



www.sjm06.com

Serbian Journal of Management 17 (2) (2022) 403 - 424

Serbian  
Journal  
of  
Management

## EXTENDING THE UTAUT MODEL TO UNDERSTAND THE BARRIERS TOWARDS SME DIGITALIZATION

Michael Adu Kwarteng\*, Diego Fernando Plata Lerma, Mark Ratilla,  
Petr Novak and Lukas Zlamal

*Tomas Bata University, Faculty of Management and Economics,  
Mostni, 5139, 76001, Zlin, Czech Republic*

*(Received 12 May 2022; accepted 24 October 2022)*

---

### Abstract

Digitalization has been identified as a core growth driver for small and medium enterprises (SMEs) in this digital era. This study investigates the drivers and barriers aligned with the tendency of owner-managers of SMEs to adopt digitalization. A conceptual framework is developed that extends the unified theory of acceptance and technology (UTAUT) with an anxiety-digitalized environment as a moderating factor of SME owner-managers' intention to adopt digitalization. A quantitative methodology is used to gauge responses from 89 respondents (owner-managers). Additionally, the variance-based structural equation modelling approach (PLS-SEM) is used to analyse and validate the proposed model. Results show that attitude positively mediates the relationship between performance expectancy and intention to adopt digitalization. However, effort expectancy and facilitating conditions were found to negatively influence attitude and intention to adopt digitalization. On the contrary, the results obtained did not confirm the significance of an anxiety-digitalized environment in moderation analyses. Consequently, the overall structural model accounted for 51.1% of the variance in the intention to adopt digitalization among SMEs. This study has theoretically and practically contributed to understanding owner-managers' intent to adopt digitalization of SMEs in the Czech Republic.

*Keywords:* anxiety, attitude, Czech Republic, digitalization, SME, Unified Theory of Acceptance and Use of Technology (UTAUT)

---

### 1. INTRODUCTION

Digitalization – a process that includes adopting digital technologies and integrating

them in any aspect of performing business activities (Vial, 2019) – has been identified as a core growth driver for small and medium enterprises (SMEs) in this digital

---

\* Corresponding author: [kwarteng@utb.cz](mailto:kwarteng@utb.cz)

DOI: 10.5937/sjm17-37629

era (Andersen et al., 2022). It offers new opportunities for SMEs, including faster access to information, better communication with stakeholders and better operations support, resulting in improved organizational performance (OECD, 2021). It endorses an organization's competitive advantage, allowing greater flexibility to perform operations in normal or turbulent times (Guo et al., 2020). Indeed, the recent coronavirus pandemic has changed the business playing field, greatly favouring early adopters of technology. For instance, SMEs with an e-commerce wing were less distraught about the effects of the crisis than those with only traditional brick-and-mortar stores. This phenomenal experience has incited SMEs to reconsider digital solutions, transform business models and processes and adapt to the changing business environment.

Despite the merits of digitalization efforts, adoption continues to fall behind (Eller et al., 2020), especially for smaller SMEs (OECD, 2021). For instance, digitalization is considered a major growth trajectory in Central and Eastern European (CEE) countries, yet it is continuously challenged in the drive to exploit its full potential (Marciniak et al., 2020). Li et al. (2018) argue that though the interest in digitization exists, SME owner-managers still lack the know-how and experience to fully exploit what technology adoption can offer. They face much complexity in executing such projects which are even more magnified, as they possess meagre resources (Kääriäinen et al., 2020; Kilimis et al., 2019). Equally, the high uncertainties surrounding technological developments (Brundin & Gustafsson, 2013) may amplify technology anxiety (Meuter et al., 2003), risk perceptions (Yang & Lee, 2019) and, thus, technology adoption decisions (Yang &

Forney, 2013).

Over the years, scholarly works have concentrated on digital transformation, particularly its adoption antecedents, challenges and consequences (Li et al., 2018). However, the studies mainly focus on larger organizations (Eller et al., 2020). Therefore, there is a need to clarify digitalization in the context of smaller organizations or SMEs (Andersen et al., 2022; Eller et al., 2020; Li et al., 2018). In contrast with large firms, SMEs' technology readiness is inferior, vulnerabilities are higher and challenges are more apparent (De Lucas Ancillo et al., 2021). Still, SMEs contribute much to the economic growth of countries worldwide (The World Bank, 2021). Therefore, as the market environment is increasingly driven by technological advancement, it is vital to pay attention and understand SMEs' route to digitalization to develop appropriate strategies and policies to sustain their growth and survival.

Several scholars have utilized many models and theories to explain consumers' technology adoption decisions. Yet, one of the most popular and robust ones is the unified theory of acceptance and use of technology (UTAUT). Research investigations, including consumers' adoption of e-commerce (Haryanti & Subriadi, 2020), mobile banking (Zhou et al., 2010), wearable technologies (Wu et al., 2016) and other tech products (Williams et al., 2015), have been widely studied in the literature, employing the UTAUT as a theoretical model. The theory postulates that technology adoption is determined by performance expectancy (PE), effort expectancy (EE), facilitating condition (FC) and social influence (SI). As explained by Venkatesh et al. (2003), the intention to adopt a technology depends on the degree to

which an individual perceives that the technology advances job performance (PE), the ease of use in executing tasks (EE) and technical or organizational infrastructure available in support of the use of technology (FC). Empirical accounts indicate that PE is the best predictor of technology adoption intentions (Williams et al., 2015). However, the proponents open a further extension of the model to enhance its predictive capacity of any technology-adoption-related phenomena under investigation (Chang, 2012; Venkatesh et al., 2016).

There were many attempts to extend the UTAUT; however, a gap in the literature ignores the emotional (affective) component of predicting technology adoption decisions (Gunasinghe & Nanayakkara, 2021). It is connected to the increasing evidence in consumer psychology research on the influence of affective factors on consumer decisions (Achar et al., 2016; Szymkowiak et al., 2021). Concerning technology adoption, an immediate emotional variable to cite is technology anxiety. Yang and Forney (2013) argue that anxiety towards the use of technology is a major determinant in the adoption of information technology or information systems. Meuter et al. (2003) characterize technology anxiety as the feeling of confusion, demotivation and perceived inability to use technology. Other studies also assert the role of technology anxiety in consumers adoption of mHealth services (Hoque & Sorwar, 2017), RFID-enabled services (Nysveen & Pedersen, 2016), m-government services (Talukder et al., 2020) and virtual learning (Gunasinghe & Nanayakkara, 2021). Despite this evidence, little is known about the role of owner-managers' technological anxiety in SMEs' adoption of digital solutions. This study argues that, like general consumers,

SME owner-managers' technological anxiety may likewise inhibit their digitalization intentions, despite perceiving technologies' edge to enhance job performance, ease of use and facilitating conditions.

Therefore, by employing the UTAUT model, the study aims to predict the relevant factors influencing SMEs' adoption of digital technologies. As an extension to the theoretical model, the study examines the moderating role of anxiety in a digitalized work environment on the relationship's technology adoption intention and its determinants. The study contributes to the literature by validating the UTAUT model in the context of SME digitalization and by offering further insights on the influence of emotion, particularly the feeling of anxiety, on the technology adoption decisions of SMEs' owner-managers. The work also offers practical contributions in designing relevant strategies and policies that support SMEs' digitization and fuel their growth and sustainability in a technology-driven and highly dynamic market environment.

This paper is arranged as follows. After presenting the theoretical background of the study in detail, including the arguments leading to the research hypotheses, we followed suit with the precise account of the research methodology used and the final results attained. Lastly, a general discussion of the findings, theoretical contributions, managerial contributions and limitations and future research directions, as well as the conclusion of the paper, are highlighted.

## **2. PRIOR RESEARCH – SMEs AND DIGITALIZATION**

To avoid the study seeming generic and cursory, the authors outlined previous

research works on SMEs and digitalization (Table 1).

