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Article

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Malaysian SMEs Performance and the use of E-Commerce: A Multi-Group Analysis of Click-and-Mortar and Pure-Play E-Retailers

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Abstract

This research focuses on SMEs' adoption of e-commerce and its impact to their performance in *click-and-mortar* and *pure-play* e-retailers in Malaysia. This research framework had been developed based on Resource-Based View (RBV) and Unified Theory of Acceptance & Use of Technology (UTAUT). At the same time, the combined framework contributes the new approach of studying the performance of the post adoption and factors adopting a technology. The quantitative research data were collected from 225 Malaysian SMEs operators who had adopted e-commerce. This research uses census sampling technique to collect the data from the respondents. Then, the data were used to investigate its measurement model and structural model via the analysis from SPSS 20 and SmartPLS 3.0. Both categories of adopters had the different opinion about the effort expectancy in encouraging the use of e-commerce that produces performance. Before conducting the further analysis in the group comparison via multi-group analysis (MGA), a three-step procedure, the measurement invariance of composite models (MICOM) was conducted. The result showed that among these two categories of businesses had a very different view about the effort expectancy in adopting the e-commerce. Thus, the result may provide the insight to previous researchers who had not segregated the adopters into *click-and-mortar* and *pure-play* e-commerce adopters. The research is particularly useful for practitioners by segregating the different marketing strategy for the respective groups of the e-commerce adopters.

Keywords: Click-and-mortar, pure-play, use of e-commerce, SME performance, RBV, UTAUT, perceived risk, performance expectation, effort expectation, Malaysia.

1. Introduction

In the pandemic, COVID-2019 has changed the purchasing habits all around the world within a month. The effects of coronavirus across the globe are uncontrolled and unstoppable (Cohen & Kupferschmidt, 2020). Even in the pandemic COVID-2019 duration, related to the E-commerce industry is still growing. Even some SME's are getting, the more order as compared to the before pandemic COVID-2019. Even the most of the countries on lockdown, shopped closed worldwide education universities lockdown, airline industry more than 90% stopped operation, and major tech companies calling off events and instructing employees to work from home (Harvard Law Today, 2020). Malaysian SMEs are gradually moving towards digital transformation in line with the vision to improve SME performance through e-commerce. In this regard, SME performance can be improved by introducing the electronic operation system. In realizing this digital transformation, the Malaysian Government has demonstrated a great effort in preparing the digital environment to guide the SMEs to prepare them for the transformation. Unfortunately, such digitalization efforts have seemed to be unfruitful. Malaysian SMEs still lack the full digital capability to use matured e-commerce resources to improve their SME performance. Furthermore, the low e-commerce adoption rate has slowed the digitalization rate to improve the performance-oriented business environment. Hence, the present research has investigated the factors which influence the use of e-commerce by SMEs to improve their business performance.

Despite the massive investment on the development infrastructures to improve electronic business accessibility, e-commerce has been seriously underused by business owners despite most of them aware about the availability and improvement of the technology. Thus, there is a desperate need to investigate the determinants for the use of e-commerce by SMEs. Even though there are several studies conducted to address the low adoption rate of e-commerce among Malaysian SME owners, yet, there is still limited study that differentiates e-commerce use by *Click-and-mortar* and *pure-player* business owners. Thus, this research attempts to compare these categories of adopters to answer the key questions regarding the major factors that contribute to the low usage of e-commerce to improve Malaysian SME performance.

This study is developed to compare the traits of both adopters through the adoption-performance model. The purpose of this research is to examine the relationships between factors (performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk) and use of e-commerce; and second is to investigate the relationships between use of e-commerce and Malaysian SME performance. To fulfill these objectives, UTAUT and RBV were employed as both theories are known as the most comprehensive theories on firm performance and ICT adoption, respectively.

Previously, researchers have either used the UTAUT or the RBV to study the impact of technology on their performance. There is no integration of these two theories into a single framework. In this way, this study introduces the adoption-performance model to confirm that a technological adoption works well to improve performance. The adoption-performance model is an integration of UTAUT and RBV to measure the performance after the adoption of a technology. In this light, when a technology involves monetary transaction, SME business owners will see some perceived risks particularly economic risk, security risk and functional risk to utilize an e-commerce. However, there is a lack of previous researches which have introduced perceived risk into the scope of this research. Hence, to fill up this gap, modification and extension of the UTAUT model are necessary to integrate it with RBV to form the adoption-performance model. This model is hoped to provide more guidance to industry players and policy-makers to promote e-commerce usage in Malaysia. By introducing a new factor, perceived risk is expected to deliver a more effective guidance to understand the factors affecting e-commerce usage as proposed in this research. E-commerce metamorphoses the way of people doing businesses; Traditional face-to-face businesses performed within a premise are called as *brick-and-mortar (BaM)* while businesses with offline and online commerce are referred to as *click-and-mortar (CaM)* companies. *Click-and-mortar* companies typically grow by adding of electronics businesses on top of their traditional businesses.

Businesses that only do business transactions via the internet are called *pure-play (PP)* business. The key characteristic of a *pure-player* business that the business is run entirely via the internet, and there is no physical retail shop. *Pure-players* can be further divided into two categories, affiliate players and free players. Affiliate players can be an affiliate partner that dropships products and service from *click-and-mortar* companies and/or *brick-and-mortar* companies. By doing an act of "referring" customers to other companies, affiliate players earn a commission as a referrer fee via the affiliate programs offered by the suppliers. Affiliate program offers one-stop drop shipping services and customer handling services if a dispute occurs. Moreover, free players are not tied to the affiliate program's tier ranking commission based on their sales volume. By setting up the selling price with a more favorable profit margin than affiliate program, free players earns a better revenue, however, at the same time, they also bear higher liability and responsibility to their customer.

Even though there are several studies have been conducted in Malaysia to address the issue on the low rate of e-commerce adoption through surveys involving SME owners, yet, there is still limited study by differentiating the e-commerce accordingly to their way of doing business: *click-and-mortar* and *pure-player*. The research starts with the

question of "are click-and-mortar and pure-player having the same characteristic of adopting the e-commerce?". As there is a distinctly different business operation between *click-and-mortar* companies and *pure-player*, it is critical to put e-commerce adopters into groups which previously ignored by past researches (Azam & Quaddus, 2009; Azeem *et al.*, 2015; Macchion et al., 2017; Ndayizigamiye, 2013; Ramanathan *et al.*, 2012; Yang *et al.*, 2015; Zhu & Kraemer, 2002). Hence, the respondents from *click-and-mortar* and *pure-play* businesses were studied in this research to compare the trait and behavior of the respective of business owners in these categories. The result of the study provides the insight to the government and the e-commerce operator to promote the usage of the e-commerce for these two categories of the adopters.

