proposed the Unified Theory of Acceptance and Use of Technology 2 (UTAUT-2) model, which was developed from the Technology Acceptance Model (TAM) and the original UTAUT, as a powerful predictor and explains people's technology acceptance behaviors framework for novel information technology products (Venkatesh et al., 2012, pp.158). Furthermore, because the functions of modern SM and digital technologies, as well as smart mobile applications, are sometimes difficult for normal business owners to comprehend, standard market research methods based on general user surveys are particularly difficult for such novel technologies. Consequently, this research introduced the conceptual model underpinning UTAUT-2 as an analytic model by testing the impact of two new variables.

Hypotheses development

Intention to Use (IU) toward actual adoption

Fishbein & Ajzen (1975, pp. 12) proposed a Theory of Reasoned Action (TRA) as a crucial predictor of the performance of a behavior that is the desire to carry it out. Intention refers the motivating factors that influence whether or not an individual will do a specific behavior in given such situation. Although earlier research has indicated that the usage of SM by SMEs is still in its early stages, SMEs are more likely to engage in SM marketing for survival due to COVID-19, resulting in an economic slump across the country (Charmaraman et al., 2022, pp. 1-3). In SMEs, the business owners is recognized as the main decision-maker. As a result, the company decision-making process is often similar to that of an individual. The way companies accept new technology can result in the similar to how an individual does. Therefore, due to a number of previous studies simply examined behavioral intention (Cabrera-Sánchez et al., 2021, pp. 4; Herrero et al., 2017 pp. 209-210), this present study has actual adoption as the dependent variable. Thus, the following is hypothesized:



Hypothesis 1 (H1). *Intention to use directly and positively affects the adoption of SM.*

Performance Expectancy (PE)

One of the most powerful constructs connected with behavioral intention is Performance Expectation (PE). It describes the degree to which employing a technology will help customers when completing specific tasks. Within TAM, performance expectation is quite similar to perceived usefulness. In the context of SM and digital technology, the earlier research, indicated that PE have directly affects the adoption and intention of SM usages in hospitality (Fong, Lam, & Law, 2017, pp. 331; Lee, lee & Kim, 2021, pp.1) and service sectors (Jadil, Rana, & Dwivedi, 2021, pp. 354; Zanetta et al., 2021, pp. 110671; Zhou et al., 2021, pp. 110767). Thus, the following is hypothesized:

Hypothesis 2 (H2). *Performance expectancy directly and positively affects the adoption of SM.*

Hypothesis 3 (H3). *Performance expectancy directly and positively affects the intention to use SM.*

Personal Innovativeness (PI)

According to previous research conducted by Bandura (1997, pp. 450), who initiatively gave a notion of a trait of resilient corporate leaders, comprises of self-efficacy in terms of cognitive adaptation and flexibility in decision making, showing that this is a quality of resilient business leaders. Additionally, Agarwal & Prasad, (1998, pp. 206) later gave a clear concept by using the term “*personal innovativeness*”, which refers to the degree to which an individual's innovativeness or novelty-seeking inclinations are expressed by their willingness to attempt something new. It is the physical manifestation of an individual's risk-taking proclivity that is found in some people. It is the physical manifestation of an individual's risk-taking proclivity, which is found in some people. In high-risk circumstances, these individuals will seek knowledge, inspiration, and solutions by gathering new information and skills in new areas of innovation (Saad et al., 2021, pp. 1-33). Research conducted by Kim, Connerton & Park (2022, pp. 411-412) indicates that personal innovativeness, selected for the extension of UTAUT, was the predominant indicator of the customer's desire to use omnichannel purchase online to induce business model change and adaptation. Due to the enormous increase in online shopping and food-delivery expenditure during the COVID-19 pandemic, it could assume that SMEs with personal innovativeness will play a crucial role in the intentions to adopt some new technologies for business survival. Based on this theoretical review, the following hypothesis can be formulated:

Hypothesis 4 (H4). *Personal innovativeness directly and positively affects the adoption of SM.*

Hypothesis 5 (H5). *Personal innovativeness directly and positively affects the intention to use SM.*



Effort Expectancy (EE)

In the context of SM and mobile technology adoption research, several studies have shown the relationship between effort expectancy and behavioral intention in terms of the impact of effort expectancy influences directly to the intentions to use, such as the research of mobile banking payment (Alalwan, et al., 2018, pp. 125; Jadil et al., 2021, pp. 354), booking hotel and restaurant (Fong et al., 2017, pp. 331-342; Ramon, 2019, pp.1-24), e-Commerce (Zhou et al., 2021, pp. 110767), and digital technologies based on Artificial Intelligence (AI) (Gursoy et al., 2019, pp. 157), Virtual Reality (VR) (Sánchez, Palos-Sánchez & Velicia-Martin, 2021; Tussyadiah et al., 2018, pp.140-141), Augmented Reality (AR) in SMEs (Rauschnabel et al., 2019, pp.43-53). Thus, the following hypothesis is proposed:

Hypothesis 6 (H6). *Effort expectancy directly and positively affects the intention to use SM.*

Hedonic Motivation (HM)

Prior studied shows the strongest link between hedonic motivation towards the intention of adoption digital technologies (Magni et al., 2021, pp. 1), in terms of product virtualization through VR technologies (Bellalouna, 2021, pp. 400; Cranmer, tom Dieck, & Fountoulaki, 2020, p. 6; Kim & Hall, 2019, pp. 236), and AR technologies in tourism and mobile augmented reality for entertainment purposes (Hung et al., 2021). A recent study conducted by Delacroix et al. (2019) indicates that the efforts of digital subsistence businesses are more about survival than transformation. Obviously, businesses in tourism industrial sector during COVID-19, are made up of staff (re)upskills by engaging engaged in multiple types of activities, which is driven by a variety of entrepreneurial behaviors and technological innovations model. Therefore, the following is hypothesized:

Hypothesis 7 (H7). *Hedonic motivation directly and positively affects the intention to use SM.*

Price Value (PV)

Venkatesh et al. (2012, pp. 161) introduced the UTAUT-2 by introducing the contextual factors, such as price-value, which is an individual's cognitive tradeoff between the perceived benefits of the applications and the monetary cost of using them. In this sense, price value in this study focused on cost reduction due to process innovations per employee, including the benefits of SM investment, which outweigh the cost. Prior studied show causal relationship between price value and adoption of technology such as SM tools and mobile applications from consumers' perspectives (Zanetta et al., 2021, pp. 110671). This implies that a low requirement of IT resources in terms of investment, implementation costs and skills (i.e., the facilities of Wi-Fi, smart phones, 4G and 5G, and any kind of freely SM open platforms), could motivate business owner intention of such initiatives' adoption also. This study, therefore, proposes the following hypothesis:



Hypothesis 8 (H8). *Price value directly and positively affects the intention to use SM.*
Perceived Fear (PF)

In a UTAUT-2 model, the perceived fear factor has been little investigated by academics, where this factor is mostly in the component of perceived anxiety, risks, concerns, and uncertainty (Al-Marroof et al., 2020, pp. 1-16). This study argues that such unpleasant emotion caused by the threat influence the rapid adoption of new technology to reduce those fear and in preventing the consequences from spread of Covid-19. An earlier study has shown the adoption of technology can minimize those fear. This includes in the area of healthcare (Bhatia, 2021, pp.1), education (Faqih & Jaradat, 2021, pp.1-16), surveillance systems (Wnuk, et al., 2020, pp.1-16), transportation (Delbosc & McCarthy, 2021, pp.43-51), tourism (Mandić & Kennell, 2021, pp.110862) and so forth. Prior to the pandemic, businesses may have delayed off completely adopting SM and technology, according to SME owners' perceptions. Furthermore, encouraging companies to embrace work-from-home practices during the pandemic might result in local travel restrictions, forcing firms to close due to a lack of customers. Perceived fear is an adaptive reaction that informs individuals to the presence of a potential danger in this environment, resulting in SMEs adopting technology to increase market potential (i.e., prospects) and retaining existing customers. Thus, the following hypothesis is postulated.

Hypothesis 9 (H9). *Perceived fear directly and positively affects the intention to use SM.*

Hypothesis 10 (H10). *Perceived fear directly and positively affects the adoption of SM.*

Competitive Pressure (CP)

In this present study, competitive pressure is defined as the degree to which SMEs business is affected by external environments forced to change in performance which motivates them to use SM. In other words, the pressure from rivals, change of consumers' behavior, changes of technology, and other stakeholders of their business and professional associations that have already embraced SM technology are among the external environment factors that SMEs plan to adopt. SMEs are also forced to change their strategy according to the backdrop of SM operations. Adoption of new technologies by SMEs is initially relatively unplanned and not aligned with business strategies or goals. This can result in a lack of business cases and the absence of beneficial evidences that outweigh the costs in a short period of time.

Nugroho et al. (2017, pp. 329) found that pressure from customers has become one of the prominent factors for new technology adoption by SMEs. Abed (2020, pp. 4-5) also insists that apart from the pressure of customers, trading partner pressure in the environmental context have the most significant influence on behavioral intention to use social commerce, and Kwon et al., (2021, pp. 102616) also asserted by extending the pressure from turbulence situations that occurred during the COVID-19 hits for businesses. To reduce such pressures, the acceptance of new technology can create plenty of new opportunities for businesses; for



example, Gursoy et al. (2019, pp. 166) indicating that AI adoption enables SMEs to increase effective service delivery. Such external pressures impacted on smaller businesses towards SM use intention (Kwon et al., (2021, pp. 102616). Thus, the following last two hypotheses are proposed:

Hypothesis 11 (H11). *Competitive pressure directly and positively affects the intention to use SM.*

Methodology

This study employed Structural Equation Modelling (SEM) analysis to validate conceptual model and test proposed hypotheses as the number of independent variables is greater than that of dependent variables. Survey-based empirical validation is preferred for achieving this research questions. The study included 412 SMEs based on postal mail which is business owner-managers operated in Phitsanulok (i.e., the lower northern provincial economic districts of Thailand). The results from samples were therefore representative of the population approximately of 1,284 businesses in CBD of Phitsanulok during 2020-2021.

The research instrument used in the data collection is a closed-end questionnaire to measure the variables by employing the purposive sampling technique to collect the data for participants, where all participants were selected to represent a sample of SMEs that were engaged and had experienced SM presence in their business. Qualified persons were invited to participate in this survey where participants age over 18 years, and must be SMEs' owner or manager, and have at least one SM channel presence in their business. The formal data collection was performed between May 2020, to October, 2020.