## 2.1. Theoretical Foundation and Hypotheses Development

### 2.1.1. Unified Theory of Acceptance and Use of Technology (UTAUT)

As indicated earlier, UTAUT is known as

one of the widely adopted theoretical models of technology acceptance research works (Teo & Noyes, 2014; Abu et al., 2015). It examines the user intention to utilize a technology system and the subsequent actual usage (Venkatesh et al., 2003). UTAUT has served as a robust baseline model to examine the user's acceptance of various technologies in different social and economic contexts (Alhaimer, 2019; Gunasinghe &

Table 1. A summary of relevant scientific articles on digitalization of SMEs

Author	Key research highlight	Theoretical background	Research method	Unit of analysis	Country of study
1 Scupola (2009)	The study aims to analyse the variables affecting business-to-business e-commerce adoption and implementation in SMEs	E-commerce Adoption Model	Quantitative	Organization – CEO/managers	Denmark Australia
2 Chuang et al. (2007)	This investigation is focused in the analysis of the impacts of organisational and owner characteristics in e-commerce adoption	E-commerce Adoption	Quantitative	Organization	USA
3 Alhaimer (2019)	This article explores the factors affecting small and medium enterprises social media use for online advertisement of their products	Unified Theory of Acceptance and use of higher level of technology (UTAUT)	Quantitative	Organization	Kuwait
4 Gunasinghe & Nanayakkara (2021)	This research aims to examine the impact of anxiety on non-user adoption intentions of Virtual Learning Environments (VLE)	UTAUT	Quantitative	Individual	Sri Lanka
5 Najib & Farah (2020)	This study focused on identifying the factors affecting digital payment system adoption among Indonesian SMEs	Technology Acceptance Model (TAM)	Quantitative	Organization – owners/managers	Indonesia
6 Martinez et al. (2020)	This paper analyses the drivers determining the adoption of Customer facing in-store technologies (CFIST) by small and medium size enterprises	Technology Organization Environment (TOE) -TAM	Quantitative	Organization – owners/managers	Spain
7 Soong et al. 2020	This research explores factors influencing small and medium-sized enterprises (SMEs) Adoption of electronic government procurement (EGP)	TAM - UTAUT	Quantitative	Organization	Malaysia
8 Saadé (2007)	This study seeks to identify the impact of anxiety in mediating the influence of computer and internet experiences on perceived ease of use	TAM	Quantitative	Organization	Canada
9 Gelbrich & Sattler (2014)	This investigation aims to test a model that illustrates the impact of technology anxiety on the intention to use a self-service technology in public	Technology Acceptance Model 3 (TAM3)	Quantitative	Individual - user	Germany
10 Meuter et al. (2003)	This article analyses the influence of technology anxiety (TA) and particular demographics, on Using self- SST usage patterns and satisfaction levels	Technology Anxiety (TA) conceptual framework	Quantitative	Individual – consumer	USA
11 Abu et al. (2015)	This research analyses the acceptance and use of technology among SMEs in order to understand the SMEs behavior towards acceptance and use of higher level of technology	UTAUT	Quantitative	Organization	Malaysia
12 El-Masri & Tarhini (2017)	This article focuses on the major factors that may hinder or enable the adoption of e-learning systems	Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)	Quantitative	Organization	Qatar - USA
13 Eller et al. (2020)	This investigation aims to study the antecedents, consequences, and challenges of SME digitalization	Resourced-based view (RBV)	Quantitative	Organization	Austria
14 Ghobakhloo et al. (2011)	This study explores the elements affecting the decision to adopt electronic commerce (EC) in SMEs	TOE	Quantitative	Organization – Managers/owners	Iran
15 Duan et al. (2012)	This article explores the SMEs' willingness to adopt e-market strategies	TOE	Quantitative	Organization	Australia

Nanayakkara, 2021). Originally developed to analyse the employee technology acceptance, the UTAUT argues that PE, EE, FC and SI affect the degree to which a technology or system is embraced by a human organization (Venkatesh & Davis, 2000). Conceptually, UTAUT integrates components from the Theory of Planned Behavior (TPB) (Ajzen, 1991), the Technology Acceptance model (TAM) (Davis, 1989), the Motivational Model (Davis et al., 1992), the Theory of Planned behavior (Ajzen, 1991), the Computer Utilization Model (Thompson et al., 1991), the Innovation Diffusion theory (Moore & Benbasat, 1991; Rogers, 2003), Social Cognitive Theory (Compeau & Higgins, 1995) and the Integrated model of technology (Davis, 1989; Venkatesh et al., 2003).

The current study utilizes the UTAUT model to test the intention of SMEs in the Czech Republic to adopt digitalization. The model consists of performance expectancy (PE), effort expectancy (EE) and facilitating conditions (FC); they are hypothesized to relate to the intention to adopt digitalization in SMEs. Furthermore, in the current study, anxiety in a digitalized marketing environment was considered to replace most of the moderating effect of age, gender, experience and voluntariness in the UTAUT model.

## 2.2. Hypotheses Development

### 2.2.1. Performance Expectancy (PE) and Attitude (ATT) Towards Intention to Adopt Digitalization by SMEs

Venkatesh et al., (2003) define PE as the degree to which an individual perceives that using a system or technology will help in

attaining a gain in job performance. Sheeshka et al. (1993) argue that expectations of performance are dependent upon expected outcomes; moreover, other academics have also interpreted this concept to elucidate outcome expectancy (Verkijika, 2020). PE is the strongest predictor of intention to use a particular system or technology (El-Masri & Tarhini, 2017; Skoumpopoulou et al., 2018; Gunasinghe & Nanayakkara, 2021) and it may represent a critical factor in enhancing or hindering digitalization adoption by SMEs in the Czech Republic. Thus, we hypothesize:

**H1:** Performance expectancy (PE) positively influences attitude (ATT) towards intention of SMEs in the Czech Republic to adopt digitalization

### 2.2.2. Effort Expectancy (EE) and Attitude (ATT) Towards Intention to Adopt Digitalization by SMEs

EE is defined as the degree of ease one experiences in the process of executing tasks using a given system (Venkatesh et al., 2003). In line with the UTAUT, the construct EE can contribute to a more accurate behaviour prediction beyond that accounted for by PE alone (Teo & Noyes, 2014). However, the contribution of PE alone to the prediction of behaviour may be limited (Davis, 1989). In the investigations carried out by Zhou et al. (2010) and Verkijika (2020), PE and EE functioned as perceived usefulness and perceived ease of use, respectively. Previous studies have proven that EE has a significant influence on behavioural intention such that the easier the use of technology, the higher the intention to adopt that technology (Grandon & Pearson, 2004; Alhaimer, 2019). Subsequently,

**H2:** Effort expectancy (EE) positively influences attitude (ATT) towards SMEs' intention to adopt digitalization

### ***2.2.3. Facilitating Conditions (FC) and Attitude (ATT) Towards Intention to Adopt Digitalization by SMEs***

According to Venkatesh et al. (2003), the FC is the degree to which one organization believes that the technical infrastructure is available to support the electronic procurement system. Furthermore, FC includes the technical aspect in an organizational environment by helping eliminate the barrier to using a technology (Meuter et al., 2003). Liu and Huang (2015) stated that the availability of a certain organizational or technical instance in case of problems influences the individual behaviour intention and explicitly resources determinants (e.g., time training) and technology factors (e.g., system compatibility) (Lu et al., 2008). Considering the discussion above, the following hypothesis is proposed:

**H3:** Facilitating conditions (FC) positively influences attitude (ATT) towards intention of SMEs in the Czech Republic to adopt digitalization

### ***2.2.4. Attitude (ATT) Towards SMEs' Intention (INT) to Adopt Digitalization***

The attitude component refers to an organization's feeling, positive or negative, towards adopting a new system, leading to the usage intention and determining the technology adoption development (Najib & Farah, 2020). In the concept of the UTAUT model, an organization's perception of new technology will influence their attitude

towards that new system (Venkatesh & Davis, 2003). Further studies by Awa et al. (2015a,b) highlight that decision-makers' functional or emotional feelings are critical predictors of the organization's technology adoption. Accordingly, in the organizational context, several academics have emphasized that enterprise-level technology adoption is largely dependent upon the individual influence of the CEO (Scupola, 2009; Abdullah et al. 2013). Furthermore, empirical studies confirm that in SMEs, the attitude towards digitalization can overrule other aspects that would not be omitted in other organizations (Francioni et al., 2015; Lorente-Martinez et al., 2020). Consequently, the variable attitude is included as a mediator of the PE, EE and FC on SMEs' intention to adopt digitalization.