2. Literature Review and Hypotheses Development

Limited literature about the comparison of click-and-mortar companies and pure-player is observed. Type of the companies was setting up to be the moderator of this research. As seen in Figure 1, the researcher believes that UE is driven by determinants which could influence SME performance while previous works have synthesized the hypotheses about the relationships inside the framework. The subsequent sections will discuss the hypotheses development and testing to validate these relationships.

2.1 Relationship between Performance Expectancy (PE) and Use of E-commerce (UE)

Most of past studies have discussed that performance expectation has a positive significant influence on the actual use behavior (UB) (Lee, 2009; Yang, 2010; Ahmad *et al.*, 2012; Cohen *et al.*, 2013; Ndayizigamiye, 2013; Maillet *et al.*, 2015; Ahmed *et al.*, 2017). For this study, SME operators expect that the use of e-commerce will improve their business efficiency. In this light, e-commerce is deemed as a useful tool to increase sales, increase the convenience of doing business and enable SME operators to accomplish business more quickly as less time is needed for business transactions. Thus, the construct of performance expectation has been conceptualized as a degree of SME operator believing in how e-commerce would improve their performance. For this purpose, hypothesis 1 has been developed as below:

- **H_1:** Performance expectancy has an influence on the use of e-commerce.

2.2 Relationship between Effort Expectancy (EE) and Use of E-commerce (UE)

In the past literature have showed the effort expectancy has a positive significant impact on the actual use behavior (UB) (Lee, 2009; Ahmad et al., 2012; Cohen et al., 2013; Ndayizigamiye, 2013; Chiu & Ku, 2015; Ahmed et al., 2017). In this study, SME operators expect that learning and using e-commerce would ease their business transaction. Moreover, e-commerce is deemed as a simple and understandable tool that is

easier to use and learn, requires less transaction time and simple in nature. Thus, the construct of effort expectancy has been conceptualized as a degree of SME operator based on the experience that e-commerce is easy to be learned and easy to be used. For this purpose, hypothesis 2 was developed:

- **H_2:** Effort expectancy has an influence on the use of e-commerce.

2.3 Relationship between Social Influence (SI) and Use of E-commerce (UE)

Most of the past studies discuss that social influence has a positive impact on the actual use behavior (UB) (Ahmad et al., 2012; Maillet et al., 2015; Yueh et al., 2016; Ahmed et al., 2017). For this particular study, it is predicted that SME operators will use e-commerce if they are encouraged by people around, influenced by important people in the company or peers such as business partners or competitors, from learning about the learning experiences of others or when they perceive that firms using e-commerce have higher prestige. Thus, the variable of social influence has been conceptualized as how SME operators perceive their peers' expectation of their use of e-commerce. For this purpose, hypothesis 3 was developed:

- **H_3:** Social influence has an influence on the use of e-commerce.

2.4 Relationship between Facilitating Condition (FC) and Use of E-commerce (UE)

Based on previous studies, facilitating condition has a positive influence on the actual use behavior (UB) (William, 2009; Yang, 2010; Adam et al., 2011; Ahmad et al., 2012; Mursalin, 2012; Cohen et al., 2013; Indahwati & Afiah, 2014; Tai & Ku, 2013; Serben, 2014; Chiu & Ku, 2015; Yueh et al., 2016; Ahmed et al., 2017). SME operators will use e-commerce if their company has sufficient resources and capabilities, access to government resources, good support by web-store service provider, have guidance from marketplace operators and receive assistance from specialized instructors from the marketplace. Thus, the construct of facilitating condition has been conceptualized as how SME operators perceive which technical infrastructure and organizational facilities are offered to support the use of e-commerce. For this purpose, hypothesis four was developed as shown below:

- **H_4:** Facilitating condition has an influence on the use of e-commerce.

2.5 Relationship between Perceived Risk (PR) and Use of E-commerce (UE)

The findings of previous researches have reported that perceived risk has a negative influence on the actual user behavior (UB) (Dinev et al., 2006; Lee, 2009; Wessels & Drennan, 2010; Lai et al., 2014). In this study, SME operators will use e-commerce

which is perceived as a platform for safe trading, safe from hackers, has a mechanism to safeguard sensitive company, free from sales exposure, free from avoidable financial risk, and is a matured technology. Thus, the construct of perceived risk has been conceptualized as a degree of SME operator perceiving that an uncertainty and adverse consequences resulted from the utilization of e-commerce to operate their business activities. For this purpose, hypothesis 5, as shown below, has been formulated:

- **H_5:** Perceived risk has an influence on the use of e-commerce.

2.6 Relationship between Use of E-commerce (UE) and SME Performance (SP)

Previous studies have shown that use of e-commerce has a positive influence on the SME's business performance (Zhu & Kraemer, 2002 & 2005; Al-Dmour & Al-Surkhi, 2012; Azeem *et al.*, 2015; Mohammed, 2015; Popa & Soto Acosta, 2015; Gregory *et al.*, 2019; Macchion *et al.*, 2017; (Aremu, Shahzad, & Hassan, 2019). In this study, it was observed that firms that use of e-commerce demonstrate better business performance. SME performance is generally measured by looking at four perspectives its financial impact, its impact on learning and growth, its impact on internal business processes and its impact on customers. Thus, the construct of SME performance has been conceptualized as the degree of SME operator achieved their goals with economy, effectiveness and efficiency. For this purpose, hypothesis 6 below has been formulated:

- **H_6:** The use of e-commerce has an influence on SME performance.