To ensure validity of quantitative research, the survey instruments was developed from a comprehensive review of current literatures and the main nine constructs adopted with prior research (Alalwan, 2018, pp.74-75; Kim & Hall, 2019, pp.243 ; Patil et al., 2020, pp.13-14; Shaw & Sergueeva, 2019, pp. 44-46) to measure an intention to use and actual adoption. All the items were evaluated by a 5-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). Additionally, since the data was collected from a single source by gathering a common instrument and self-report method, common method bias (CMB) must be clarified and checked by using Harman's single factor test approach. Finally, the cumulative variance extracted value of 32.012 %, in Harman's single factor test was well below the threshold of 50 % indicating the absence of common method bias in this study (Podsakoff et al., 2003, pp. 889; Podsakoff & Organ, 1986, pp. 532) resulting in a final sample size of 412 for empirical analysis. **Table 1** shows a profile of the sample.



Table 1: Descriptive statistic profile of participants

Respondent position	N	%	Industrial sector	N	%
Business owner	297	72.08	Food and beverage	118	28.64
Manager	115	27.92	Retails and wholesale	113	27.42
Overall	412	100	Tourism and hospitality	58	14.07
Type of business	N	%	Argriculture	42	10.19
B2C	361	87.62	Education	35	8.49
B2B	44	10.67	Finacial services	26	6.35
Others (e.g. B2G)	7	1.71	Manufacturing	10	2.42
Overall	412	100	IT and media	10	2.42
Age of business operation	N	%	Overall	412	100
Less than 1 year	45	10.92	Experience of SM usage	N	%
1 to less than 3 years	71	17.23	Less than 1 year	20	4.85
3 to less than 5 years	109	26.45	1 to less than 3 years	103	25.01
5 to less than 10 years	95	23.05	3 to less than 5 years	248	60.19
More than 10 years	92	22.35	More than 5 year	41	9.95
Overall	412	100	Overall	412	100

Results

Convergent validity and internal consistency and reliability

According to Fornell & Larcker (1981, pp.49), to ascertain validity and constituency of each construct, three criteria to examine the constructs' convergent validity are commonly to be estimated including Loading Factor (LF), Average Variance Extracted (AVE) and Composite Reliability (CR) (Cronbach & Shavelson, 2004, pp. 391; Hair et al., 2006, pp. 640-645; Hair et al., 2012, pp. 423; Urbach & Ahlemann, 2010, pp. 19-20). Additionally, the reliability of the items was obtained through the relationships between the dimensions and their items; thus, to test the reliability of the physical literacy Cronbach's alpha coefficient (α) was also employed.



Table 2: Assessment of Reliability and validity of constructs

Constructs	Items	Loading Factor	Cronbach's alpha	CR	AVE
Performance Expectancy (PE)	PE1	0.765***	0.853	0.766	0.589
	PE2	0.623***	0.875		
	PE3	0.754***	0.769		
Personal Innovativeness (PI)	PI1	0.546**	0.759	0.731	0.612
	PI2	0.895***	0.915		
	PI3	0.754***	0.841		
Effort Expectancy (EE)	EE1	0.765	0.863	0.832	0.632
	EE2	0.653	0.798		
	EE3	0.766***	0.736		
Hedonic Motivation (HM)	HM1	0.712	0.724	0.886	0.584
	HM2	0.654	0.814		
	HM3	0.682*	0.835		
Price Value (PV)	PV1	0.684**	0.765	0.763	0.566
	PV2	0.755	0.812		
	PV3	0.787*	0.825		
Perceived Fear (PF)	PF1	0.652	0.795	0.865	0.521
	PF2	0.745*	0.901		
	PF3	0.618	0.764		
Competitive Pressure (CP)	CP1	0.789**	0.839	0.895	0.745
	CP2	0.659	0.799		
	CP3	0.845*	0.765		
Intention to Use (IU)	IU1	0.845***	0.842	0.955	0.815
	IU2	0.867**	0.911		
	IU3	0.765	0.848		
Adoption	Adoption1	0.863	0.860	0.910	0.625
	Adoption2	0.902***	0.759		
	Adoption3	0.745**	0.797		

A p value $< .05$ was taken to be significant as followed: * $p < .05$, ** $p < .01$, *** $p < .001$

According to **Table 2**, the parameters have been estimated. Since the results show that the lowest values of CR and AVE of each construct are greater than their lowest acceptable values which are (i) **0.5** for LF as suggested by Hair (2012, pp. 423), (ii) **0.5** for AVE as suggested by Gefen & Straub (2005, pp.94), (iii) **0.6** for CR as suggested by Urbach & Ahlemann (2010, pp. 19-20), and **0.7** for Cronbach's alpha coefficient (α) (Nunnally, 1978, pp.

174). According to Fornell & Larcker (1981, pp. 46), when the value of AVE is less than 0.5 but CR is higher than 0.6, the convergent validity of the construct is still adequate. Also, Cronbach's outcome for the instruments is ranged between 0.724-0.915. All of this demonstrates that all proposed items were accepted and confirmed that the identification of constructs is valid. Also, to test the validity of the scale items, discriminant validity measures were also conducted as suggested by Bagozzi, Yi & Phillips (1991, pp. 421-458). **Table 3** demonstrates the correlation matrix among all constructs of the measurement model incorporating with the restrictive method of the Heterotrait-Monotrait ratio (Henseler, Ringle & Sarstedt, 2015, pp.120-121) to ensure that all values were less than 0.9 and that the square root of AVE surpassed the corresponding inter-construct correlation estimations.

