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The Model of the Sustainability of E-commerce Adoption: A Study on Carved Furniture SMEs in Indonesia

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Abstract. The extent of e-commerce use by SMEs in developing countries such as Indonesia is still relatively low. This study seeks to identify and test the sustainability factors of e-commerce use by SMEs in a developing country. This study uses TOE theory which was expanded by including 12 predictors of sustainability of e-commerce adoption into four sub-domains: technology, organization, environment, and psychology. The contribution of this study is to explain the relevance of predictors of e-commerce adoption differs across two-time phases: at the early adoption phase and the later phase. In particular, in the early adoption phase, competitive pressure is a variable that affects the sustainability of e-commerce adoption. While at the later phase, perceived trust and competitor pressure are predictors that affect the sustainability of e-commerce adoption. Another interesting finding from this study is that SMEs utilize online sales brokers to increase their production and sales. This is done by SMEs, because they are aware of the limited resources that SMEs have.

Keywords. E-commerce adoption, Sustainability model, SMEs, Developing countries

1. Introduction

In a new decade for social changes, the use of e-commerce has developed rapidly and offered new opportunities for business organizations to innovate and launch competitive marketing strategies [1]. As a part of business strategy, e-commerce adoption is not a recent phenomenon, especially for large firms in developed countries [1], [2]. However, that is not the case for small and medium enterprises (SMEs) [3]. SMEs in developing countries face more challenges than SMEs in developed countries e-commerce adopting [4]. Lack of adequate basic infrastructure such as the internet and web, socioeconomic and lack of government ICT strategies are barriers to e-commerce adoption and e-commerce growth in developing countries [5]. Limited human and informational resources also hinder SMEs from adopting e-commerce [6]. Other constraints, including costly investments, security issues in e-commerce transactions, and limited managerial support [7]. Most SME owners are still reluctant to adopt e-commerce because they do not consider e-commerce to offer business solutions [8].

As in developing countries in general, the level of adoption of e-commerce in Indonesia is still low and many of them still use conventional methods to run their business

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[9]. SMEs in Indonesia have obstacles in adopting e-commerce like what SMEs experience in other developing countries. Technology readiness is one inhibiting factor for SMEs in adopting e-commerce [10]. Only a small fraction of total SMEs in Indonesia utilize the internet for business [11] which results in the lack of e-commerce adoption among SMEs in Indonesia [12], and they are left behind by larger firms [13].

The development of technology and information has changed how business organizations promote and sell their products or buy raw materials, targeting customers and potential customers through digital marketing or e-commerce [11]. E-commerce has created better opportunities for local and global markets and has increased their sales [14]. The opportunities are possible because e-commerce technology facilitates faster communication within the company through shared electronic files and networked computers and efficiency in doing business processes such as documentation, data processing, and backup functions-other offices [15]. The adoption of e-commerce has a significant impact on the performance of SMEs, so it is necessary for SMEs to take advantage of the opportunities presented by e-commerce adoption [16]. SMEs need to realize all these benefits from e-commerce adoption before they are willing to invest financial resources in e-commerce technology [17].

Some of the benefits and advantages derived from adopting e-commerce, however, whether the benefits and advantages can be felt by all SMEs by adopting e-commerce. When the adoption of e-commerce has been carried out and SMEs feel the benefits and advantages, then the adoption of e-commerce will be sustainable. And vice versa, when SMEs cannot feel the benefits and advantages of e-commerce adoption, e-commerce adoption will stop. This is possible because SMEs have limitations as inhibiting factors, both internal and external barriers [18]. Besides that, the understanding of what drives the adoption of sustainable e-commerce among SMEs in developing countries is still limited, this is due to the use of more innovation adoption theories that are designed in the context of developed countries [19].

Many previous studies discussed the issues of e-commerce adoption in developing countries [13], [15], [20]–[23]. Some scholars focus on the theme of barriers to adopt e-commerce among SMEs in developing countries [5], [7], [17], [24]–[26]. Other scholars discussed the determinants of successful e-commerce adoption [27]–[29]. However, the sustainability of e-commerce use, especially in developing countries, is still relatively researched [30]. The sustainability of e-commerce use illustrates how SMEs benefit from e-commerce adoption and sustain the benefits in the future.