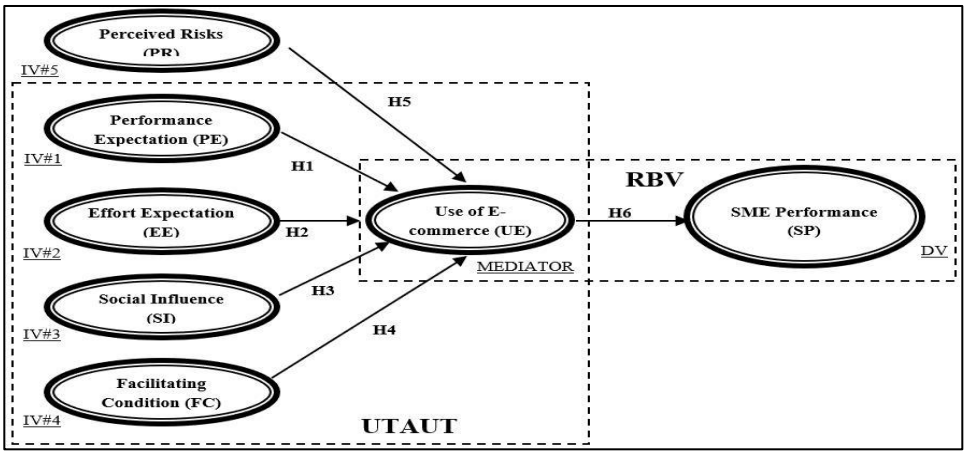


Figure 1: Technology Adoption-Performance Model

3. Research Methodology

3.1 Data Collection and Survey Instrument

This quantitative research employed a questionnaire survey to measure the performance expectancy (Venkatesh *et al.*, 2003), effort expectancy (Burnham *et al.*, 2003; Venkatesh *et al.*, 2003), social influence (Venkatesh *et al.*, 2003; Khare *et al.*, 2011; Tai & Ku, 2013), facilitating condition (Venkatesh *et al.*, 2003), perceived risk (Gürhan-Canli & Batra, 2004; Homburg *et al.*, 2010; Tai & Ku, 2013), use of e-commerce (Venkatesh *et al.*, 2003) and SME performance (Mohd Rosli *et al.*, 2012; Shamsuddin, 2014; Sheikh, Rana, Inam, Shahzad, & Awan, 2018). Then, the survey questions, or items were adapted from the previous researches to suit the scope of research in Malaysia. Furthermore, the items in the questionnaire used a seven-point Likert scale which was affixed by "strongly disagree" (1) to "strongly agree" (7). Moreover, the questions were designed to find the constructs that would determine the SME performance and use of e-commerce in Malaysia. In total, there are 1,595 companies have officially registered their business profiles on the Malaysian e-marketplaces. 2,448 questionnaires have been delivered to prospective respondents and the data collection took 143 days to complete. The questionnaire survey yielded 205 responses. Therefore, the response rate of the returned questionnaires is only 12.85 percent.

SEM is a flexible statistical procedure for testing hypotheses about the relationships between variables in a research model. Besides, Partial Least Square-Structural Equation Modeling (PLS-SEM) is a statistical procedure for studying multivariate relationships between latent variables and observed variables. Additionally, PLS-SEM deals with multiple dependent variables as well as multiple independent variables. Finally, PLS-SEM is robust to non-normality and small sample size while covariance based-SEM not (Sarstedt et al., 2011; Hair et al., 2017).

Another benefit of using the PLS-SEM is the simultaneously analyse the reflective and formative variables. It is essential to note that model configuration in either formative or reflective, is important because approach in testing reflective construct is different from approach used in testing formative construct (Hair et al., 2014; Lowry & Gaskin, 2014). In this light, all the indicators of latent variables were reflective. The analysis did not involve testing second-order. The construct of this study for the inner model were first order constructs. The current study consisted of five exogenous latent variables namely PE, EE, SI, FC and PR. The endogenous variable in this study was the dependent variable SP.

3.2 Data Analysis

SPSS was used to carry out the data cleaning and performing the simple descriptive statistics analysis while SmartPLS was used to have the further analysis on the measurement and structural analysis. The study of Reinartz *et al.* (2009) and Altaf & Shahzad, (2018) mentioned that "PLS is the preferable approach when researchers focus on prediction and theory development". In this light, assessment on the measurement model and structural model, specifically via SmartPLS 3.2.7.0 with bootstrap resampling (1,000 re-samples) were conducted. Moreover, MGA between the two groups (*click-and-mortar* and *pure-play*) was analyzed by using SmartPLS. In this moderation study, the obtained data were split into two data sets: *click-and-mortar* and *pure-play*. Additionally, Hair *et al.* (2017) suggested necessary criteria e.g. convergent validity, discriminant validity and measurement invariance had to be tested before the running the MGA.

4. Analysis and Findings

The questionnaires were distributed via email to e-commerce adopters. After data screening, there were 102 click-and-mortar (CnM) respondents and 103 pure-players (PP) respondents. Table 1 illustrates the respondents' demographic profile into two groups, click-and-mortar and pure-play. From the Table 1, 87.4 percent of the respondents from pure players were owners, 84.5 percent of pure players did not have the goods and service tax (GST) registration with Malaysian Custom and 93.2 percent of them had work force less than 5 persons. In contrasts, 57.8 percent of the respondents from click-and-

mortar were owners, 55.9 percent of click-and-mortar did not have the goods and service tax (GST) registration with Malaysian Custom and 67.6 percent of them had work force less than 5 persons. The demographic data indicated that both entity had a very different way of commencing the business. Besides, the statistics from SPSS for the two groups' comparison were tabulated in Table 2. Table 2 illustrated that the group mean and standard deviation for these two groups are not very different.

Table 1: Demographic Profile of Respondents

Demography	**Responses**		**Percentage**	
	***CnM* (N=102)**	***PP* (N=103)**	***CnM* (N=102)**	***PP* (N=103)**
Position				
Owner	59	90	57.8%	87.4%
Manager	43	13	42.2%	12.6%
Gender				
Male	67	72	65.7%	69.9%
Female	35	31	34.3%	30.1%
Age				
Min	21	21		
Max	62	55		
Mean	34.86	34.61		
Mode	30	37		
Year of selling Online				
Experience ≤ 1 year	6	9	5.9%	8.7%
1 year < Experience ≤ 3 years	35	42	34.3%	40.8%
3 years < Experience ≤ 5 years	37	35	36.3%	34.0%
Experience > 5 years	24	17	23.5%	16.5%
Valid SSM registration				
Yes	98	93	96.1%	90.3%
No	4	10	3.9%	9.7%
Physical store and/or shop				
Yes	102	0	100.0%	0.0%
No	0	103	0.0%	100.0%
Number of product listing				
Listings > 2500	4	4	3.9%	3.9%
1001 ≤ Listings ≤ 2500	16	8	15.7%	7.8%
501 ≤ Listings ≤ 1000	20	14	19.6%	13.6%
101 ≤ Listings ≤ 500	28	36	27.5%	35.0%

51 ≤ Listings ≤ 100	13	13	12.7%	12.6%
21 ≤ Listings ≤ 50	10	17	9.8%	16.5%
Listings ≤ 20	11	11	10.8%	10.7%
GST registered				
Yes	45	16	44.1%	15.5%
No	57	87	55.9%	84.5%
Sales per month				
Sales > RM10000	36	20	35.3%	19.4%
RM5001 ≤ Sales ≤ RM10000	23	17	22.5%	16.5%
RM1001 ≤ Sales ≤ RM5000	26	34	25.5%	33.0%
RM501 ≤Sales ≤ RM1000	11	19	10.8%	18.4%
Sales ≤ RM500	6	13	5.9%	12.6%
Number of worker				
Large: Workers > 75	0	0	0.0%	0.0%
Medium: 31< Workers < 75	6	3	5.9%	2.9%
Small: 6 < Workers < 30	27	4	26.5%	3.9%
Micro: Workers < 5	69	96	67.6%	93.2%
Accept dropshipper				
Yes	71	82	69.6%	79.6%
No	31	21	30.4%	20.4%