Table 3: Correlation coefficients matrix (Discriminant validity measures)

Constructs	1	2	3	4	5	6	7	8	9
(1) PE	0.757								
(2) PI	0.542	0.792							
(3) EE	0.653	0.620	0.839						
(4) HM	-0.067	-0.066	-0.417	0.754					
(5) PV	0.422	0.316	0.520	0.535	0.763				
(6) PF	0.448	0.493	0.572	0.265	6.721	0.849			
(7) CP	-0.058	-0.155	0.656	-0.032	6.029	0.231	0.546		
(8) IU	0.620	0.571	0.610	0.626	4.095	0.246	0.514	0.615	
(9) Adoption	0.514	0.558	0.594	0.670	0.546	0.513	0.539	0.602	0.724
Mean	3.658	3.891	3.798	3.402	2.678	2.506	3.145	3.983	3.277
S.D.	0.625	0.689	0.724	0.659	0.858	0.875	0.678	0.874	0.754

Note: Diagonal elements show the average variance extracted (AVE). Below the diagonal is the correlation coefficient.

Evaluation of the measurement model

The model's goodness-of-fit for the variables is also evaluated. The measurement of nine constructs shows the model is fit, which is relatively satisfactory after using the cut off criteria for the fit index suggested by prior academics (Hair et al., 2006, pp.640-645; Hu & Bentler, 1999, pp.15-27) (i.e., Chi-square (χ^2) = 842.546, df = 363, *p*-value = 0.000, CMIN/df = 2.154, GFI=0.912, RMSEA= 0.067, NFI = 0.945, TLI=0.935, CFI=0.941)

Hypotheses testing

Following the evaluation of the measurement model, the test of Hypotheses 1 to 12 was conducted, the overall causal links of the proposed model were examined. SEM was utilized in conjunction with the AMOS 22.0 statistical tool for hypothesis testing. To test the hypotheses using the path coefficients provided by SEM, the results of the hypotheses testing regarding the relationship between each of the factors are shown in **Table 4** and **Figure 2**.



IU ($\beta = 0.824$, $t = 16.289$, $p = 0.000$) was found to have a significantly positive effect on SM adoption, thus supporting H1. Performance expectancy was found to have a significantly positive effect on SM adoption ($\beta = 0.759$, $t = 14.526$, $p = 0.000$) and IU ($\beta = 0.452$, $t = 8.018$, $p = 0.003$), thus supporting H2 and H3. The PI ($\beta = 0.048$, $t = 0.925$, $p = 0.586$) was not found to have a significant effect on SM adoption, but was found to have a significant effect on IU ($\beta = 0.213$, $t = 4.325$, $p = 0.017$), thus rejecting H4 but supporting H5. The EE ($\beta = 0.125$, $t = 2.659$, $p = 0.014$) was found to have a significant effect on IU, thus supporting H6. The HM ($\beta = -0.087$, $t = -0.476$, $p = 0.452$) was not found to have a significant effect on IU, thus rejecting H7. The PV ($\beta = 0.295$, $t = 3.512$, $p = 0.021$) was found to have a significant effect on IU, thus supporting H8. The PF ($\beta = 0.056$, $t = 0.768$, $p = 0.564$) was not found to have a significant

Table 4: Results of hypotheses analysis

Hypotheses/statistics	Beta (β)	t-Value	p-Value	Decision
H1: Intention to use \rightarrow Adoption	0.824	16.289***	0.000	Supported
H2: Performance expectancy \rightarrow Adoption	0.759	14.526***	0.000	Supported
H3: Performance expectancy \rightarrow Intention to use	0.452	8.018**	0.003	Supported
H4: Personal innovativeness \rightarrow Adoption	0.048	0.925	0.586	Rejected
H5: Personal innovativeness \rightarrow Intention to use	0.213	4.325*	0.017	Supported
H6: Effort expectancy \rightarrow Intention to use	0.125	2.659*	0.014	Supported
H7: Hedonic motivation \rightarrow Intention to use	-0.087	-0.476	0.452	Rejected
H8: Price value \rightarrow Intention to use	0.295	3.512*	0.021	Supported
H9: Perceived fear \rightarrow Intention to use	0.056	0.768	0.564	Rejected
H10: Perceived fear \rightarrow Adoption	0.301	2.326*	0.030	Supported
H11: Competitive pressure \rightarrow Intention to use	0.869	11.256***	0.000	Supported
H12: Competitive pressure \rightarrow Adoption	0.465	9.067**	0.000	Supported

*Note: Critical t-values. * $p < 0.5$, ** $p < 0.01$, *** $p < 0.001$*

effect on IU, but was found to have a significant effect on SM adoption ($\beta = 0.301$, $t = 2.326$, $p = 0.030$), thus rejecting H9 but supporting H10. Finally, the CP was found to have a significant effect on both IU ($\beta = 0.869$, $t = 11.256$, $p = 0.000$) and SM adoption ($\beta = 0.465$, $t = 9.067$, $p = 0.000$), thus supporting both of H11 and H12.