This study aims to examine the factors affecting the sustainability of e-commerce use and also to fill the gaps in the e-commerce adoption literature by investigating the sustainability of e-commerce use, particularly in a developing country in Indonesia. E-commerce adoption plays a crucial role for SMEs, especially in developing countries, offering various benefits. This study proposes a conceptual model of sustainability in e-commerce use and tests the model in carved furniture SMEs in Jepara, Indonesia. The proposed model includes factors positioned into four sub-domains: dynamic changes in technology, organization, business environment, and psychology.

2. Literature Review

E-commerce is not a simple innovation but a set of separate innovations that involve accounting and auditing, business law and ethics, computer science and management information system, finance and economics, marketing, management, and other relevant fields [31]. A business can be called e-commerce if it uses the Internet, World Wide Web (Website), Applications and Browsers that operate on mobile gadgets to conduct business transactions

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[32]. Also, e-commerce is able to change plans and business strategy in SMES [1], as a strategy to strengthen global competitive position [33] and offers quick access to international markets [34]. However, e-commerce adoption by SMEs in developing countries is lower than that of SMEs in developed countries [3], [35], e-commerce adoption in developing countries received less attention than in developed countries so that the adoption of e-commerce is very difficult for SMES [5]. SMEs adopt e-commerce due to pressures from customers and suppliers, desire to gain competitive advantages, and the possession of technical experts [36]. Customers and competitors are external factors that influence how SMEs decide to adopt e-commerce and benefit from that adoption[22].

The adoption of e-commerce in developing countries is a form of empowering SMEs to contribute to the growth of the national economy [6], UKM harus mampu meningkatkan peluang yang diharapkan oleh lingkungan bisnis untuk meningkatkan kinerjanya melalui penggunaan e-commerce [16]. However, Limited human and information resources are inhibiting factors for e-commerce adoption [6]. Organizational factors also become obstacles to e-commerce adoption in Indonesia [26],

Most SMEs in Indonesia intend to adopt e-commerce into higher levels (i.e., part of their strategic business plans) than their current position [6]. This fact indicates that SMEs plan to adopt e-commerce sustainably. The likelihood that SMEs continue to use e-commerce depends on to what extent that SMEs experience benefits and have a positive expectation for future benefits from e-commerce. This situation leads to the sustainability of e-commerce use. E-commerce is considered a sustainable business because it has a potential green business, a democratic partnership, and economic opportunities. E-commerce as a green business refers to electronic infrastructure and technology to facilitate trade, deliver products, services, and information [37].

Sustainable business can be interpreted as firms' ability to survive in the long run, profitability, productivity, financial performance, and the ability to manage social and environmental assets that form capital [38]. As an innovation, e-commerce offers solutions for business sustainability by combining the whole process and considering uniqueness, product quality and durability, and competitors' ability and conditions [39]. In general, sustainability refers to the capacity to continue an activity or process without limits. This capacity can be related to several economic, social, and environmental activities with various meanings from numerous disciplines [40].

Firms likely succeed in their e-commerce business by maintaining their competitive advantages through constant improvement processes. In this case information technology investment is the most important factor to achieve success, where the advantages of competitiveness can be achieved depending on the use of technology effectively[41]. Firms that continuously develop new concepts and ideas have the flexibility and organizational culture to organize continuous changes [42]. According to buyer's futuristic perspective analysis (FPA), the sustainability of e-commerce use is affected by four factors: convenience, optimism, responsiveness, and comfortability [43]. Meanwhile, the sustainability of e-commerce adoption in SMEs is affected by organizational readiness, managerial productivity, external pressures, decision support system, compatibility, and perceived benefits [30].

This study aims to develop a conceptual model of the sustainability of e-commerce use by SMEs in a developing country that focuses on the factors that affect e-commerce use sustainability. Several factors were technological, organizational, environmental, and psychological factors. This study then empirically measured and tested each determining

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factor to analyze the relevance of these factors in the model of e-commerce adoption sustainability.

The conceptual model framework integrates several theories to test the determinants of sustainability of e-commerce adoption, namely the technology, organization, and environment (TOE) framework, information system success model, and technology acceptance model (TAM) theory. The TOE framework was initially developed by Tornatzky, Fleischer, and Chakrabarti (1990) to illustrate the effects of contextual factors on innovation adoption. Three contextual aspects affect innovation adoption, namely technological, organizational, and environmental contexts. The information system success model is a framework and model to measure complex dependent variables in information system research, and it was developed by Delone dan McLean (1992). Meanwhile, the TAM model initially developed by Davis (1989) offers a model that explains individual behavior. According to this theory, individuals' actual behavior is determined by intention, which is affected by attitude and perceived usefulness. Perceived benefits, together with ease of use, also affect attitude in e-commerce adoption [13].