Table 2: Click-and-Mortar and Pure-Play Statistics

LV[1]	Group[2]	N=205	Mean	Std. Deviation
PE	CnM	102	6.0351	0.9089
	PP	103	6.1343	0.8314
EE	CnM	102	5.3922	0.9985
	PP	103	5.4434	0.9453
SI	CnM	102	5.4085	0.9723
	PP	103	5.5647	0.9423
FC	CnM	102	5.1879	0.8734
	PP	103	5.3317	0.9697
PR	CnM	102	3.7034	1.3234
	PP	103	3.5178	1.2494
UE	CnM	102	5.9812	0.8453
	PP	103	6.1780	0.8727
SP	CnM	102	5.2490	1.0078
	PP	103	5.3757	1.0555

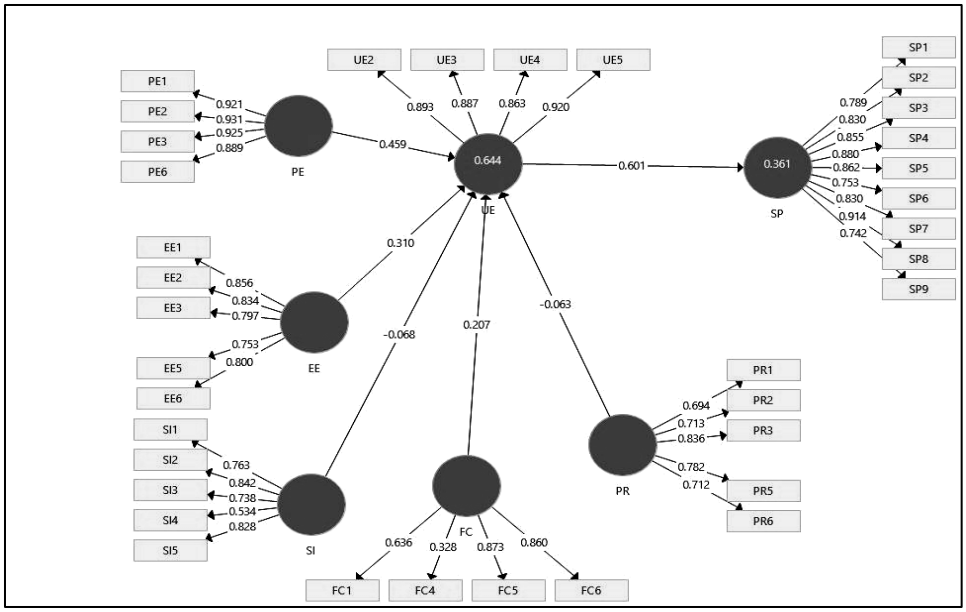
Note 1: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), perceived risk (PR), use of e-commerce (UE) and SME performance (SP) Note 2: CnM denotes *Click-and-Mortar*, PP denotes *Pure-Play*.

4. Results of the Study

The measurement model could be assessed by observing at the internal consistency reliability using composite reliability (CR), the convergent validity of a construct using average variance extracted (AVE) and the discriminant validity using Fornell-Larcker criterion (Fornell & Larcker, 1981). Result of the SmartPLS illustrated the loading, reliability and validity of the research as presented in Table 3. Moreover, the result can be observed that the measurement model's validity is satisfactory based on the criteria for each step; first the item's loading is over than 0.30 for the indicator reliability criteria (Hair et al., 2010). In the second step, the CR is not less than 0.70 for internal consistency criteria (Cheung & Wang, 2017; Hair et al., 2017) while in the third step, the construct's AVE value is greater than 0.50 for the convergent validity criteria (Hair et al., 2017). The result fulfills the factor loading, CR and AVE criteria and indicates the measurement

model is highly reliable. Table 4a and Table 4b showed that the model has high discriminant validity as none of the Heterotrait-Monotrait Ratio (HTMT) values is greater than 0.9 (Gold et al., 2001). These outcomes show that the measurement model in Figure 2 and Figure 3 have met the satisfactory in reliability and validity.

Figure 2: PLS Algorithm Click-and-Mortar



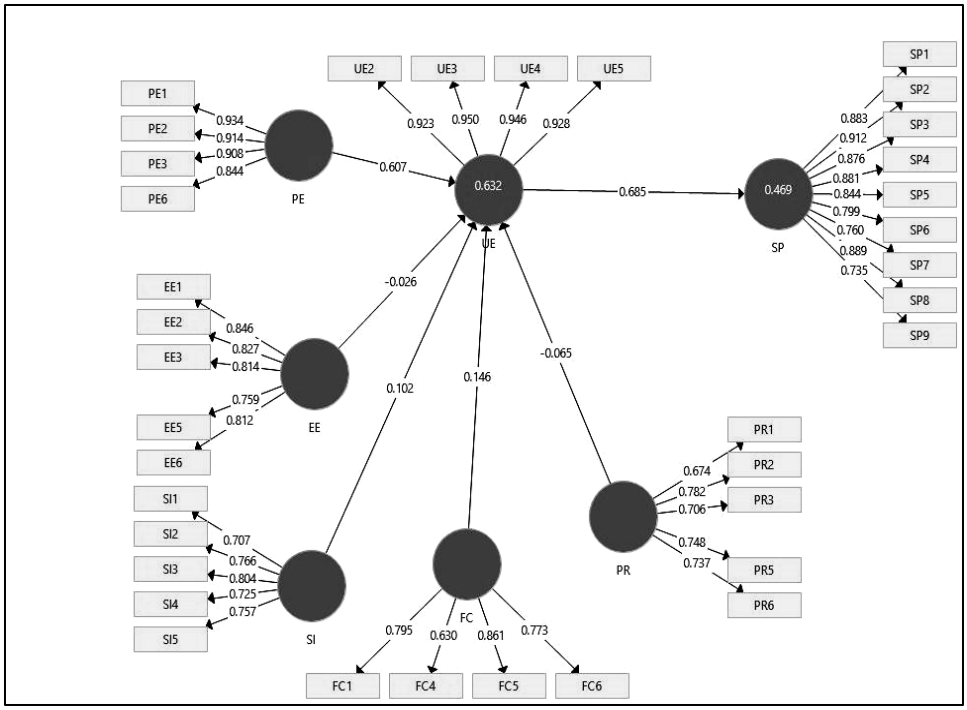


Figure 3: PLS Algorithm Pure Play

Table 3: Assessment Result for the Measurement Model

Construct / Associated Items	Loading		CR			AVE
Reflective	**CnM**	**PP**	**CnM**	**PP**	**CnM**	**PP**
Performance Expectancy						
PE1	0.921	0.934	0.955	0.945	0.840	0.811
PE2	0.931	0.914				
PE3	0.925	0.908				
PE6	0.889	0.844				
Effort Expectancy						
EE1	0.856	0.846	0.904	0.906	0.654	0.66
EE2	0.834	0.827				
EE3	0.797	0.814				
EE5	0.753	0.759				
EE6	0.800	0.812				
Social Influence						
SI1	0.763	0.707	0.862	0.867	0.561	0.566
SI2	0.842	0.766				
SI3	0.738	0.804				
SI4	0.534	0.725				
SI5	0.828	0.757				
Facility Conditions						
FC1	0.636	0.795	0.785	0.852	0.503	0.592
FC4	0.328	0.630				
FC5	0.873	0.861				
FC6	0.860	0.773				
Perceived Risk						
PR1	0.694	0.674	0.864	0.851	0.562	0.533
PR2	0.713	0.782				
PR3	0.836	0.706				
PR5	0.782	0.748				