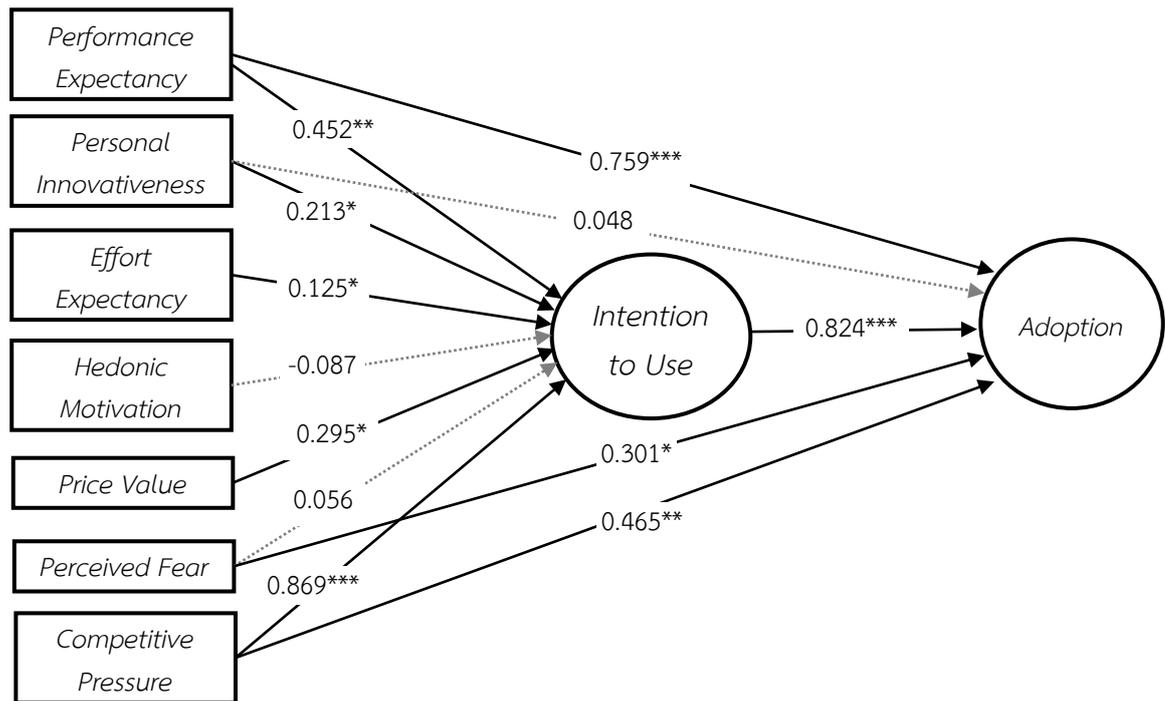


Figure 2: Structural equation model with parameter estimates

Conclusions

The purpose of this study was to investigate the factors that influenced SMEs located at the lower northern region of Thailand decisions to adopt SM platforms during COVID-19 incident, utilizing UTAUT-2 as theoretical foundation. Along with UTAUT-2 originating variables, three new variables related to the intention of such adoption (i.e., Personal innovativeness, Perceived fear, and Competitive pressure) were presented and examined. This research is one of the first empirical studies in rural region of Thailand by extending the exploration of technology acceptance of SM tools and platforms in service sectors.

Discussion

To answer the research question, it can be stated that most of the proposed factors influence the intention of SM adoption in the context of local SMEs during COVID-19 pandemic. In addition, the empirical findings of this study indicating drivers of intentions to use SM during COVID-19— in order of impact, are competitive pressure, performance expectancy, price value, personal innovativeness, and effort expectancy, excluding hedonic motivation. These results imply that SMEs will have positive intentions toward adopting SM and new technologies to better promote their business and generate more sales with low-cost expenses as long as they stay competitive in the market. The intensity of SM usage depends on the sophisticated knowledge of leaders and their SM activities. These findings agree with a previous study that reported performance and effort expectancies are predominant factors influencing the new technology acceptance by entrepreneurs (Gavino et



al., 2019; Kim et al., 2022; Magni et al., 2021, pp. 1). Hedonic motivation, however, did not have a significant effect on the intention of use. This could be because business owners rate SM usage as being positive when they are enjoyable and entertaining. Thus, in doing business, hedonic motivation is not perceived as a predictor of intentions to use SM by business owner's perspectives, compared to previous studies on the intention of mobile application usage by customers, where most studies indicated that hedonic motivation is a strong predictor of such technology (Faqih & Jaradat, 2021, pp. 6-7; Kim & Hall, 2019, pp. 246; Ramon, 2019, pp. 1; Venkatesh et al., 2012, pp. 161). Interestingly, personal innovativeness has significant impact on the intention to use, but is not the impulsive adoption. In line with recent research conducted by Kim et al., (2022, pp. 411) reveals that personal (individual) innovativeness, was the strongest predictor for the usage intention online buying intention from customer's perspectives. In the same vein, increasing awareness of mobile and online buying services by SME owners-managers' perspective leads to raising acceptance and usage levels in such technology. However, personal innovativeness was not observed to have a direct effect on SM adoption. For this reason, SMEs have been lacking in their professional SM teams since the majority of employees do not use SM for commerce but rather for personal purposes. Without the assistance of knowledgeable employees, their abilities would be unable to effect immediate changes within the business. In the meantime, perceived fear had a positive impact on prompt SM adoption rather than the intention to use it during COVID-19. The reason could be concerns about business operations, such as the future of COVID-19 outbreaks and when they will end. The implementation of agile business through adoption of SM can be a valuable addition to an SME's operation strategy with cost effectiveness (cost-saving orientation) (Qalati et al., 2021, pp. 8-9). Finally, this research reveals that competitive pressure have a strong significant effect on the intention of SM usage and adoption, in line with the previous research by Qalati et al. (2021, pp. 4-6) and Dutot & Bergeron (2016, pp. 1170) indicating that business already with SM presence could acquire more new capabilities based on their SM activities, compared to those who have not, they are on the process of reconfiguring the resource base and intending to find a new solution that could help them adjust to competitive environments. Unsurprisingly, competitive pressure is one of the crucial factors that drives the change of SMEs during COVID-19. This research argues that the technological benefits may not be the only motivators for SME owners and managers, they intend to create the process-redesign efforts in support of legacy system during COVID-19 pandemic. Thus, it is possible that SMEs will invest in future growth areas by hiring the right talent and re and upskilling employees in their workforce.