Based on the above arguments, this study presents factors in four dimensions that affect the sustainability of e-commerce adoption by SMEs: technological, organizational, environmental, and psychological factors.

Several indicators measure the technological factor, such as compatibility and system quality. E-commerce compatibility can be defined as the consistency of e-commerce with firms' existing technical infrastructure, culture, values, and work practices [44]. Firms are more likely to adopt innovation when innovation is compatible with individuals' works, system values, existing cultural values, and initial ideas [45]. Next, system quality is measured with ease of use, functionality, reliability, flexibility, data quality, portability, integration, and importance [27].

The indicators to measure organizational factors are resources ownership, relative advantages, and support from managers/owners. Organizational resources consist of financial and human resources. Financial resources refer to the availability of financial resources to apply and operate information technology infrastructure for e-commerce which SMEs usually have limited financial resources [31]. Meanwhile, human resources refer to the accessibility of employees with sufficient experiences and exposure towards information and communication technology (ICT) and other skills (such as marketing and business strategy) to initiate e-commerce projects [46]. The organizational factor is based on the belief that one will receive certain benefits by committing specific actions [15]. E-commerce adoption will also highly depend on technological acceptance by business owners [45]. Managers or owners play crucial roles in influencing other organizational members to accept e-commerce adoption [15].

There are two indicators to measure the effect of the environmental context on the sustainability of e-commerce adoption, namely competitors' pressure and government. Intense competition likely results in a business change (i.e., relying more on current technologies) [23]. Competition pressure and market trend anticipation likely affect firms' adoption of e-commerce technology [15]. When competitors start to use e-commerce technology, firms are motivated to adopt e-commerce technology broadly to secure competitive advantages [13]. When more competitors adopt e-commerce, small firms are more likely to secure their competitive positions by implementing e-commerce technology [47].

Governments can act as an essential catalyst to stimulate a successful IT adoption experience for SMEs. Governmental support in financing infrastructure projects, adoption

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schemes, and other initiatives have directly and indirectly encouraged SMEs to use IT and other innovative business practices [47]. Government support, in terms of policies, regulations, national infrastructure, education, training programs, and others, play a crucial role in facilitating e-commerce implementation by SMEs [28].

Several indicators to measure the effect of the psychological factor on the sustainability of e-commerce adoption are perceived trust, perceived benefits, perceived ease, perceived risks, and initiative. Trust refers to the belief that one anticipates success due to typical situations [48]. Specifically, trust is associated with the full confidence that a feature or system offers its functionality with expected quality and reliability. Perceived trust refers to one's perception level of technological solutions as reliable and safe applications [21].

Perceived benefits indicate the acceptance level of the potential benefits of e-commerce technology for organizations [13]. Perceived benefits can be interpreted as the extent of one's belief that using a specific feature or system increases its performance quality [21]. Furthermore, perceived ease of use can be defined as the belief that using a particular system is easy. This factor is usually represented by user-friendliness, learning curves, and intuitive user interface [21].

Perceived risks can be classified as gain and loss scales expected from the achievement of specific results. Perceived risk potentially demotivates individuals to adopt technologies to exchange information and engage in transactions [21]. Subsequently, initiatives refer to positive individual qualities that manifest into mental motivation and the ability to start new businesses, take the initial actions, and own decisions to deal with personal and social problems [49]. Initiatives imply that one starts something without being informed, explicitly instructed, or without explicit role conditions [50].

3. Research Methods

This study was conducted using a non-probability method (snowball sampling) on a population of SME carving Jepara, Indonesia that has adopted e-commerce and continues to use e-commerce. The sample size in this study was set at 100 respondents, and the number of indicators used was 48. Data was collected using questionnaires and in-depth interviews with several respondents and also conducted interviews with the Chairperson of the Jepara Wood Crafts Association (*APKJ*). The semantic differential measurement scale is used to measure behavior, attitudes, and beliefs. The data obtained were analyzed using the Partial Least Square (PLS) analysis technique to predict the model in theory development. Validity and reliability tests were conducted to analyze the total correlated items.