**H4:** Attitude (ATT) positively influences the intention (INT) of SMEs in the Czech Republic to adopt digitalization

**H5:** Attitude (ATT) mediates the influence of (a) performance expectancy, (b) effort expectancy and (c) facilitating conditions on the intention of SMEs in the Czech Republic to adopt digitalization

### ***2.2.5. The Moderation Role of Anxiety (ANX) in a Digitalized Working Environment***

According to Meuter et al. (2003), technology can evoke users' feelings of anxiety, which might influence users' attitudes and behaviours towards technology adoption. In the digitalized marketing environment setting, the concept of anxiety has widely influenced performance and organizational attitude towards the utilization and acceptance of technology

(Beckers et al., 2007). Anxiety is defined as the degree of apprehension that a user associates with the actual or anticipated use of information technology (Gelbrich & Sattler, 2014). Supported by Bailey et al. (2017), Lee (2010) argued that individuals who evoke anxious behaviours when using a particular technology tend to have an aversion towards using it and would rather avoid its utilization.

Therefore, users with less experience with a new technology are expected to rely upon their general beliefs regarding technologies and technology use; as a result, their attitude may be highly anxious (Plouffe et al., 2001). Consequently, organizations with higher technology anxiety tend to automatically avoid the use of a particular new technology (Gunasinghe & Nanayakkara, 2021). In connection to the adoption of digital tools, the relationship between the facilitating conditions and user intention is strengthened by anxiety (Yang & Forney, 2013). Furthermore, Venkatesh et al. (2000) state that the negative effect of technology anxiety on effort expectancy is significant, particularly in the early adoption period. Accordingly, investigations carried out by van Raaij & Schepers (2008) found that distress felt by the user towards a technology might make that technology be perceived as more complex than it actually is. Hourahine and Howard (2004) state that anxiety may increase when monetary transactions are involved in the adoption of a new technology to the extent that users fear losing money or information.

Consistent literature has proven that technology anxiety can act as a critical component in the adoption process (Parayitam et al., 2010; Gelbrich & Sattler, 2014; Celik, 2016); hence, inducing high levels of anxiety regarding a digital system

will directly or indirectly lead to a lower intention to adopt it (Rana & Dwivedi, 2015). Subsequently, considering that technology anxiety may be a major obstacle to adopting a new digital system (Beckers et al., 2007; Saadé & Kira, 2007), the present study proposes that anxiety will moderate causal relationships among determinants in the UTAUT model.

**H6:** Anxiety in a digitalized marketing environment (ANX) moderates the influence of attitude (ATT) towards (a) performance expectancy (PE), (b) effort expectancy (EE) and (c) facilitating conditions (FC) on the intention of SMEs in the Czech Republic to adopt digitalization

Overall, Figure 1 presents the proposed research framework depicting the influence of performance expectancy (PE), effort expectancy (EE) and facilitating conditions (FC) towards attitude (ATT) and intention (INT) of SMES in the Czech Republic to adopt digitalization. Notably, in the proposed model, the moderating role of anxiety in a digitalized marketing environment (ANX) on PE → ATT, EE → ATT and FC → ATT relationships were examined.

### 3. METHODOLOGY

#### 3.1. Data Collection and Sampling Procedure

The data for this study draws from a Visegrad project geared towards understanding possibilities and barriers for industry 4.0 implementation in SMEs. As per the requirements of the project, a comprehensive questionnaire was developed based on extant literature and relevant

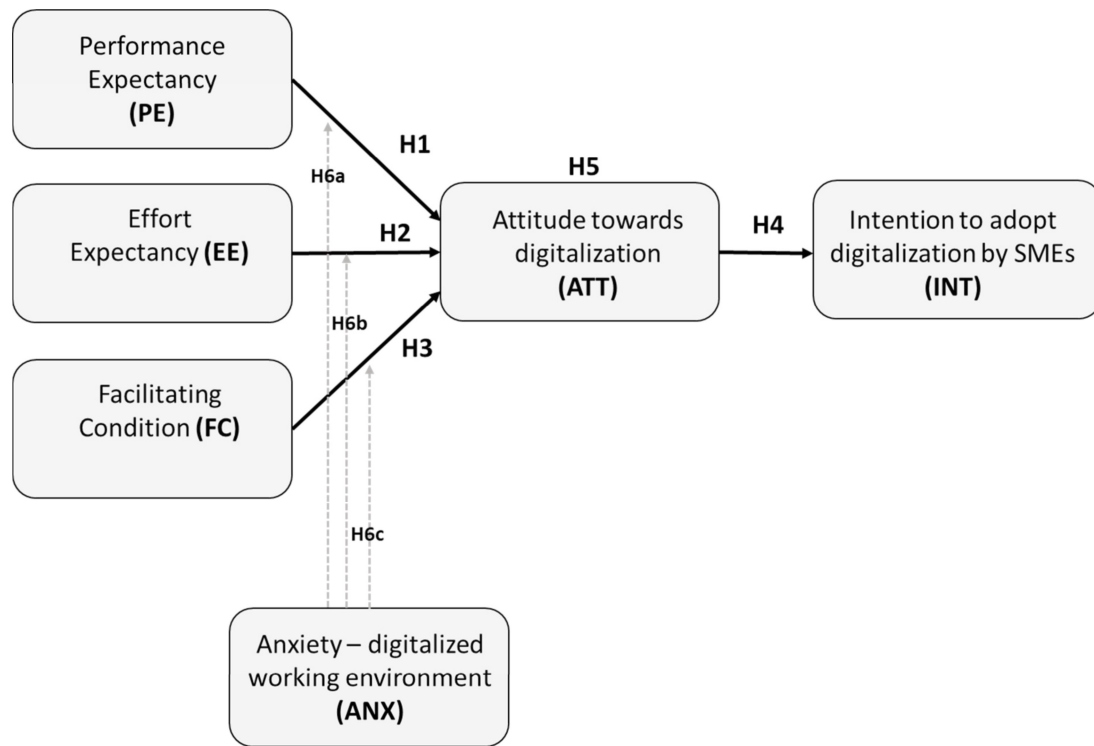


Figure 1. Proposed research model grounded on the Unified Theory of Acceptance and Use of Technology (UTAUT)

theoretical underpinnings to delve into the opinions and intent of SME owner-managers regarding the adoption of digitalization in the Czech Republic, as stated earlier. Countries participating in the survey were asked to pre-test the entire questionnaire to ensure that any ambiguities are checked and corrected. Subsequently, primary data were initiated using a convenience sampling technique with a selection criterion for each country's respondents – SME owner-managers – in August 2021. As a sequel, all pertinent information of the participating SME owner-managers was retrieved from the CRIBIS database in the Czech Republic and recorded in an Excel file. Then a bulk email was sent politely with an invitation to partake in the study for scientific research. After several reminders, only 94 people responded. In the end, 89 responses were accurate for our data

analyses. Whether this remaining sample size was acceptable for use to test the model was answered statistically, with the aid of G\*Power (Faul et al., 2009). Accordingly, G\*Power, was initiated to help assess the required minimum sample size in order to prevent disturbances associated with statistical significance in the present study. Reflecting on the results of the G\*Power analysis (see Appendix 1), we needed 70 responses as the minimum sample size, given an effect size of 0.15 at 0.10 significance level, 0.80 statistical power and with at least 5 predictor variables. In effect, the sample size of 89 responses used for this exhibits satisfactory statistical power to create a more robust model. A general breakdown of respondents' profiles in the accrued data showed that most of the respondents from SMEs were from the



Zlinsky Kraj (38%), followed by the Olomouc Kraj (29%), with the rest distributed across the entire Czech Republic. We must also emphasize that the entire questionnaire was first developed in English and then translated into the Czech language by two native Czechs, who happen to be academics and part of the project in question. The questionnaire was translated back into English by another colleague from a different department to ensure translation equivalence. The demographic profile of the respondents is presented in Table 2.