This study contributes to research in a number of ways and has implications for both academics and practitioners. From a theoretical perspective; firstly, this study contributes to the current literature by providing empirical evidence that (i) personal innovativeness, (ii) perceived fear, and (iii) competitive pressure, are the factors affecting SMEs intention for



adopting SM during economic recession time caused by COVID-19. Secondly, this study is a starting point for the detailed characterization of the new variables (i.e., using personal innovativeness as a main variable (factor) instead of a moderating variable). This is because young entrepreneurs (including second, third, and later generation family-owned SMEs) are more familiar with the new frontier of technology, including part-time self-employed business owners becoming full-time entrepreneurs (Thorgren et al., 2016, pp. 14-18), and bricks and mortar stores shifting to online (Bhatnagar & Syam, 2014, pp. 1293). Hence, personal innovativeness and self-efficacy in information technology acceptance lead to start-up businesses (Shahzad et al., 2021, pp. 123-124). Finally, the empirical research confirms the previous study in terms of investigating the factors influencing the intention to adopt SM during COVID-19 in developing countries.

From a practical perspective, this study is the first empirical evidence of understanding the factor affecting the intention of SM adoption during COVID-19 by SMEs located at lower northern region of Thailand. The research findings provide practical and managerial implications for SME owners, managers, policy makers, or even practitioners in the areas of marketing and information technology. This study's findings rank the following determinants of usage intention and actual adoption from high to low: competitive pressure, performance expectancy, perceived fear, price value, and personal innovativeness. SME policymakers may use the above ranking to help them decide on marketing techniques that they can integrate with other business-related initiatives. Furthermore, a leader's personal innovativeness seems to be a factor to consider in the research, as individuals with higher degrees of innovation are more likely to be interested in adopting such technology. As a consequence, the findings of this study will be useful to SMEs that are actively researching and experimenting with resilience and absorptive skills in the context of business change.

Recommendations

Despite the fact that this study clearly outlined the key variables that may impact consumer perception and behavior toward SM advertising, it has a number of limitations that should be considered in future research. First, this research did not include control variables (i.e. age, gender, experience, income, educational level, and so forth) that are not considered in the current study. Thus, it could be useful if future studies pay attention to such attributes along with new moderator and mediator variables related to research objectives. Second, new factors other than those in the original UTAUT-2 should be investigated, not only to expand the model but also to help segmentations, with the goal of analyzing novel effects not previously considered such as a concept of business and leadership resilience incorporating absorptive theory and assimilation practices. Third, there is a need to analyze a perception of SME owners-managers and content over specific SM channels and platforms regarding the method of implementation, adoption, and evaluation together with its performance. Future



studies, therefore, could further investigate such methods and technique to provide an in-depth view regarding of such areas. Fourth, the use of SM marketing with digital technologies (such as AI, AR, VR, IoTs and deep learning techniques) through mobile application should be further investigated in the context of emerging countries to develop a best practice of SM investment.

References

- Abed, S. S. (2020). Social commerce adoption using TOE framework: An empirical investigation of Saudi Arabian SMEs. *International Journal of Information Management*, 53, 102118.
- Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204-215.
- Al-Marroof, R. S., Salloum, S. A., Hassanien, A. E., & Shaalan, K. F. (2020). Fear from COVID-19 and technology adoption: the impact of Google Meet during Coronavirus pandemic. *Interactive Learning Environments*, 1-16. DOI: <https://doi.org/10.1080/10494820.2020.1830121>
- Alalwan, A. A. (2018). Investigating the impact of social media advertising features on customer purchase intention. *International Journal of Information Management*, 42, 65-77.
- Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Algharabat, R. (2018). Examining factors influencing Jordanian customers' intentions and adoption of internet banking: Extending UTAUT2 with risk. *Journal of Retailing and Consumer Services*, 40, 125-138.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36(3), 421-458.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W H Freeman/Times Books/Henry Holt & Co. https://www.academia.edu/28274869/Albert_Bandura_Self_Efficacy_The_Exercise_of_Control_W_H_Freeman_and_Co_1997_pdf.
- Bank of Thailand. (2020). *Soft loan policy for Entrepreneurs and SMEs*. Retrieved October 20, 2021, from <https://www.bot.or.th/covid19/content/sme/Pages/fin-rehab.aspx>
- Bellalouna, F. (2021). The augmented reality technology as enabler for the digitization of industrial business processes: case studies. *Procedia CIRP*, 98, 400-405.
- Bhatia, R. (2021). Telehealth and COVID-19: Using technology to accelerate the curve on access and quality healthcare for citizens in India. *Technology in Society*, 64, 101465.
- Bhatnagar, A., & Syam, S. S. (2014). Allocating a hybrid retailer's assortment across retail stores: Bricks-and-mortar vs online. *Journal of Business Research*, 67(6), 1293-1302.