4. Results and Discussion

4.1. Respondents' Profiles. Table 1 shows the profile data of respondents, what is interesting here is that most of the respondents (60%) are micro businesses and 39% of respondents are small businesses with no more than ten employees (90%), another fact shows that they have been adopting e-commerce for a long time. -commerce is relatively new (1-5 years) by 76%. Respondent data also shows that only 17% of respondents have a company web, while 83% of respondents do not have a web. As many as 62% of respondents use the services of an online marketing broker. This shows that there is a tendency for micro and small businesses to have limited human and financial resources. Inadequate financial resources and skilled human resources, and the absence of a website as well as ordering and payment facilities are inhibiting factors for e-commerce adoption in developing countries [5].

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Table 1. Respondents' Profiles

	Freq.	Percent
Age		
20 – 30 years	15	15
31 – 40 years	65	65
41 – 50 years	19	19
51 – 60 years	1	1
Position		
Owner/Manager	100	100
Sex		
Male	100	100
Education		
Senior High School	48	48
Academy/ college	16	16
Undergraduate	33	33
Master	2	2
Other	1	1
Number of Employees		
< 10	90	90
11 – 20	9	9
21 – 30	1	1
Annual Sales (Rupiah)		
<=300,000,000	60	60
>300,000,000<=2,500,000,000	39	39
>=2,500,000,000<5,000,000,000	1	1
Length of Adoption		
1 – 5 years	76	76
6-10 years	24	24
Web		
1 – 5 years	76	76
6-10 years	24	24
Broker		
Yes	62	62
No	38	38

Source: Primary data, processed (2022)

4.2. The Measurement Model Initial Phase of E-commerce Adoption. This study tested the measurement model for all indicators of the e-commerce adoption model in the initial phase. From 48 indicators, 45 indicators had loading factor values > 0.5 and thus are considered valid. However, three indicators had loading factor values < 0.5 that indicated low convergent validity. Consequently, they were eliminated from the structural model (Figure 1).

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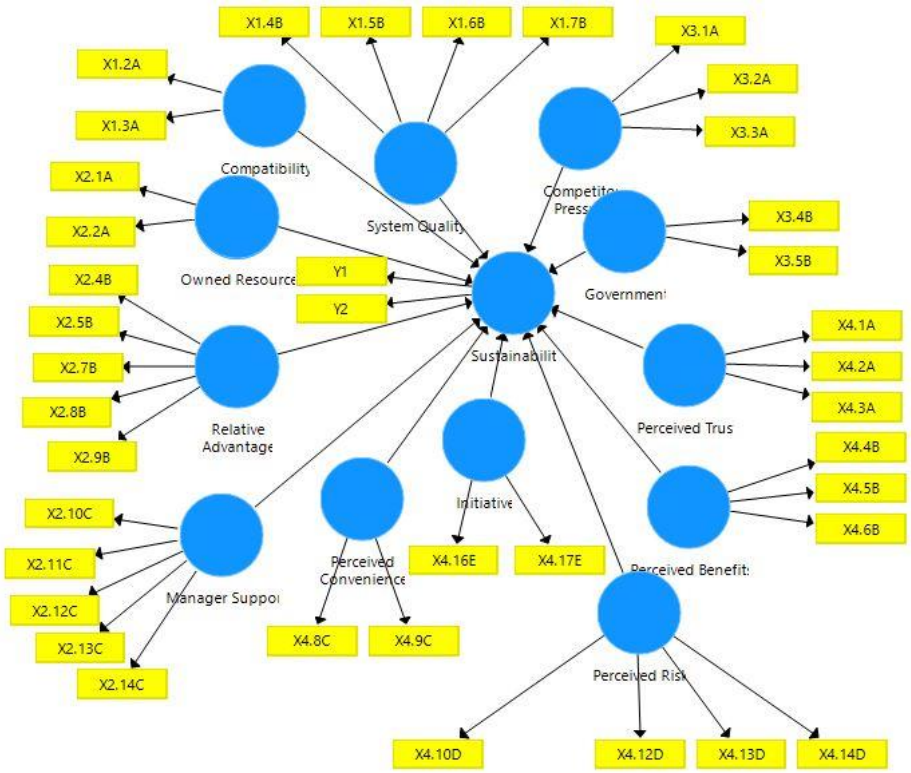

Figure 1. The Model of E-commerce Adoption in the Initial Phase

4.3. The Validity and Reliability of the E-commerce Adoption Model in the Initial Phase. In testing the reliability of several previous literature suggesting using composite reliability instead of Cronbach's alpha, this is because the value of Cronbach's alpha tends to provide a conservative measurement in SEM-PLS [51]. Table 2 shows that the composite reliability values are proven to be greater than 0.6, so that a high level of internal consistency reliability has been shown from the reflective latent variables of the study. Next, checking the convergent validity, by evaluating the Average Variance Extracted (AVE) of each latent variable, from table 2, it was found that all AVE values were greater than the acceptable threshold of 0.5, so that the convergent validity was confirmed.