### 3.2. Controlling for Common Method Bias (CMB)

Common method bias (CMB) produces

systematic errors that usually arise when the variables measured in the study used the same response method (i.e., self-administered surveys) (Kock et al., 2021). It generates spurious effects threatening the reliability and validity of the study's empirical results (Kock et al., 2021; Podsakoff et al., 2003). Scholars across disciplines strongly advice to control for CMB using procedural and statistical approaches (Kock et al., 2021). To perform these controls, all adapted indicators used for latent measurement in this study, with the exception of demographic variables, were drawn from established scales in the literature. For instance, the measurement items for the three independent variables associated with UTAUT were adapted from

Table 2. Demographic profile of the respondents

Variable	Category	Frequency	(%)
Gender	Male	65	73
	Female	24	27
Age	18-30	13	14.6
	31-45	32	36
	46-60	37	41.6
	61+	7	7.9
Position	Owner	21	23.6
	Senior manager	29	32.6
	Manager	26	29.2
	Employee	13	14.6
Educational attainment	High School	16	17.98
	Bachelor	6	6.74
	Master	64	71.91
	Ph.D	3	3.37
Work Experience	Up to 5 years	10	11.2
	From 6 to 10 years	16	18
	From 11 to 20 years	27	30.3
	More than 20 years	36	40.4
Number of Employees	up to 9	2	2.2
	10-49	9	10.1
	50-249	75	84.3
	more than 250	3	3.4
Business Sector	Production	42	47.2
	Trade	10	11.2
	Services	37	41.6
Years of Business Operation	6 to 10 years	5	5.6
	11 to 20 years	21	23.6
	21 years and older	63	70.8

Venkatesh et al. (2003), but they were modified to suit the current study. Again, this study adapted both the anxiety-digitalized environment and attitude scales from Tsai et al. (2019) and Bollweg et al. (2020), respectively. All the measurement items were anchored on a five-point Likert scale measurement ranging from 'strongly disagree' to 'strongly agree' or 'not at all' to a large extent. In addition, to control for the incidence of social desirability in the study, metrics were ensured to gauge and minimize such occurrences; thus, we assured respondents that there were no right or wrong answers to the questions asked, and that they were permitted to recuse themselves from participation, which is congruent with the commendations in past research (Podsakoff et al., 2003). Moreover, we assured respondents of their anonymity. Lastly, by executing Harman's single factor test, the cumulative variance of the first factor extracted was below the 50% acceptable limit (Podsakoff et al., 2003). In sum, we can conclude that the common concern of CMB in the present study is negligible at best.

### 3.3. Statistical Strategy

Data analyses were initiated using a path modelling approach (PLS-SEM) which has been given a stamp of approval for exploratory research like the present study (Hair et al., 2017). Another vital reason for using this statistical approach is that the current research investigation is largely born out of in-sample prediction, especially regarding the owner-managers' intent to adopt digitalization in their day-to-day activities (Hair et al., 2017). Again, the use of this statistical technique is well entrenched in the literature, as it has been

widely used by scholars on a number of occasions, researching technology-based adoption and resistance in recent times (Baudier et al., 2020; Featherman et al., 2021). This research uses SmartPLS software for the estimation and evaluation of the proposed research model.

## 4. RESULTS

### 4.1. Assessment of the Measurement Model

The study follows the guidelines Hair et al. (2017) set in evaluating the measurement model. Initially, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was determined to assess the factorability of the data. A KMO value of 0.829 was found, which exceeds the 0.7 recommended minimum threshold (Madanchian et al., 2018; Shkeer & Awang, 2019). Meanwhile, Bartlett's test of sphericity revealed a statistically significant value ( $p < 0.05$ ). Therefore, subsequent factor analysis involving the assessment of the reliability and validity of the indicators and constructs followed. Observing the indicators' factor loadings (FLs) in Table 3, most values exceeded the 0.70 cut-offs (Hair et al., 2017), while those with FL below 0.7 were discarded. Cronbach's alpha and composite reliability likewise demonstrate acceptable values, exceeding the 0.7 thresholds (Hair et al., 2017). Convergent validity of constructs was established, as revealed by the average variance extracted (AVE) scores exceeding 0.5 (Hair et al., 2017). Similarly, the constructs exhibited adequate discriminant validity. Based on the Fornell-Larcker criterion, the square root of the AVE of each construct was higher than its correlation with

Table 3. A summary of the results of the construct reliability and validity assessments

Construct	SD	Mean	FL	CA	CR	AVE
<b>Performance Expectancy (PE)</b>				0.927	0.943	0.735
PE1: I would find digitalisation useful in my job.	1.106	4.125	0.888			
PE2: Using digitalised processes enables me and the company to accomplish tasks more quickly.	1.145	4.091	0.914			
PE3: Using digitalised processes and services increases productivity.	1.089	4.136	0.938			
PE4: Investing in digital technologies enable cost-effectiveness.	1.108	3.850	0.798			
PE5: Digitalisation impacts the profit and performances of the company.	1.126	3.862	0.799			
PE6: My good digital skills increase my chances of getting a raise.	1.339	3.590	0.765			
PE7: Digital technologies are useful for my business during the COVID-19 pandemic	1.309	4.034	0.686 <sup>d</sup>			
<b>Effort Expectancy (EE)</b>				0.946	0.961	0.860
EE1: My interaction with the digitalised working environment would be clear and understandable.	1.031	4.125	0.909			
EE2: It would be easy for me to gain digital skills to work in the digitalised working environment.	1.050	4.011	0.948			
EE3: I would find digitalised working environment easy to use.	1.129	4.011	0.935			
EE4: Learning to operate digitalised processes is easy for me.	1.056	4.102	0.918			
<b>Facilitating Condition (FC)</b>				0.840	0.903	0.757
FC1: The company has the necessary resources to use more digitalised process and services.	1.099	3.640	0.845			
FC2: The company has the necessary knowledge to use more digitalised processes and services.	1.149	3.402	0.922			
FC3: The modern digitalisation techniques are not compatible with other digitalised processes and services at the company.	1.150	2.709	0.255 <sup>d</sup>			
FC4: A specific person (or group) is available for assistance if difficulties with digitalisation at the company arise	1.370	3.721	0.826			
<b>Attitude towards digitalization (ATT)</b>				0.934	0.950	0.792
ATT1: Digitalisation at the company is a good idea.	1.100	4.067	0.906			
ATT2: Digitalisation at the company makes work more interesting.	1.274	3.640	0.919			
ATT3: Working in digitalized environment is fun.	1.292	3.360	0.833			
ATT4: I like that the company I work for creates a digitalised working environment.	1.282	3.652	0.921			
ATT5: I believe that digitalisation at the company creates competitive advantage in the market.	1.347	3.775	0.869			
<b>Intention to adopt digitalization (INT)</b>				0.953	0.969	0.913
INT1: My company intends to digitalise its business processes to a higher extent.	1.236	3.750	0.956			
INT2: My company predicts that it would introduce more digitalisation in the near future.	1.282	3.693	0.969			
INT3: My company plans to invest in digitalisation more in the near future.	1.331	3.511	0.941			
<b>Anxiety in a digitalized working environment (ANX)</b>				0.896	0.928	0.763
ANX1: I feel apprehensive about digitalisation.	0.998	1.690	0.840			
ANX2: It scares me to think that I could make malfunctioning in digitalised working processes by hitting the wrong button.	0.899	1.488	0.904			
ANX3: I hesitate to work in the digitalised working environment for fear of making mistakes I cannot correct.	0.998	1.557	0.928			
ANX4: Digitalisation is somewhat intimidating to me.	0.824	1.341	0.818			

Notes: d – discarded, FL – factor loading, CA – Cronbach's alpha, CR – composite reliability, AVE – average variance extracted, SD – standard deviation

Table 4. Results of the discriminant validity assessment using Fornell-Larcker criterion and HTMT ratios

	ANX	ATT	EE	FC	INT	PE
ANX	<b>0.874</b>	0.236	0.553	0.255	0.282	0.274
ATT	-0.216	<b>0.890</b>	0.638	0.528	0.742	0.905
EE	-0.506	0.610	<b>0.928</b>	0.620	0.451	0.612
FC	-0.222	0.481	0.561	<b>0.870</b>	0.531	0.499
INT	-0.260	0.714	0.430	0.474	<b>0.956</b>	0.674
PE	-0.254	0.853	0.580	0.456	0.648	<b>0.857</b>

Notes: CA- Cronbach's alpha, CR – composite reliability, AVE – average variance extracted, Square root of AVE (in bold) on diagonal, HTMT values in italic (in gray zone)

other constructs (Fornell & Larcker, 1981; Hair et al., 2017) (Table 4). Heterotrait-Monotrait Ratio (HTMT) values were less than the 0.85–0.90 upper limit (Hair et al., 2017). The structural model assessment followed, given the satisfactory results of the measurement model assessment.