- Cabrera-Sánchez, J.-P., Villarejo-Ramos, Á. F., Liébana-Cabanillas, F., & Shaikh, A. A. (2021). Identifying relevant segments of AI applications adopters – Expanding the UTAUT2's variables. *Telematics and Informatics*, *58*, 101529.
- CGD. (2021). *Economical Report of Phitsanulok province. PLK CDG Evaluation Phitsanulok Economics in 2021*. Retrieved October 12, 2021, from <http://online.anyflip.com/kevcd/fazy/mobile/index.html>
- Charmaraman, L., Lynch, A. D., Richer, A. M., & Grossman, J. M. (2022). Associations of early social media initiation on digital behaviors and the moderating role of limiting use. *Computers in Human Behavior*, *127*, 107053.
- Chatterjee, S., & Kumar Kar, A. (2020). Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India. *International Journal of Information Management*, *53*, 102103.
- Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior*, *86*, 109-128.
- Cranmer, E. E., tom Dieck, M. C., & Fountoulaki, P. (2020). Exploring the value of augmented reality for tourism. *Tourism Management Perspectives*, *35*, 100672.
- Cronbach, L. J., & Shavelson, R. J. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and Psychological Measurement*, *64*(3), 391-418.
- Delacroix, E., Parguel, B., & Benoit-Moreau, F. (2019). Digital subsistence entrepreneurs on Facebook. *Technological Forecasting and Social Change*, *146*, 887-899.
- Delbosc, A., & McCarthy, L. (2021). Pushed back, pulled forward: exploring the impact of COVID-19 on young adults' life plans and future mobility. *Transport Policy*, *107*, 43-51.
- Dupuis, M., Khadeer, S., & Huang, J. (2017). I Got the Job!': an exploratory study examining the psychological factors related to status updates on Facebook. *Computers in Human Behavior*, *73*, 132-140.
- Dutot, V., & Bergeron, F. (2016). From strategic orientation to social media orientation: Improving SMEs' performance on social media. *Journal of small business and enterprise development*, *23*(4), 1165-1190.
- Faqih, K. M. S., & Jaradat, M.-I. R. M. (2021). Integrating TTF and UTAUT2 theories to investigate the adoption of augmented reality technology in education: Perspective from a developing country. *Technology in Society*, *67*, 101787.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading: Addison-Wesley.



- Fong, L. H. N., Lam, L. W., & Law, R. (2017). How locus of control shapes intention to reuse mobile apps for making hotel reservations: Evidence from chinese consumers. *Tourism Management, 61*, 331-342.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.
- García-Milon, A., Olarte-Pascual, C., & Juaneda-Ayensa, E. (2021). Assessing the moderating effect of COVID-19 on intention to use smartphones on the tourist shopping journey. *Tourism Management, 87*, 104361.
- Gavino, M. C., Williams, D. E., Jacobson, D., & Smith, I. (2019). Latino entrepreneurs and social media adoption: personal and business social network platforms. *Management Research Review, 42*(4), 469-494.
- Gefen, D., & Straub, D. W. (2005). A practical guide to factorial validity using PLS-graph: tutorial and annotated example. *Communications of the Association for Information Systems, 16*(1), 91-109.
- Gursoy, D., Chi, O. H., Lu, L., & Nunkoo, R. (2019). Consumers acceptance of artificially intelligent (AI) device use in service delivery. *International Journal of Information Management, 49*, 157-169.
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis*. (6th ed.). Upper Saddle River: Pearson Prentice Hall.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414-433.
- Henseler, J., Ringle, C. M. & Sarstedt, M. (2015), A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135.
- Herrero, Á., San Martín, H., & García-De los Salmones, M. d. M. (2017). Explaining the adoption of social networks sites for sharing user-generated content: A revision of the UTAUT2. *Computers in Human Behavior, 71*, 209-217.
- Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.
- Hung, S.-W., Chang, C.-W., & Ma, Y.-C. (2021). A new reality: Exploring continuance intention to use mobile augmented reality for entertainment purposes. *Technology in Society, 67*, 101757.



- Hynes, W., Trump, B., Love, P., & Linkov, I. (2020). Bouncing forward: a resilience approach to dealing with COVID-19 and future systemic shocks. *Environment systems & decisions*, 40(2020), 174-184, DOI: 10.1007/s10669-020-09776-x.
- Jadil, Y., Rana, N. P., & Dwivedi, Y. K. (2021). A meta-analysis of the UTAUT model in the mobile banking literature: The moderating role of sample size and culture. *Journal of Business Research*, 132, 354-372.
- Kaplan, A., & Haenlein, M. (2010). Users of the world, unite! the challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68.
- Kim, J. J., Kim, I., & Hwang, J. (2021). A change of perceived innovativeness for contactless food delivery services using drones after the outbreak of COVID-19. *International Journal of Hospitality Management*, 93, 102758.
- Kim, M. J., & Hall, C. M. (2019). A hedonic motivation model in virtual reality tourism: Comparing visitors and non-visitors. *International Journal of Information Management*, 46, 236-249.
- Kim, S., Connerton, T. P., & Park, C. (2022). Transforming the automotive retail: Drivers for customers' omnichannel BOPS (Buy Online & Pick up in Store) behavior. *Journal of Business Research*, 139, 411-425.
- Kwon, W.-S., Woo, H., Sadachar, A., & Huang, X. (2021). External pressure or internal culture? An innovation diffusion theory account of small retail businesses' social media use. *Journal of Retailing and Consumer Services*, 62, 102616.
- Lee, Y., Lee, S., & Kim, D.-Y. (2021). Exploring hotel guests' perceptions of using robot assistants. *Tourism Management Perspectives*, 37, 100781.
- Magni, D., Scuotto, V., Pezzi, A., & Giudice, M. D. (2021). Employees' acceptance of wearable devices: Towards a predictive model. *Technological Forecasting and Social Change*, 172(2), 121022.
- Mandić, A., & Kennell, J. (2021). Smart governance for heritage tourism destinations: Contextual factors and destination management organization perspectives. *Tourism Management Perspectives*, 39, 100862.
- Mulier, L., Slabbinck, H., & Vermeir, I. (2021). This way up: the effectiveness of mobile vertical video marketing. *Journal of Interactive Marketing*, 55, 1-15.
- Nugroho, M. A., Susilo, A. Z., Fajar, M. A., & Rahmawati, D. (2017). Exploratory study of SMEs technology adoption readiness factors. *Procedia Computer Science*, 124, 329-336.
- Nunnally, J. C. (1978). *Psychometric theory*. (2nd ed.). New York: McGraw-Hill.
- Ogunjimi, A., Rahman, M., Islam, N., & Hasan, R. (2021). Smart mirror fashion technology for the retail chain transformation. *Technological Forecasting and Social Change*, 173, 121118.