PR6	0.712	0.737				
Use of E-Commerce						
UE2	0.893	0.923	0.939	0.966	0.793	0.878
UE3	0.887	0.950				
UE4	0.863	0.946				
UE5	0.920	0.928				
SME Performance						
SP1	0.789	0.883	0.952	0.957	0.689	0.713
SP2	0.830	0.912				
SP3	0.855	0.876				
SP4	0.880	0.881				
SP5	0.862	0.844				
SP6	0.753	0.799				
SP7	0.830	0.760				
SP8	0.914	0.889				
SP9	0.742	0.735				

Table 4a: Discriminant Validity HTMT/Click-and-Mortar

EE	**FC**	**PR**	**PE**	**SM**	**SI**	**UE**
EE	-					
FC	0.876					
PR	0.247	0.259				
PE	0.539	0.713	0.133			
SM	0.571	0.791	0.159	0.669		
SI	0.598	0.872	0.240	0.612	0.592	
UE	0.720	0.800	0.237	0.758	0.644	0.54 9

Table 4b: Discriminant Validity HTMT/Pure-Play

	EE	FC	PR	PE	SM	SI	UE
EE	-						
FC	0.734						
PR	0.256	0.212					
PE	0.637	0.791	0.294				
SM	0.610	0.607	0.247	0.660			
SI	0.734	0.390	0.240	0.745	0.712		
UE	0.527	0.723	0.290	0.829	0.711	0.668	-

The measurement invariance test was established to ensure across the groups understood the measurements. The test was conducted prior to accomplishing the MGA to assess the path coefficients between click-and-mortar and pure-player (Henseler et al., 2016; Hair et al., 2017). In this regard, common factor models are commonly used for determining measurement invariance in SEM. In this light, Henseler et al. (2016) suggested a three-step procedure for the measurement invariance of composites (MICOM) method which assessed measurement invariance via the following steps.

First step, the configural invariance assessment was established for the purpose of ensuring the same the data sets from the groups had the same basic factor structure, i.e. same construct number and same item's loading on each construct. Table 3, Table 4a and Table 4b indicated result of the configural invariance had the same algorithms for the group from click-and-mortar and pure-play. Hence, configural invariance was observed.

Second step, the establishment of compositional invariance assessment was conducted using a permutation tests to ensure the composite scores (compositional invariance correlation-1, C-1) were straddle between upper and lower bounds of 95 percent confident interval. Based on Table 5, it showed that all the value of C-1 fell within upper and lower bounds of 95 percent confident interval. Consequently, the partial measurement invariance of the click-and-mortar and pure-play group was established.

Third step, an assessment of equal means and variances across click-and-mortar and pure-play group was conducted to ensure the computed "difference of the composite's mean value" and "difference of the composite's variance ratio" were straddle between upper and lower bounds of 95 percent confident interval. Table 5 indicated that the result of equal means and variances ratio assessment across the groups met the criteria of their

value fell within the upper and lower bounds of 95 percent confident interval. Hence, the third step result supported no significant difference for composite mean value and variance ratio. MICOM had assessed the measurement invariance and now it is ready to start the MGA's group-specific differences of PLS-SEM results.

Table 5: Measurement Invariance Assessment (MICOM) Test between Click-and-Mortar and Pure-Play

Construct	Step 1: Configural Invariance Same Algorithms	C-1	95% CI	Step 2: Partial Measurement Invariance Established	Differences Equal Mean Value	95% CI	Differences Equal Variance Ratio	95% CI	Step 3: Measurement Invariance Established
EE	Yes	0.997	[.992,1]	Yes	-.071	[-.263, .273]	.091	[-.309, .326]	Yes
FC	Yes	0.993	[.981,1]	Yes	-.222	[-.278, .258]	.065	[-.368, .358]	Yes
PR	Yes	0.983	[.834,1]	Yes	.216	[-.280, .263]	.055	[-.378, .361]	Yes
PE	Yes	1.000	[.999,1]	Yes	-.041	[-.263, .267]	.145	[-.370, .371]	Yes
SP	Yes	0.999	[.998,1]	Yes	-.158	[-.275, .259]	-.073	[-.393, .386]	Yes
SI	Yes	0.994	[.976,1]	Yes	-.130	[-.276, .275]	.092	[-.306, .309]	Yes
UE	Yes	1.000	[.999, 1]	Yes	-.250	[-.257, .262]	.031	[-.304, .306]	Yes

Table 6 shows the summarized result of hypothesis testing via the structural model and MGA approaching the assessment by employing two different nonparametric procedures, namely bootstrap-based MGA (Henseler et al., 2009) and the permutation test (Chin & Dibbern, 2009). For the Henseler's bootstrap-based MGA method, $p<0.05$ or $p>0.95$ implies at five percent level significant different between two categories (Henseler et al., 2009). While for permutation MGA method, $p<0.05$ indicates at five percent level significant different between two groups.

The structural model was assessed to study the significance of the relationship in the hypothesized model. Path coefficients were examined to decide the significance of the relationships for H_1 to H_6. The results in the Table 6 were obtained from the bootstrapping with 5000 sampling iterations. Table 6 shows that the direct influence of every construct on SME performance via SmartPLS output about the path coefficients for click-and-mortar and pure-play. Five hypotheses (H_1, H_2, H_3, H_4 & H_5) from the first

objective were tested and one hypothesis from the second objective was tested and is supported (H_6).

Table 6 presented the results of a MGA using the Henseler's MGA method and permutation method. It can be observed that there is significant variation between click-and-mortar and pure-play with respect to the effect of EE on UE (H_2). The result shows that Henseler's MGA method result is significant differences using as none of the p-value is higher than 0.95, however, the value for H_2: EE -> UE is lower than 0.05. For the permutation method, the H_2: EE -> UE p-value is lower than 0.05. The finding of this study supports that there is a significant difference between click-and-mortar and pure-play businesses. Both methods similarly explain the significance difference between the click-and-mortar and pure-play businesses. Furthermore, it showed that the Click-and-mortar companies agree that effort expectancy does impact the use of e-commerce while pure-player does not impact.