#### 4.2. Assessment of the Structural Model

Before assessing the structural model, multicollinearity issues were examined first. No serious issues were found as the variance inflation factors (VIF) values of all combinations of endogenous and exogenous constructs are higher than 0.20 and lower than 5 (Hair et al., 2017) (Table 5). Then, we examined the  $R^2$  figures; the model explained 51.1% of the digitalization intention variance. This figure means that PE, EE, FC, ANX and ATT altogether account for 51.1% of the variance in SMEs' intention to adopt digitalization (INT) among SMEs.

The effects of predictor variables to the endogenous constructs are presented in Table

5. At 5% significance level, only PE demonstrates a positive and significant effect towards ATT ( $\beta=0.711$ ,  $p<0.01$ ), thus accepting H1. The influence of EE on ATT ( $\beta=0.180$ ,  $p>0.05$ ) is positive, yet only significant at a 10% significance level. The effect of FC on ATT ( $\beta=0.079$ ,  $p>0.05$ ) is likewise found insignificant. Hence, we reject H2 and H3. ATT remains a robust predictor of INT ( $\beta=0.715$ ,  $p<0.01$ ) and holds a significant mediating role in the relationship between PE and INT ( $\beta=0.508$ ,  $p<0.01$ ), thereby accepting H4 and H5a. The result only partially supports the mediating role of ATT on EE→ATT→INT ( $\beta=0.129$ ,  $p<0.10$ ), at a 10% significance level. Meanwhile, its mediating role on the FC→ATT→INT relationship is insignificant ( $\beta=0.056$ ,  $p>0.05$ ), thus rejecting H5b and H5c. Lastly, the moderating effects of ANX on the relationships between PE $\diamond$ ATT ( $\beta=0.056$ ,  $p<0.05$ ), EE→ATT ( $\beta=0.-0.049$ ,  $p>0.05$ ) and FC→ATT ( $\beta=0.003$ ,  $p>0.05$ ) relations are not supported, thus rejecting H6a, H6b and H6c.

Table 5. A summary of the results of the structural model assessment

Hypotheses	Relationships	VIF	Beta values	SD	T-values	P-values	Remarks
<i>Direct Effect</i>							
H1	PE → ATT	1.883	0.711***	0.078	9.128	0.000	<b>Supported</b>
H2	EE → ATT	2.339	0.180*	0.059	1.890	0.059	Not Supported
H3	FC → ATT	1.581	0.079	0.076	1.031	0.303	Not Supported
H4	ATT → INT	1.000	0.715***	0.059	12.036	0.000	<b>Supported</b>
<i>Mediation Effect</i>							
H5a	PE → ATT → INT		0.508***	0.078	6.514	0.000	<b>Supported</b>
H5b	EE → ATT → INT		0.129*	0.066	1.944	0.052	Not Supported
H5c	FC → ATT → INT		0.056	0.055	1.023	0.306	Not Supported
<i>Moderating Effects</i>							
H6a	ANX* PE → ATT	2.122	0.056	0.061	0.917	0.359	Not Supported
H6b	ANX* EE → ATT	3.559	-0.049	0.095	0.517	0.605	Not Supported
H6c	ANX* FC → ATT	2.025	0.003	0.089	0.032	0.974	Not Supported
					<b>R<sup>2</sup></b>	<b>R<sup>2</sup> Adjusted</b>	
					ATT	0.757	0.737
					INT	0.511	0.505

Notes: \*\*\* significant at 0.01; \*\* significant at 0.05; \*significant at 0.10

## 5. GENERAL DISCUSSIONS

This investigation advances knowledge on the mechanism linking anxiety and attitude to digitalization adoption by validating the UTAUT model in the SME context. The inclusion of a negative behavioural belief, such as anxiety, expands the literature related with emotion factors, thus affecting SMEs' IT adoption. Further, this model induced new relationships between anxiety and UTAUT predictors such as PE, EE and FC. This work is relevant to the extent that previous literature on IT adoption by organizations has tended to focus on organizational components, without considering owner-managers' beliefs such as those tested empirically here. The primary objective of this study was to examine the role of anxiety in moderating the influence PE, EE and FC on attitude.

### 5.1. Theoretical Contributions

The proposed and tested theoretical model makes the following important contributions to research in digitalization of SMEs and, by extension, the literature on technology adoption and resistance.

First, among all the negative emotions that could be involved in the proposed model, the construct anxiety has been particularly shown to have a solid relationship with attitude (Meuter et al., 2003; Yang & Forney, 2013). In fact, many academics, including Venkatesh et al. (2003), have stated the significance of anxiety in influencing an organization's response to new technologies. Nevertheless, as Table 4 shows, the anxiety component failed to be significant as a moderator on the impact of attitude on digitalization adoption. This result is surprising because numerous studies

(Beckers et al., 2007; Parayitam et al., 2010; Gelbrich & Sattler, 2014; Salimon et al. 2021) have repeatedly found that anxiety can be a dominant factor for the adoption of new technology in the organizational context. Consequently, this finding supports prior research that highlights that the anxiety impact on IT adoption is not as straightforward as it seems (Rosen et al., 1987). In fact, the results are consistent with Saadé and Kira (2007) to the extent that anxiety does not play a determinant role in moderating the digitalization intentions of SMEs – therefore H6 is not supported. Furthermore, the negative influence of anxiety in organization PEs, stated by Celik (2016), and the significance of technology anxiety in predicting behavioural intention, theorized by Gunasinghe and Nanayakkara (2021), were not proved in this research.

Not surprisingly, PE (H1) emerged as the most significant predictor of attitude towards intention to adapt a digital system among SMEs, consistent with prior studies (Ibrahim et al., 2018; Jeon et al., 2006; Lutfi, 2022; Mensah et al., 2021; Skoumpopoulou et al., 2018). Accordingly, if SME owners contemplate a potential utility and applicability of a new technology in their business, they will be likely to implement it. This means that SME owner-managers assess perceived cost versus benefits (e.g., time-saving) of using IT; thus, higher the perceived benefits, greater the positive attitude towards adopting digitalization (Dwivedi et al., 2017). Furthermore, this finding revealed the importance of the CEO's attitude towards technology adoption (Abdullah et al. 2013; Lorente-Martínez et al., 2020). Indeed, a positive attitude increases the chance of trying innovative systems, particularly in SMEs, to the extent that in these organizations, the CEO or the

manager is the main decision-maker (Duan et al., 2012). Consequently, this causal relationship has been studied, and the results indicate that managers' perceptions and attitudes towards a digital system are strongly associated with its performance expectancy, which is a key parameter for SMEs due to their reduced margins (Chuang, 2007). The role of the attitude construct as a mediator of the digitalization adoption among SMEs was significant, and H4 is, thus, accepted.

In contrast with prior studies (Lutfi, 2022; Perdana et al., 2022), EE was not proved to have a solid impact on SMEs' digital adoption intentions. In the UTAUT model, a technology that is perceived to be easier to use is more likely to encourage a perception of usefulness and, thus, stimulate the intention to use it. However, the proposed model did not support H2 at a 5% significance level. In fact, the expected effect of EE during the early stages of digital adoption (Venkatesh & Davis, 2000) was not evidenced. Furthermore, one argument against the Davis (1989) and Grandon and Pearson (2004) theorization is the found lack of relationship between EE and manager's attitude. In fact, organizations will have a positive attitude towards digitalization adoption, being aware of the performance improvement it may generate and not considering the effort they may require to develop a task using the given system. Evidence from previous empirical research also proved that if the performance expectancy of a technology is outweighed by EE, it is less likely that an organization will adopt the new technology (Najib & Farah, 2020). The results obtained revealed that for SME owner-managers, the degree of ease when using a technologic system is not a significant barrier to adoption.