- OSMP. (2021). *Phitsanulok Master Plan: B.E. 2563 – 2582 (2020 - 2039)*. Retrieved September 25, 2021, from <https://www.opsmoac.go.th/phitsanulok-strategic-files-421191791803>.
- Öztamur, D., & Karakadilar, İ. S. (2014). Exploring the role of social media for SMEs: as a new marketing strategy tool for the firm performance perspective. *Procedia - Social and Behavioral Sciences*, 150, 511-520.
- Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management*, 54, 102144.
- Podsakoff, P. M., MacKenzie, S. M., Lee, J., & Podsakoff, N. P. (2003). Common method variance in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Podsakoff, P. M., & Organ, D. W. (1986). Self reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.
- Qalati, S. A., Yuan, L. W., Khan, M. A. S., & Anwar, F. (2021). A mediated model on the adoption of social media and SMEs' performance in developing countries. *Technology in Society*, 64, 101513.
- Qasem, Z. (2021). The effect of positive TRI traits on centennials adoption of try-on technology in the context of E-fashion retailing. *International Journal of Information Management*, 56, 102254.
- Ramon, P.-S. (2019). User acceptance of mobile apps for restaurants: an expanded and extended UTAUT-2. *Sustainability*, 11(4), 1-24.
- Rauschnabel, P. A., Felix, R., & Hinsch, C. (2019). Augmented reality marketing: How mobile AR-apps can improve brands through inspiration. *Journal of Retailing and Consumer Services*, 49, 43-53.
- Kim, Connerton, T. P., & Park, C. (2022). Transforming the automotive retail: Drivers for customers' omnichannel BOPS (Buy Online & Pick up in Store) behavior. *Journal of Business Research*, 139, 411-425.
- Saad, M. H., Hagelaar, G., van der Velde, G., & Omta, S. W. F. (2021). Conceptualization of SMEs' business resilience: A systematic literature review. *Cogent Business & Management*, 8(1), 1-33.
- Sánchez, M. R., Palos-Sánchez, P. R., & Velicia-Martin, F. (2021). Eco-friendly performance as a determining factor of the Adoption of Virtual Reality Applications in National Parks. *Science of The Total Environment*, 798, 148990.



- Shahzad, M. F., Khan, K. I., Saleem, S., & Rashid, T. (2021). What factors affect the entrepreneurial Intention to start-ups? The role of entrepreneurial Skills, propensity to take Risks, and innovativeness in open business models. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(3), 173, 1-23.
- Sharma, A., Sharma, S., & Chaudhary, M. (2020). Are small travel agencies ready for digital marketing? Views of travel agency managers. *Tourism Management*, 79, 104078.
- Shaw, N., & Sergueeva, K. (2019). The non-monetary benefits of mobile commerce: Extending UTAUT2 with perceived value. *International Journal of Information Management*, 45, 44-55.
- Sigley, I. (2020). It has touched us all: Commentary on the social implications of touch during the COVID-19 pandemic. *Social Sciences & Humanities Open*, 2(1), 100051.
- Thorgren, S., Sirén, C., Nordström, C., & Wincent, J. (2016). Hybrid entrepreneurs' second-step choice: The nonlinear relationship between age and intention to enter full-time entrepreneurship. *Journal of Business Venturing Insights*, 5, 14-18.
- Tussyadiah, I. P., Wang, D., Jung, T. H., & tom Dieck, M. C. (2018). Virtual reality, presence, and attitude change: Empirical evidence from tourism. *Tourism Management*, 66, 140-154.
- Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *The Journal of Information Technology Theory and Application*, 11(2), 5-40.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178.
- Wielgos, D. M., Homburg, C., & Kuehnl, C. (2021). Digital business capability: its impact on firm and customer performance. *Journal of the Academy of Marketing Science*, 49(4), 762-789.
- Wnuk, A., Oleksy, T., & Maison, D. (2020). The acceptance of Covid-19 tracking technologies: The role of perceived threat, lack of control, and ideological beliefs. *PLOS ONE*, 15(9), 1-16.
- Yawised, K., & Apasarawirote, D. (2021). Social media overcoming impediments for successful strategy formulation by small and medium enterprises (SMEs). *The 8th Business Economics and Communications International Conferences*, (pp.126-135). Faculty of Business, Economics and Communications, Naresuan University.
- Yawised, K., Torugsa, N., & O'Donoghue, W. (2017). Exploring social customer relationship management in Australian small and medium enterprises. *International Journal of Globalisation and Small Business*, 9(4), 222-251.



Zanetta, L. D. A., Hakim, M. P., Gastaldi, G. B., Seabra, L. M. A. J., Rolim, P. M., Nascimento, L. G. P., et al. (2021). The use of food delivery apps during the COVID-19 pandemic in Brazil: The role of solidarity, perceived risk, and regional aspects. *Food Research International*, *149*, 110671.

Zhou, M., Huang, J., Wu, K., Huang, X., Kong, N., & Campy, K. S. (2021). Characterizing Chinese consumers' intention to use live e-commerce shopping. *Technology in Society*, *67*, 101767.