Table 6: Structural Model and MGA

Relationship	**Path Coefficient Original (*click-and-mortar*)**	**Path Coefficients Original (*pure-play*)**	**Cls (Bias corrected *click-and-mortar*)**		**Cls (Bias corrected *pure-play*)**		**Path coefficient differences**	**p-value Henseler's MGA**	**p-value Permutation test**	**Group Difference**
H_1: PE -> UE	0.459***	0.607***	0.343	0.625	0.472	0.764	0.149	0.888	0.224	No difference
H_2: EE -> UE	0.31***	-0.026	0.188	0.426	-0.174	0.106	0.336	0.001***	0.003***	Difference
H_3: SI -> UE	-0.068	0.102	-0.206	0.049	-0.111	0.277	0.170	0.887	0.224	No difference
H_4: FC -> UE	0.207**	0.146*	0.013	0.359	-0.068	0.362	0.062	0.355	0.715	No difference
H_5: PR -> UE	-0.063	-0.065	-0.134	0.041	-0.152	0.039	0.002	0.493	0.983	No difference
H_6: UE -> SP	0.601***	0.685***	0.489	0.686	0.581	0.752	0.084	0.859	0.280	No difference

Note: p<0.1 *, p<0.05 **, p<0.01***

4.1 Click-and-Mortar Result

Table 6 and Figure 1 show that that PE has a significant influence on UE (β=0.459, p<0.01) hence, H_1 was supported. H_2 was also supported as the result indicated the significant influence of EE on UE (β =0.310, p<0.01). Similarly, the result for H_4 showed that provided that there was a significant impact of FC on UE (β=0.207, p<0.05). Hence,

H_4 was supported. Another supported hypothesis is H_6 as the result showed that there is a strong positive association between UE and SP (β=0.601, $p<0.01$). On the other hand, H_3 was not supported as the influence of SI on UE (β=-0.068, $p>0.1$) is not significant. This is similar for H_5 where the result showed that there is no significant relationship between PR and UE (β=-0.063, $p>0.1$). Hence, H5 was not supported.

Table 7 illustrates Stone's (1974) Q^2 which is used as an indicator for predictive relevance, based on the blindfolding procedure. Stone's (1974) criteria of $Q^2>0$, shows the presence of a predictive relevance in the model, while $Q^2\leq 0$ presents the lack of predictive relevance in the model. Consequently, as Q^2 values of the items on endogenous latent variable, i.e. SME performance are greater than 0, the result can be deduced that a predictive relevance is present in the model. As a conclusion, when a PLS-SEM model exhibited predictive relevance. Thus, it well-predicted the data points of indicators.

4.2 Pure Play Result

Table 6 and Figure 2 suggest that PE has a significant influence on UE (β=0.607, $p<0.01$), hence, H_1 was supported. H_2 was not supported because EE has no significant influence on UE (β=-0.026, $p>0.10$). Moreover, H_3 was not supported as the result showed that SI has no significant influence on UE (β=0.102, $p>0.10$). For H_5, the result provided the evidence there is no relationship of PR and UE (β=-0.065, $p>0.10$). Hence, H_5 was not supported. Meanwhile, for H_4, the result showed that FC has a significant impact on UE (β=0.146, $p<0.10$) and similarly, the result of H6 showed that there is a strong positive association between UE and SP (β=0.685, $p<0.01$). Therefore, H_6 was supported.

Table 8 shows that Q^2 values of the items on SME performance are greater than 0 except the item SP7. Eight out of nine items in the endogenous latent variable, i.e. SME performance, are greater than 0. The result deduced that a predictive relevance is present in the model. As a conclusion, when a PLS-SEM model exhibited predictive relevance. Thus, it well-predicted the data points of indicators.

Table 7: Predictive Relevance (Click-and-Mortar)

		PLS Predict						LM		PLS Predict - LM	
	RMSE	MAE	MAPE	Q^2_predict		RMSE	MAE	MAPE	Q^2_predict	RMSE	Q^2_predict
SP1	0.961	0.739	17.363	0.251	SP1	1.049	0.821	19.273	0.108	-0.088	0.143
SP2	1.036	0.778	19.300	0.284	SP2	1.333	0.982	25.484	-0.185	-0.297	0.469
SP3	0.971	0.769	18.027	0.327	SP3	1.109	0.830	20.116	0.123	-0.138	0.204
SP4	1.065	0.800	21.692	0.242	SP4	1.207	0.943	23.420	0.026	-0.142	0.216
SP5	1.159	0.846	25.756	0.257	SP5	1.346	1.011	28.045	0.000	-0.187	0.257
SP6	1.091	0.866	23.542	0.264	SP6	1.113	0.862	21.802	0.234	-0.022	0.030
SP7	1.019	0.755	20.669	0.276	SP7	1.178	0.895	22.620	0.033	-0.159	0.243
SP8	0.988	0.754	20.509	0.366	SP8	1.107	0.881	22.801	0.204	-0.119	0.162
SP9	1.055	0.792	21.758	0.229	SP9	1.181	0.867	22.548	0.034	-0.126	0.195

Table 8: Predictive Relevance (Pure-Play)

		PLS Predict						LM		PLS Predict - LM	
	RMSE	MAE	MAPE	Q^2_predict		RMSE	MAE	MAPE	Q^2_predict	RMSE	Q^2_predict
SP1	0.946	0.705	14.948	0.353	SP1	1.428	1.123	30.641	-0.024	-0.482	0.377
SP2	1.041	0.752	19.074	0.293	SP2	1.288	0.961	22.921	-0.101	-0.247	0.394
SP3	0.948	0.771	15.751	0.358	SP3	1.205	0.944	24.600	0.037	-0.257	0.321
SP4	1.032	0.802	17.731	0.318	SP4	1.151	0.898	17.873	-0.022	-0.119	0.340
SP5	1.219	0.982	26.795	0.255	SP5	1.128	0.865	20.647	0.170	0.091	0.085
SP6	1.065	0.868	23.102	0.248	SP6	1.260	0.933	20.630	-0.016	-0.195	0.264
SP7	1.100	0.851	21.253	0.197	SP7	1.034	0.815	16.652	0.236	0.066	-0.039
SP8	0.966	0.773	15.440	0.280	SP8	1.086	0.788	16.407	0.147	-0.120	0.133
SP9	1.228	0.963	25.497	0.226	SP9	1.492	1.150	28.941	-0.141	-0.264	0.367

5. Discussion

Direct Relationship between Factors and Use of E-commerce: The aim of this research is to determine the relationship between the use of e-commerce relating to the determinants of performance expectancy, effort expectancy, social influence, facilitating conditions and perceived risk. This is to address the level of e-commerce usage businesses. The explanatory power of this model was examined through the R-value for use of e-commerce. When the full model was split into two groups, the R-value was 64.4 percent for click-and-mortar and 63.2 percent for pure-play. As expected, the model explains a

moderate amount of the variance which has led to a substantial effect. This result is highly consistent with the results of previous researches. Yu (2012) reported 65.1 percent of variances explained in Taiwan's m-banking adoption while Zhou et al. (2010) reported that 57.5 percent of the variances were explained in m-banking adoption in China. Thus, this result reflects the reasonable accepted percentage of variance explained.