In addition, being consistent with related empirical studies, FC does not provide any direct 'push' for SMEs to adopt digitalization (Soong et al., 2020). Contrary to our hypothesis and previous literature (Alhaimer, 2019), FC did not significantly affect SME managers' decision to adopt digital technologies, thus rejecting H3. This corroborates the studies of Iskandar et al. (2020) and Hoi (2020) asserting the insignificant effect of FC on the adoption of digital technologies. One plausible explanation suggests that SME owner-managers may consider the availability of resources, technology infrastructure, technical support, and organizational support as integral drivers of digitalization (Lu et al., 2008), yet these remain limited in the study context. Consequently, confidence in making digitalization decisions remains delicate among SMEs. As facilitating conditions (infrastructure support) for adopting novel technologies remain an issue, digital adoption decisions can only be predicted by the advantages that adopted technologies can offer especially in driving business performance.

## 5.2. Managerial Contributions

Several managerial implications can be derived from this research. First, performance expectancy remains a key element affecting attitude towards digitalization adoption by SMEs. Second, the role of CEOs and their attitude towards digitalization is crucial in the decision-making process. Moreover, the effect of anxiety does not appear to be relevant in the attitude towards digitalization adoption. Undoubtedly, SMEs are conscient of the need to adapt to the current market conditions, and to be competitive, it is

imperative to adopt new technologies to achieve higher performance. This study helps SMEs improve the right factors for increasing the intention to adopt digitalization.

It is suggested that governmental agencies and IT consultants need to promote owners and managers' attitudes by improving their awareness towards digitalization adoption (e.g., by offering training). Through the understanding of these organizational components within the theoretical framework, the SMEs are in a better position to design relevant strategies and policies that incentivize SMEs' digitalization and fuel their growth and sustainability in an Industry 4.0-driven market environment.

### **5.3. Limitations and Future Research Directions**

Notwithstanding this study's contributions, applying the UTAUT model to test technology adoption by SMEs may not capture the effect of external factors that influence managers' attitudes towards the intention to adopt digitalization (Damanpour & Schneider, 2006). Clearly, the role of anxiety on digitalization adoption among SMEs will be better understood when this methodology is replicated in a wide range of situations and contexts. Hence, future research can further expand this study by conducting similar studies among SMEs in different European countries or even in non-developed countries, in order to examine how the anxiety and attitude constructs affect intention to adopt digitalization. Lastly, considering the fact that our study was situated in the behavioural research context, it was basically self-reported in nature, using the quantitative approach. We anticipate that the study may have overlooked important

scenarios which can only be established using a qualitative inquiry or mixed methods approach.

### **5.4. Conclusions**

This study was conducted to understand the drivers and barriers aligned with the tendency of owner-managers of SMEs to adopt digitalization. The study extended the UTAUT model by including an anxiety-digitalized working environment as a moderating factor of attitude and the intent to adopt digitalization, using SMEs in the Czech Republic as the study sample. Through online data collection, 89 responses were attained; they provided empirical evidence in this regard. Results show that attitude positively mediates the relationship between PE intention to adopt digitalization. However, EE and FC effects on attitude and intention to adopt digitalization were found to be insignificant. On the contrary, the results obtained did not confirm the significance of anxiety-digitalized environment in moderation analyses. Consequently, the overall structural model accounted for 51.1% of the variance in the intention to adopt digitalization among SMEs. This study has theoretically and practically contributed to understanding of owner-managers' intent to adopt digitalization in SMEs in the Czech Republic.

### **Acknowledgement**

This work was supported and funded by research project number and title: MVF – SG- 22110036- Visegrad project geared towards understanding possibilities and barriers for industry 4.0 implementation in SMEs, and Internal Grant Agency of Tomas

Bata University-Czech Republic – FSR FORD 5-6 /2021-23/FaME/003, also by Internal Grant Agency of Tomas Bata University under the project no. I G A / F a M E / 2 0 2 0 / 0 0 7 ; IGA/FaME/2021/003. The authors further acknowledge that they have series of articles (in press) on the subject.

## References

- Abdullah, N. H., Wahab, E., & Shamsuddin, A. (2013). Exploring the common technology adoption enablers among Malaysian SMEs: Qualitative findings. *Journal of Management and Sustainability*, 3 (4), 78-91.
- Abu, F., Jabar, J., & Yunus, A. R. (2015). Modified of UTAUT theory in adoption of technology for Malaysia small medium enterprises (SMEs) in food industry. *Australian Journal of Basic and Applied Sciences*, 9 (4), 104–109.
- Achar, C., So, J., Agrawal, N., & Duhachek, A. (2016). What we feel and why we buy: The influence of emotions on consumer decision-making. *Current Opinion in Psychology*, 10, 166-170.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Alhaimer, R. (2019). Factors affecting SMEs owners to use social media for online advertisement in Kuwait. *International Journal of Entrepreneurship*, 23 (2), 1-9.
- Andersen, T. C. K., Aagaard, A., & Magnusson, M. (2022). Exploring business model innovation in SMEs in a digital context: Organizing search behaviours, experimentation and decision-making. *Creativity and Innovation Management*, 31 (1), 19-34.
- Awa, H. O., Baridam, D. M., & Nwibere, B. M. (2015a). Demographic determinants of electronic commerce (EC) adoption by SMEs: A twist by location factors. *Journal of Enterprise Information Management*, 28 (3), 326-345.
- Awa, H. O., Ojiabo, O. U., & Emecheta, B. C. (2015b). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science & Technology Policy Management*, 6 (1), 76-94.
- Bailey, A. A., Pentina, I., Mishra, A. S., & Ben Mimoun, M. S. (2017). Mobile payments adoption by US consumers: an extended TAM. *International Journal of Retail and Distribution Management*, 45 (6), 626–640.
- Baudier, P., Kondrateva, G., & Ammi, C. (2020). The future of Telemedicine Cabin? The case of the French students' acceptability. *Futures*, 122, 102595.
- Beckers, J. J., Wicherts, J. M., & Schmidt, H. G. (2007). Computer anxiety: "Trait" or "state"? *Computers in Human Behavior*, 23 (6), 2851–2862.
- Bollweg, L., Lackes, R., Siepermann, M., & Weber, P. (2020). Drivers and barriers of the digitalization of local owner operated retail outlets. *Journal of Small Business and Entrepreneurship*, 32 (2), 173–201.
- Brundin, E., & Gustafsson, V. (2013). Entrepreneurs' decision making under different levels of uncertainty: The role of emotions. *International Journal of Entrepreneurial Behaviour & Research*, 19 (6), 568–591.
- Celik, H. (2016). Customer online shopping anxiety within the Unified Theory of Acceptance and Use Technology (UTAUT) framework. *Asia Pacific Journal of Marketing and Logistics*, 28 (1), 278-307.



## ПРОШИРИВАЊЕ УТАУТ МОДЕЛА КАКО БИ СЕ РАЗУМЕЛЕ ПРЕПРЕКЕ ДИГИТАЛИЗАЦИЈИ МСП

Michael Adu Kwarteng, Diego Fernando Plata Lerma, Mark Ratilla,  
Petr Novak, Lukas Zlamal

### Извод

Дигитализација је идентификована као основни покретач раста малих и средњих предузећа (МСП) у овој дигиталној ери. Ова студија истражује покретаче и препреке у складу са тенденцијом власника-менаџера малих и средњих предузећа да прихвате дигитализацију. Развијен је концептуални оквир који проширује јединствену теорију прихватања и технологије (енг. Unified Theory of Acceptance and Use of Technology -UTAUT) са анксиозним дигитализованим окружењем као модерирајућим фактором намере власника-менаџера МСП да усвоје дигитализацију. Квантитативна методологија је коришћена за мерење одговора 89 испитаника (власника-менаџера). Додатно, приступ моделовања структурних једначина заснован на варијанси (ПЛС-СЕМ) се користи за анализу и валидацију предложеног модела. Резултати показују да став позитивно посредује у односу између очекиваног учинка и намере да се усвоји дигитализација. Међутим, утврђено је да очекивани напор и олакшавајући услови негативно утичу на став и намеру да се прихвати дигитализација. Напротив, добијени резултати нису потврдили значај анксиозног дигитализованог окружења у анализи модератора. Сходно томе, укупни структурни модел објашњава 51.1% варијансе намере прихватања дигитализације међу МСП. Ова студија је теоријски и практично допринела разумевању намере власника-менаџера да прихвате дигитализацију МСП у Чешкој Републици.