Table 2. Assessment of the reflective latent variable measurement model

Latent Variable	Loadings	Indicator Reliability	Composite Reliability	AVE
Compatibility	0,927	0.859	0,873	0,774
	0,830	0.689		
System Quality	0,865	0.748	0,935	0,781
	0,922	0.850		
	0,913	0.834		
	0,832	0.692		
Owned Resources	0,927	0.859	0,863	0,760
	0,812	0.659		
Relative Advantage	0,750	0.563	0,876	0,586
	0,788	0.621		

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	0,691	0.477		
Manager Support	0,805	0.648	0,918	0,691
	0,822	0.676		
	0,897	0.805		
	0,758	0.575		
Competitor Pressure	0,727	0.529	0,791	0,558
	0,765	0.585		
	0,749	0.561		
Government	0,947	0.897	0,917	0,846
	0,892	0.796		
Perceived Trust	0,804	0.646	0,840	0,636
	0,823	0.677		
	0,764	0.584		
Perceived Benefits	0,742	0.551	0,859	0,671
	0,871	0.759		
	0,838	0.702		
Perceived Convenience	0,956	0.914	0,943	0,892
	0,933	0.870		
Perceived Risk	0,743	0.552	0,870	0,629
	0,815	0.664		
	0,915	0.837		
	0,682	0.465		
Initiative	0,845	0.714	0,830	0,709
	0,839	0.704		

Source: Primary data, processed (2022)

4.4. The Measurement Model Later Phase of E-commerce Adoption. Subsequently, the measurement model for the e-commerce adoption model in the later phase was tested. From 48 indicators in the measurement model, 40 indicators with loading factor values > 0.5 and thus were considered valid, whereas eight indicators had loading factor values < 0.5, implying low convergent validity, and should be eliminated from the structural model (Figure 2).

4.5. The Validity and Reliability of the E-commerce Use Model in the Later Phase. Just like in the Initial Phase of adoption, in the later phase of adoption, reliability testing is carried out. Table 3 shows that the composite reliability values are greater than 0.6, so a high level of internal consistency reliability has been shown from the reflective latent variables of the study. Furthermore, the Average Variance Extracted (AVE) value of each variable was evaluated, showing that all AVE values were greater than 0.5, so that the convergent validity was confirmed.

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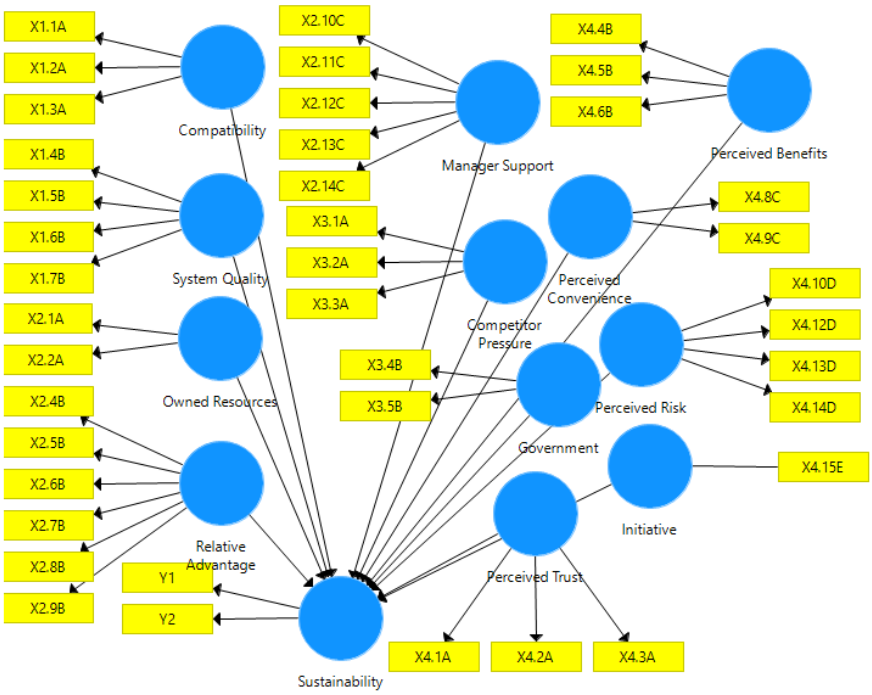