Performance Expectancy (PE) and Use of E-commerce (UE): Click-and-mortar and pure-play all indicated that performance expectancy significantly influences the use of e-commerce. The H_1 results illustrated that click-and-mortar companies and pure-players agree that high performance expectancy produced high usage of e-commerce, vice versa. According to the findings of Venkatesh et al. (2003), the performance expectancy constructs derived from UTAUT has a significant positive influence on the use behaviour. This is also shown by previous ICT-related works (Adam et al., 2011; Indahwati & Afiah, 2014; Moghavvemi et al., 2011; Mursalin, 2012; Ndayizigamiye, 2013; Peris et al., 2013; Tai & Ku, 2013; Serben, 2014; Mbrokoh, 2015; Jaradat & Rababaa, 2013; Jambulingam, 2013; William, 2009). Hence, e-commerce adopters agreed that using e-commerce could increase their job performance, perceived usefulness, extrinsic motivation, outcome expectation and job-fit within the context of an organization.

Effort Expectancy (EE) and Use of E-commerce (UE**):** Click-and-mortar indicated that effort expectancy significantly influences the use of e-commerce. However, Hypothesis H2 was not supported for the pure-players. According to the findings of Venkatesh et al. (2003), the effort expectancy constructs derived from UTAUT has a significant positive influence on the use behavior. This is supported by other IT-related literature (Adam et al., 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Ndayizigamiye, 2013; Peris et al., 2013; Li et al., 2014; Tai & Ku, 2013; Mbrokoh, 2015; Jaradat & Rababaa, 2013; Chiu & Ku, 2015; William, 2009). However, a few researchers such as Yang (2010); Zhou (2012); Jambulingam (2013); Serben (2014); Abu et al. (2015); Maillet et al. (2015) and Dastan & Gürler (2016) reported that effort expectancy was found to be not significant factor in their researches. Furthermore, MGA both Henseler's and permutation test had reaffirmed the heterogeneity found in the EE-UE relationship. Thus, only e-commerce adopters from the categories of click-and-mortar companies highly expect that the use of e-commerce should be effortless. This means that click-and-mortar companies are driven to use e-commerce if they perceive the experience as pleasant, enjoyable, easy, simple fun and will make work more interesting. Pure-players are probably ICT-related fast learner who master the eco-system of an e-commerce platform easily. They probably from the IT industry who had the wide knowledge and experience of setting up the

webstore easily. Thus, perceive the experience as pleasant, enjoyable, easy, simple fun and will make work more interesting could not be a driven factor for pure-players to use the e-commerce.

Social Influence (SI) and Use of E-commerce (UE): In contrast from H_1, H_3 shows the insignificant influence of social influence on the use of e-commerce for both categories. As evident from the previous literature, the role of social influence construct has been controversial. Social influencers such as, "people around me", "people who are important to the company", image, attitude toward word-of-mouth (online), attitude towards the website (image) and peers (business partner/competitor), were used as scale items in this research. The results indicate that social influence is not a significant determinant for the use of e-commerce.

These results contradict the findings in the previous-related study (Adam et al., 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Ndayizigamiye, 2013; Peris et al., 2013; Li et al., 2014; Tai & Ku, 2013; Serben, 2014; Mbrokoh, 2015; Jaradat & Rababaa, 2013; William, 2009). However, the current result is in line with Cheah et al. (2011); Gagnon et al. (2012); Jambulingam (2013); Ndayizigamiye (2013); Cohen et al. (2013) and Chiu & Ku (2015) that indicated that social influence has no significant influence on the use of e-commerce. The overall mean age of e-commerce adopter in this research is 34.73 and a mode age of 29. This generation is largely dominated by computers, video games and mobile phones, hence, the influence of their peers is not significant as they might already aware about the existence of e-commerce. This shows that people in this digital generation might not be influenced by their peers as they are often the early adopters of a newly innovated technology. This pattern reflects that the social influence does evolve over time and could help explaining some of the observations reported in the literature.

Facilitating Condition (FC) and Use of E-commerce (UE): H4 shows that there is a significant impact of facilitating conditions on the use of e-commerce for click-and-mortar companies but not for pure-players. From the perspective of click-and-mortar companies, the presence of facilitating conditions significantly influences the use of e-commerce. According to the findings of Venkatesh et al. (2003), the facilitating condition constructs derived from UTAUT has a significant positive influence on the use behavior, as shown by previous ICT-related studies (Adam et al., 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Tai & Ku, 2013; Serben, 2014; William, 2009). However, a few studies, such as Fillion et al. (2012); Jambulingam (2013); Jaradat & Rababaa (2013); Ndayizigamiye (2013); Peris et al. (2013); Li et al. (2014); Maillet et al. (2015) and Mbrokoh (2015) reported that facilitating conditions was found to be not significant in this relationship. Hence, both categories of the e-commerce adopters disagreed about the FC-UE relationship.

Perceived Risk (PR) and Use of E-commerce (UE): For H5, when we investigate further on the different groups, it was found that perceived risk does not influence the use of e-commerce. According to the findings of previous ICT-related studies (Azam & Quaddus, 2009; Tai & Ku, 2013; Zhou, 2012; Lou et al., 2010; Wessels & Drennan, 2010; Featherman & Pavlou, 2003; Cruz, 2010; Cheah et al. 2011; Thakur & Srivastava, 2014; Vasileiadis, 2014), perceived risk has a significant negative influence on the use behavior but Wang (2008) reported the contrary. In this regard, both groups of e-commerce adopters agreed that perceived risk is not a factor that influencing them to use the e-commerce.

Relationship between Use of E-commerce and SME Performance: The result of H6 result showed that click-and-mortar and pure-play companies agree on the strong positive association between use of e-commerce and SME performance. Therefore, H6 was supported and the use of e-commerce significantly influences the SME performance. According to the findings of previous ICT-related study (Zhu & Kraemer, 2002 & 2005; Al-Dmour & Al-Surkhi, 2012; Azeem et al., 2015; Popa & Soto Acosta, 2015; Gregory et al., 2019; Macchion et al., 2017), the use of e-commerce has a major influence on the SME performance. The use of e-commerce was found to be a significant contributing factor to SME performance in this research. Hence, e-commerce adopters agreed that their performance will increase with the use of e-commerce. It can help increase their growth in sales revenue, profit, the return of an asset, return on sales, market share, labor productivity, level of customer satisfaction, overall financial performance, level of customer loyalty and growth of machine or employees.

Measurement model assessment has indicated its reliability and validity before it proceed to the MICOM assessment. After the assessment of the MICOM, then MGA comparison between click-and-mortar and pure player with its respective predictive relevance was determined. In Malaysia, it is observed that different opinion about the adoption-performance from the aspect of effort expectancy between the adopters into click-and-mortar and pure-play e-retailers. Malaysian Click-and-mortar adopters highly expect that the use of e-commerce should be effortless where they perceive the using experience as pleasant, enjoyable, easy, simple fun and will make work more interesting. Generally, pure-players are small business entities that their business only ran by a few key person who already has the advance computer skill. In order words, pure-players are probably ICT-related fast learner who master the eco-system of an e-commerce platform easily. They probably from the IT industries who had the wide knowledge and experience of setting up the webstore easily. Hence, the previous researcher which ignore the

segregation their respondents into these groups may produce the wrong marketing approach to the respective click-and-mortar and pure-play e-retailers.