*Кључне речи:* анксиозност, став, Чешка, дигитализација, МСП, Јединствена теорија прихватања и употребе технологије

Chang, A. (2012). UTAUT and UTAUT 2: A Review and Agenda for Future Research. *The Winners*, 13 (2), 106-114.

Chuang, T., Nakatani, K., Chen, J., Huang, I. (2007). Examining the impact of organizational and owner's characteristics on the extent of e-commerce adoption in SMEs. *International Journal of Business and Systems Research*, 1 (1), 61-80.

Compeau, D. R.; Higgins, C. A. (1995). Computer self- efficacy: development of a measure and initial test. *MIS Quarterly*, 19 (1), 189-211.

Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment,

organization and top managers. *British Journal of Management*, 17, 215–236.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13 (1), 319–340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace<sup>1</sup>. *Journal of Applied Social Psychology*, 22 (14), 1111–1132.

De Lucas Ancillo, A., Gavrila Gavrila, S., del Castillo Díez, J. R., & Corro Beseler, J. (2021). LATAM and Spanish SME barriers to Industry 4.0. *Academia Revista Latinoamericana de Administración*, 35 (2),

204-222.

Duan, X., Deng, H., & Corbitt, B. (2012). Evaluating the critical determinants for adopting e-market in Australian small-and-medium sized enterprises. *Management Research Review*, 35 (3/4), 289-308.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2017). Reexamining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers*, 21 (1), 719–734.

Eller, R., Alford, P., Kallmünzer, A., & Peters, M. (2020). Antecedents, consequences, and challenges of small and medium-sized enterprise digitalization. *Journal of Business Research*, 112(1), 119–127.

El-Masri, M. & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*, 65 (1), 743-763.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G\* Power 3.1: Tests for correlation and regression analyses. *Behaviour research methods*, 41 (4), 1149-1160.

Featherman, M., Jia, S. Califf, C. B., & Hajli, N. (2021). The impact of new technologies on consumers beliefs: Reducing the perceived risks of electric vehicle adoption. *Technological Forecasting and Social Change*, 169, 120847.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing*, 18 (1), 39-50.

Francioni, B., Musso, F., & Cioppi, M.

(2015). Decision-maker characteristics and international decisions for SMEs. *Management Decision*, 53 (10), 2226–2249.

Gelbrich, K., & Sattler, B. (2014). Anxiety, crowding, and time pressure in public self-service technology acceptance. *Journal of Services Marketing*, 28 (1), 82-94.

Grandon, E., & Pearson, M. (2004). Electronic Commerce Adoption: An Empirical Study of Small and Medium US Businesses. *Information & Management*, 42 (1), 197–216.

Gunasinghe, A., & Nanayakkara, S. (2021). Role of technology anxiety within UTAUT in understanding non-user adoption intentions to virtual learning environments: the state university lecturers' perspective. *International Journal of Technology Enhanced Learning*, 13 (3), 284–308.

Guo, H., Yang, Z., Huang, R., & Guo, A. (2020). The digitalization and public crisis responses of small and medium enterprises: Implications from a COVID-19 survey. *Frontiers of Business Research in China*, 14(1), 19.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM)*. Second Edition. California: Sage Publications.

Haryanti, T., & Subriadi, A. P. (2020). Factors and theories for E-commerce adoption: A literature review. In *International Journal of Electronic Commerce Studies*, 11 (2), 87-106.

Hoi, V. N. (2020). Understanding higher education learners' acceptance and use of mobile devices for language learning: A Rasch-based path modelling approach. *Computers and Education*, 146, 103761.

Hoque, R., & Sorwar, G. (2017). Understanding factors influencing the adoption of mHealth by the elderly: An

- extension of the UTAUT model. *International Journal of Medical Informatics*, 101 (1), 75–84.
- Hourahine, B., & Howard, M. (2004). Money on the Move: Opportunities for Financial Service Providers in the 'Third Space'. *Journal of Financial Services Marketing*, 9 (1), 57-67.
- Ibrahim, A. M., Hassan, M. S., & Gusau, A. L. (2018). Factors influencing acceptance and use of ICT innovations by agribusinesses. *Journal of Global Information Management*, 26 (4), 113–134.
- Iskandar, Y. H. P., Subramaniam, G., Majid, M. I. A., Ariff, A. M., & Rao, G. K. L. (2020). Predicting healthcare professionals' intention to use poison information system in a Malaysian public hospital. *Health Information Science and Systems*, 8 (1), 1–15.
- Jeon, B. N., Han, K. S., & Lee, M. J. (2006). Determining factors for the adoption of e-business: the case of SMEs in Korea. *Applied Economics*, 38 (16), 1905–1916.
- Kääriäinen, J., Kuusisto, O., Pussinen, P., Saarela, M., Saari, L., & Hänninen, K. (2020). Applying the positioning phase of the digital transformation model in practice for SMEs: Toward systematic development of digitalization. *International Journal of Information Systems and Project Management*, 8 (4), 24–43.
- Kilimis, P., Zou, W., Lehmann, M., & Berger, U. (2019). A Survey on Digitalization for SMEs in Brandenburg, Germany. *IFAC-PapersOnLine*, 52 (13), 2140–2145.
- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*, 86, 104330.
- Lee, C. (2010). The impact of technology anxiety on the use of mobile financial applications. *International Journal of Technology Diffusion*, 1 (4), 1–12.
- Li, L., Su, F., Zhang, W., & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. *Information Systems Journal*, 28 (6), 1129–1157.
- Liu, Y., & Huang, Y.-M. (2015). Using the UTAUT model to examine the acceptance behavior of synchronous collaboration to support peer translation. *The JALT CALL Journal*, 11 (1), 77–91.
- Lorente-Martínez, J., Navío-Marco, J., & Rodrigo-Moya, B. (2020). Analysis of the adoption of customer facing In Store technologies in retail SMEs. *Journal of Retailing and Consumer Services*, 57, 102-225.
- Lu, J., Liu, C., Yu, C. S., & Wang, K. (2008). Determinants of accepting wireless mobile data services in China. *Information and Management*, 45 (1), 52–64.
- Lutfi, A. (2022). Factors Influencing the Continuance Intention to Use Accounting Information System in Jordanian SMEs from the Perspectives of UTAUT: Top Management Support and Self-Efficacy as Predictor Factors. *Economies*, 10 (4), 75.
- Madanchian, M., Hussein, N., Noordin, F., & Taherdoost, H. (2018). The impact of ethical leadership on leadership effectiveness among SMEs in Malaysia. *Procedia Manufacturing*, 22 (1), 968–974.
- Marciniak, T., Novak, J., Pastusiak, B., & Purta, M. (2020). Digital Challengers in the next normal in Central and Eastern Europe. McKinsey & Company Web Site. Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-challengers-in-the-next-normal-in-central-and-eastern-europe>
- Mensah, I. K., Wang, R., Gui, L., &