Figure 2. The Model of the Sustainability of E-commerce Adoption in the Later Phase

Table 3. Measurement model assessment of the reflective latent variables

Variabel Laten	Loadings	Indicator Reliability	Composite Reliability	AVE
Compatibility	0,865	0.748	0,871	0,692
	0,864	0.746		
	0.764	0.584		
System Quality	0,865	0.748	0,935	0,781
	0,922	0.850		
	0,914	0.835		
	0,832	0.692		
Owned Resources	0,928	0.861	0,863	0,760
	0,811	0.658		
Relative Advantage	0,736	0.542	0,878	0,545
	0,775	0.601		
	0,664	0.441		
	0.732	0.536		
	0.743	0.552		
	0.775	0.601		
Manager Support	0,804	0.646	0,918	0,691
	0,822	0.676		
	0,897	0.805		
	0,869	0.755		

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	0.758	0.575		
Competitor Pressure	0,726	0.527	0,791	0,558
	0,765	0.585		
	0,749	0.561		
Government	0,947	0.897	0,917	0,846
	0,892	0.796		
Perceived Trust	0,804	0.646	0,840	0,636
	0,824	0.679		
	0,764	0.584		
Perceived Benefits	0,739	0.546	0,859	0,670
	0,871	0.759		
	0,841	0.707		
Perceived Convenience	0,956	0.914	0,943	0,892
	0,933	0.870		
Perceived Risk	0,741	0.549	0,870	0,630
	0,816	0.666		
	0,913	0.834		
	0,686	0.471		
Initiative	1.00	1.000	1.000	1.000

Source: Primary data, processed (2022)

4.6. Structural Model Assessment and Hypothesis Testing. The coefficient of determination (R^2) measures the exogenous construction to explain the extent to which the construction is endogenous. It has a value between zero and one. The analysis shows that the R-squared value of the sustainability variable is 0.721. The results imply that 72.1% of the variance of the sustainability variable can be explained by constructs of manager/owner support, initiative, perceived convenience, perceived trustworthiness, relative advantage, compatibility, system quality, perceived benefits, government, perceived risk, resources. owned, competitor pressure, and the rest is explained by other variables. Cross-validated Redundancy (Q^2) analysis yielded a value of 0.139, implying the model is suitable because the value of Q^2 is above 0. Therefore, the e-commerce adoption model shows predictive relevance.

The path coefficient analysis generates values to justify the significance and strength of the relationship among constructs used to test the hypothesis. The t statistic indicates the importance of the path coefficient value should be higher than 1.96 for the two-tailed hypothesis.

Table 4. The path coefficient values of the e-commerce adoption model in the initial phase

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Manager Support -> Sustainability	0.109	0.124	0.088	1.248	0.213
Initiative -> Sustainability	0.207	0.225	0.155	1.334	0.183
Convenience -> Sustainability	-0.042	-0.059	0.088	0.477	0.633
Trust -> Sustainability	0.208	0.195	0.159	1.307	0.192

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Relative Advantage -> Sustainability	0.112	0.118	0.099	1.132	0.258
Compatibility -> Sustainability	0.075	0.074	0.078	0.965	0.335
System quality -> Sustainability	0.114	0.119	0.088	1.295	0.196
Benefits -> Sustainability	-0.073	-0.067	0.067	1.087	0.278
Government -> Sustainability	-0.028	-0.034	0.087	0.323	0.747
Risk -> Sustainability	-0.086	-0.054	0.096	0.903	0.367
Resource -> Sustainability	-0.044	-0.033	0.080	0.552	0.581
Competitor pressure -> Sustainability	0.329	0.303	0.130	2.525	**0.012**

Source: Primary data, processed (2022)

The statistical test demonstrates that the competitor pressure variable has positive relationships with the sustainability of e-commerce adoption with the t-statistic value of the competitor's pressure variable of 2.525 (> 1.96) and the p-value of 0.012 (<0.05). These results indicate that competitive pressure is the impetus for SMEs to adopt e-commerce, what competitors do in e-commerce adoption, other SMEs will do the same, the trend of e-commerce adoption is used as a reference for them in e-commerce adoption. The results of this study are in line with previous research, that competitive pressure is a factor influencing e-commerce adoption [3][15][25][35].