6. Implications

Examining the Issue by Combining UTAUT and RBV – Adoption Performance Model: The research framework was modified to address the scope of study, which is e-commerce adoption and SME performance. In the first part, this research has studied a range of factors that influence the use of e-commerce, which are rooted in the UTAUT theory. The second part focuses on the use of e-commerce as a digital capability and its influence toward SME performance, which is rooted in the RBV theory. In this light, the use of e-commerce in the research framework is seen as a bridge to link the UTAUT and RBV theories. Hence, the research framework adds value to a new exploratory body of knowledge and improves the explanatory power to enhance understanding.

Examining the Issue by Taking Click-and-mortar and Pure-play E-commerce Adopter as Unit of Analysis: Previous studies have mostly focused on the use of e-commerce from the perspective of consumerism (Cheah et al., 2011; Alkhunaizan & Love, 2012; Ghalandari, 2012; Vasileiadis, 2014; Sohrabi et al., 2013). However, in contrast from the previous studies, this research has examined the factor affecting the use of e-commerce by adopter and segregate the adopters into click-and-mortar and pure-play. The group of adopters is considered as this right unit analysis to provide the evaluation of e-commerce about the business performance. Here, the advantages of e-commerce adoption are linked to performance, which produces a very different trait or behavior for click-and-mortar and pure-play. Therefore, it is important for this study to obtain accurate data on the adopters' industry experience in using e-commerce to yield a better result.

Social Influence is Not Significant Factor for E-commerce Adopter: In reviewing the results, it is noticeable that the relationship between social influence and the use of e-commerce was not significant for both the click-and-mortar nor pure-play companies. Thus, social influence, which is a determinant from the UTAUT, does not influence the use acceptance of e-commerce. In this regard, it can be concluded that this determinant does not influenced entrepreneurs to adopt e-commerce as they are already well-aware of e-commerce and that the adopters' familiarity of using e-commerce is not influenced by their peers, competitors and suppliers.

Consideration of Perceived Risk in UTAUT Model: UTAUT does not consider perceived risk as a determinant. However, as monetary transaction could be done through ICT application, its adoption has to consider the perceived risk. The click-and-mortar or pure-play respondents agree that perceived risk does not posted relationship with use of e-commerce. In this light, further examination shall be carried to verify this relationship.

Thus, this research will enrich the literature on the perceived risk in the UTAUT and provide an extension to the UTAUT.

Focus on the Importance of the System Performance: In this research, both performance expectancy and effort expectancy are significantly related to the use of e-commerce. Therefore, e-commerce platform operators could take note on the importance of the values perceived by SMEs as to the extent of performance and efforts required to use e-commerce. It was found that the perceived of usefulness, ease of use as well as simplicity of the platform need to be introduced, however, only click-and-mortar companies highly expect that the use of e-commerce should be effortless, while pure-players do not. This means that most SMEs will use this system if they feel that e-commerce as easy to use, help them to perform their tasks, reduce their existing workload and the new system requires less effort for learning and handling. Hence, a comprehensive usage guideline should be provided to users any technology is introduced for public usage.

Designing a System with More Effective Interactions: In terms of effective communication among the sellers, platform operator and buyers, introducing the mobility communication in chat apps may probably increase the interaction among the stakeholders. Through chat apps, information exchanges could be facilitated and confusions could be averted. Hence, bridging the gap between the stakeholders may indirectly help improves communication and to simplify the complexity of the selling and buying activities.

Considering the Essential Support of Infrastructure and Technical Facilities: E-commerce operators and government agencies should consider the facilitating conditions and ensure that the resources needed to use e-commerce are available and accessible. Appropriate facilities that support e-commerce, such as laptop/computers, server, back up support and other technical equipment, should be ready and available to be used by the organization. In this regard, employees' acceptance of e-commerce is influenced by the provision of adequate infrastructure and technical support, especially from click-and-mortar companies.

Use of E-commerce Increases SME Performance: The research has presented evidence on how the use of e-commerce by SMEs could increase their business performance. By using e-commerce, not only that SMEs from both categories can do their business in a better way, they might gain advantage of accessing into a new market and new supplier at low costs. In promoting e-commerce, governments must recognize that improvement in SME performance is significant as it will shape a new form of productivity that leads to further GDP growth. Hence, the government needs to recognize e-commerce as a new

economy that increases a country's competitiveness. Moreover, the government should create the right environment and ensure the SMEs can increase their performance through practicing e-commerce.

7. Limitation of the Study and Future Research Directions

There are several limitations demonstrated in this study. These limitations should be considered for future research improvement. First, the study's respondents were limited to sellers using the Lelong platform as other platforms like Lazada, 11street and Shopee do not openly publish their seller information. This limitation could be caused by the limitation imposed by PDPA 2010. Thus, future research may expand the research to other platforms as well.

Second, the empirical evidence for this study was collected the e-commerce platform, and the results may not be generalized and inapplicable to social-commerce (s-commerce). Hence, future researchers may further their research and compare the use of e-commerce, m-commerce and s-commerce. Third, there was no segregation on the type of e-commerce in B2B, B2C and C2C; there is limited research about this segregation in the adoption, as a result, the performance of different e-commerce sites may vary and the level of the capability was expected to be significantly different. Hence, researchers may further their research by comparing the adoption and performance between B2B, B2C and C2C. Fourth, this study was conducted in the Malaysian context and the results may not be applicable to other countries e.g. Singapore. Thus, researchers could expand the study by considering the geographical factor to make a broader generalization in future studies.

8. Conclusion

In conclusion, this paper aims to compare the factors influencing the use of e-commerce by two forms of adopters in Malaysia: click-and-mortar and pure-player SMEs. Both adopters agree that adoption of e-commerce has a significant relationship with SME performance, hence, further study is needed on post-adoption's performance. Indirectly, this research empirically contributes to the body of knowledge by testing the existing UTAUT theory by adding perceived risk and expanded together with RBV. The findings of this study show that the use of e-commerce increases the SME performance and the use of e-commerce is influenced by performance expectancy, effort expectancy and facilitating condition. Meanwhile, the effect of social influence and perceived risk are found to be insignificant in this study for both click-and-mortar and pure-player while click-and-mortar companies agree that effort expectancy does impact the use of e-commerce while pure-player disagree. Thus, this research has provided valuable knowledge and information to governments, e-commerce operators, software developers

and e-business supply chain players to understand more about the use of e-commerce by Malaysian SMEs.

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