- Wang, J. (2021). Exploring the Elements Influencing the Behavioural Adoption of E-Commerce by Chinese Small and Medium Enterprises (SMEs). *Information Development*, in press.
- Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal of Business Research*, 56 (11), 899–906.
- Moore, G. C. & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2 (3), 192–222.
- Najib, M. F., & Farah. (2020). Investigating the Adoption of Digital Payment System through an Extended Technology Acceptance Model: An Insight from the Indonesian Small and Medium Enterprises. *International Journal on Advanced Science, Engineering and Information Technology*, 10 (4), 1702-1708.
- Nysveen, H., & Pedersen, P. E. (2016). Consumer adoption of RFID-enabled services. Applying an extended UTAUT model. *Information Systems Frontiers*, 18 (2), 293–314.
- OECD. (2021). *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris.
- Parayitam, S., Desai, K. J., Desai, M. S., & Eason, M. K. (2010). Computer attitude as a moderator in the relationship between computer anxiety, satisfaction, and stress. *Computers in Human Behaviour*, 26 (3), 345–352.
- Perdana, A., Lee, H. H., Arisandi, D., & Koh, S. K. (2022). Accelerating data analytics adoption in small and mid-size enterprises: A Singapore context. *Technology in Society*, 69, 101966.
- Plouffe, C. R., Vandenbosch, M., & Hulland, J. (2001). Intermediating technologies and multi-group adoption: A comparison of consumer and merchant adoption intentions toward a new electronic payment system. *Journal of Product Innovation Management*, 18 (1), 65–81.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88 (5), 879-903.
- Rana, N. P., & Dwivedi, Y. K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly*, 32 (2), 172-181.
- Rogers, E. (2003). *Diffusion of Innovations*. Fifth edition. Free Press: New York.
- Rosen, L. D., Sears, D. C., & Weil, M. M. (1987). Computerphobia. *Behaviour Research Methods, Instruments, & Computers*, 19 (2), 167–179.
- Saadé, R. G., & Kira, D. (2007). Mediating the impact of technology usage on perceived ease of use by anxiety. *Computers and Education*, 49 (4), 1189–1204.
- Salimon, M. G., Kareem, O., Mokhtar, S. S. M., Aliyu, O. A., Bamgbade, J. A., & Adeleke, A. Q. (2021). Malaysian SMEs m-commerce adoption: TAM 3, UTAUT 2 and TOE approach. *Journal of Science and Technology Policy Management*, in press.
- Scupola, A. (2009). SMEs' e-commerce adoption: Perspectives from Denmark and Australia. *Journal of Enterprise Information Management*, 22 (1/2), 152-166.
- Sheeshka, J. D., Woolcott, D. M., & MacKinnon, N. J. (1993). Social cognitive theory as a framework to explain intentions

- to practice healthy eating behaviours 1. *Journal of Applied Social Psychology*, 23 (19), 1547-1573.
- Shkeer, A. S., & Awang, Z. (2019). Exploring the Items for Measuring the Marketing Information System Construct: an Exploratory Factor Analysis. *International Review of Management and Marketing*, 9 (6), 87-97.
- Skoumpopoulou, D., Wong, A. K., Ng, P. M., & Lo, M. F. (2018). Factors that affect the acceptance of new technologies in the workplace: a cross case analysis between UK and Hong Kong. *International Journal of Education and Development using Information and Communication Technology*, 14 (3), 209-222.
- Soong, K., Musa, E., & Sin, K. (2020). Factors influencing Malaysian small and medium enterprises adoption of electronic government procurement. *Journal of Public Procurement*, 20 (1), 38-61.
- Szymkowiak, A., Gaczek, P., Jeganathan, K., & Kulawik, P. (2021). The impact of emotions on shopping behaviour during epidemic. What a business can do to protect customers. *Journal of Consumer Behaviour*, 20 (1), 48- 60.
- Talukder, Md. S., Chiong, R., Corbitt, B., & Bao, Y. (2020). Critical Factors Influencing the Intention to Adopt m-Government Services by the Elderly. *Journal of Global Information Management*, 28 (4), 74-94.
- Teo, T., & Noyes, J. (2014). Explaining the intention to use technology among pre-service teachers: a multi-group analysis of the Unified Theory of Acceptance and Use of Technology. *Interactive Learning Environments*, 22 (1), 51-66.
- The World Bank. (2021). Small and Medium Enterprises (SMEs) Finance. The World Bank. Retrieved from <https://www.worldbank.org/en/topic/sme/finance>
- Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly*, 15 (1), 125-143.
- Tsai, J. M., Cheng, M. J., Tsai, H. H., Hung, S. W., & Chen, Y. L. (2019). Acceptance and resistance of telehealth: The perspective of dual-factor concepts in technology adoption. *International Journal of Information Management*, 49 (1), 34-44.
- van Raaij, E. M., & Schepers, J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers and Education*, 50 (3), 838-852.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46 (2), 186-204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly: Management Information Systems*, 27 (3), 425-478.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, 17 (5). 328-376.
- Verkijika, S. F. (2020). An affective response model for understanding the acceptance of mobile payment systems. *Electronic Commerce Research and Applications*, 39 (1), 100905.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28 (2), 118-144.
- Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). The unified theory of acceptance and use of technology (UTAUT):

A literature review. In Journal of Enterprise Information Management, 28 (3), 443-488.

Wu, L. H., Wu, L. C., & Chang, S. C. (2016). Exploring consumers' intention to accept smartwatch. Computers in Human Behaviour, 64 (1), 383-392.

Yang, K., & Forney, J. C. (2013). The moderating role of consumer technology anxiety in mobile shopping adoption: differential effects of facilitating conditions and social influences. Journal of Electronic Commerce Research, 14 (4), 334-347.

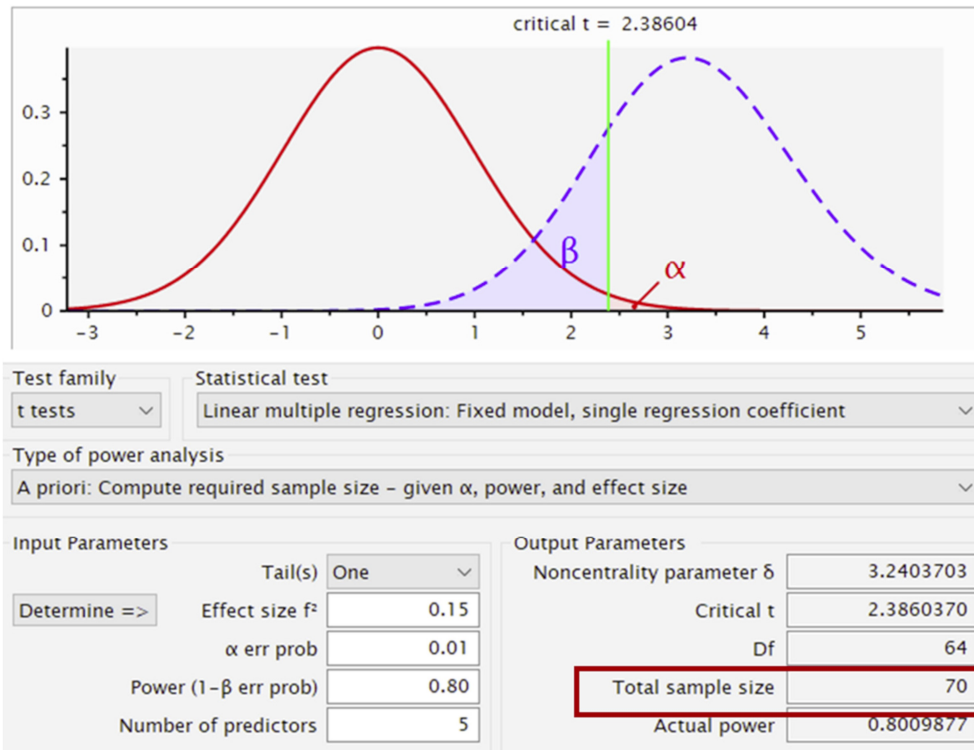
Yang, Q., & Lee, Y. C. (2019). An investigation of enablers and inhibitors of crowdfunding adoption: Empirical evidence

from startups in China. Human Factors and Ergonomics in Manufacturing, 29 (1), 5–21.

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. Computers in Human Behaviour, 26 (4), 760-767.

**Appendix 1.**

Results of the G\*power sample size determination



Notes: (medium effect size = 0.15,  $\alpha$  = 0.01, Power = 0.80, number of predictor variables = 5)