The other variables do not affect e-commerce adoption. Compatibility and system quality did not affect the sustainability of e-commerce adoption. In the initial phase, respondents may consider that they could not evaluate the compatibility and system quality due to their limited knowledge of e-commerce platforms. As a result, they did not prioritize the technology aspect in their evaluation process to adopt an e-commerce platform. In addition, respondents did not consider the e-commerce platform to fit with company goals due to its early adoption, and expected benefits were not immediately. They were at the stage of testing the waters to see the possibility of reaping significant benefits from e-commerce adoption in the future.

Organizational context comprising resources ownership, relative advantage, and manager/owner support did not influence the sustainability of e-commerce adoption in the initial stage. Carved furniture SMEs in Jepara had a straightforward organizational structure. Some of them had limited human resources in terms of quantity, competence, educational background, and experience in information technology. The limitations impacted management and the organization’s ability to run well, organizational functions were not optimal, and overlapping organizational operations often occurred. Owner of SME and a manager who handled almost all the processes in the organization, starting from purchasing raw materials, being involved in the production function, and the marketing function. Carved furniture SMEs also experienced little capital resources in Jepara. Limited working capital inhibits business activities, and available working capital can only finance the company's routine operations. The earned revenue was distributed to operating financing and partly for living expenses. However, they consider the potential of e-commerce platforms although their limitations did not allow them to reach optimum utilization of e-commerce platforms. As a result, they might still adopt an e-commerce platform for their business despite its resource limitations.

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It appears that carved furniture SMEs in Jepara had not been able to experience significant benefits from e-commerce adoption in the initial phase. It is pretty challenging to get substantial benefits from e-commerce adoption following minimum resource commitment. However, managers/owners might still adopt e-commerce platforms. At the same time, they could not set a high target for the adoption of e-commerce, and they consider the adoption of e-commerce as an opportunity to develop their business. The adoption of e-commerce in the initial phase initiates a learning curve for carved furniture SMEs in Jepara with the expectation of better benefits in the future and increased experience and expertise. At this stage, respondents had not fully explored their relative advantage from their early e-commerce adoption, such as efficiency in marketing and operating cost. Subsequently, the nature of manager/owner support is incremental. It means that their support depends on the extent of actual benefit that SMEs reach from e-commerce adoption. Therefore, relative benefit and managers/owners' support did not influence e-commerce adoption in the initial phase.

In the initial phase, the government factor in the environmental context did not become a predictor of e-commerce adoption. The central required infrastructure for implementing an e-commerce platform is reliable internet service. The role of the government to facilitate internet service to carved furniture SMEs in Jepara had been delegated to state-owned enterprises (i.e., Telkom and Indosat) and other private internet service providers. Internet service exists even before SMEs adopt e-commerce, and the government also shares the role with private enterprises. The existence of state-owned and private enterprises indicates that SMEs have the flexibility to get internet access and do not depend on particular providers (mainly state-owned enterprises). In addition, most of the carved furniture SMEs in Jepara had never experienced training events facilitated by the government of the Jepara regency. The government has held several training events, but the events had not covered all carved furniture SMEs in Jepara.

Psychological factors consist of perceived trust, perceived benefit, perceived convenience, perceived risk, and initiative. All these variables did not influence e-commerce adoption in the initial phase. Respondents had not fully emphasized the role of trust in the use of e-commerce because of minimum resource commitment. They consider it as a "nothing to lose" attitude when they adopt e-commerce for their business. This situation was likely to be driven by the belief that benefits from e-commerce were still uncertain, and the risk associated with the adoption was still manageable. In addition, the adoption of e-commerce was mainly not driven by their initiative, but they imitated what competitors did.

The coefficient of determination (R2) measures the extent that exogenous constructs can explain the constructs of the endogenous variable. The analysis suggested that the R-square value of the sustainability variable was 0.724. The result implies that 72.4% of the variance of sustainability could be explained by the constructs of manager/owner support, initiative, perceived ease, perceived trustworthiness, competitive advantage, compatibility, system quality, perceived benefits, government, perceived risk, resources owned, and competitor pressure, and other variables explain the rest. Cross-validated Redundancy (Q2) analysis suggested that the value of Q2 is 0.376 > 0, implying that the model is good and has predictive relevance.

The path coefficients provide a basis for justifying the significance and strength of the relationship when testing hypotheses. The path coefficient value was significant when the value of t statistic > 1.96 for a two-tailed hypothesis

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Table 5. The path coefficient values of the e-commerce adoption model in the later phase

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Manager Support -> Sustainability	0.121	0.132	0.082	1.480	0.139
Initiative -> Sustainability	0.042	0.041	0.084	0.505	0.614
Convenience -> Sustainability	-0.022	-0.032	0.096	0.234	0.815
Trust -> Sustainability	0.267	0.256	0.128	2.077	**0.038**
Relative Advantage -> Sustainability	0.099	0.100	0.097	1,012	0.312
Compatibility -> Sustainability	0.155	0.165	0.087	1.788	0.074
System quality -> Sustainability	0.119	0.124	0.081	1.472	0.142
Benefits -> Sustainability	-0.076	-0.066	0.077	0.983	0.326
Government -> Sustainability	-0.067	-0.075	0.081	0.837	0.403
Risk -> Sustainability	-0.093	-0.072	0.093	1.004	0.316
Resource -> Sustainability	-0.048	-0.042	0.073	0.657	0.511
Competitor pressure -> Sustainability	0.390	0.379	0.099	3.942	**0.001**

Source: Primary data, processed (2022)

Statistical analysis as in table 5 shows that perceived trust and competitor pressure variables positively affect the sustainability of e-commerce use. whereas, manager/owner support, initiative, perceived convenience, relative advantage, compatibility, system quality, perceived benefit, government, perceived risk, and resource ownership do not affect the sustainability of e-commerce use. The t-statistic value for perceived trust is 2.077 (>1.96), and the p-value is 0.038 (<0.05), indicating that perceived trust positively affects the sustainability of e-commerce adoption. The t-statistic value for competitor pressure is 3.942 (>1.96), and p-value <0.001, implying that competitor pressure has a positive effect on the sustainability of e-commerce adoption.

In the later phase of e-commerce adoption, perceived trust and competitor pressure affect the sustainability of e-commerce adoption. Perceived trust positively affects the sustainability of e-commerce adoption due to their positive experience of using e-commerce platforms. At this stage, carved furniture SMEs in Jepara started to generate sales transactions through an e-commerce platform. Although the sales were still a small portion of total sales, this result increases their confidence to continue using the e-commerce platforms with the expectation of better future sales performance. Subsequently, competitive pressure in the environmental context leads the respondents to continue e-commerce adoption in the later phase due to competitors' increased commitment to implement the same platform for conducting business. Respondents might think that other competitors also apply the same strategy as they do. The presence of competitors motivates them to continue to use e-commerce and innovate through e-commerce technology, particularly as an online sales platform.

Furthermore, the role of government is still not significant for respondents to adopt e-commerce in the later phase. Internet infrastructure has been available from various providers

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through state-owned and private enterprises. The government had not allocated considerable resource commitment to facilitate regular and intensive training for developing business through an e-commerce platform. However, some training had been conducted occasionally.

Compatibility and system quality as part of the technology factor did not affect e-commerce adoption in the later phase. At this stage, respondents were likely to perceive still, they could not evaluate the technology aspect in adopting an e-commerce platform. They had not explored the possibility of expanding the use of e-commerce platforms, given their limited knowledge of the technology. As a result, they did not prioritize utilizing technology when evaluating whether to use e-commerce platforms in the later phase. Respondents may consider positive results from e-commerce adoption that fit company goals, although the results are insignificant.

The required resources, relative advantage, and manager/owner support did not influence e-commerce adoption in the later phase. Respondents still have limited resources to support e-commerce adoption, although they started to get an incremental benefit from using the e-commerce platforms to sell their products. They still maintain an e-commerce platform with minimum budget and expertise. The primary use of an e-commerce platform does not require a large budget and a group of e-commerce experts to run its operation. Therefore, respondents do not need to allocate a vast amount of resources dedicated to e-commerce adoption. As a result, they did not assume to get the optimal benefit of an e-commerce platform for improving the efficiency of the business relative to a sales result. Moreover, the manager/owner did not intentionally posit the e-commerce platform as part of their primary business strategic plan. Other facts show that limited resources are the reason for SMEs to take advantage of online marketing brokers. Marketing brokers run a separate business from the carving furniture SME business, they market their products through various e-commerce platforms. The role of the marketing broker is to forward orders from customers to SMEs.

Perceived benefit, perceived convenience, perceived risk, and initiative did not influence e-commerce adoption in the later phase. This situation is similar to e-commerce adoption in the initial phase. Respondents consider they can benefit from e-commerce adoption, although the proportion of online sales was still relatively low. Moreover, some portions of the sales were handled by another party (e.g., e-commerce startups). Consequently, they perceive the risk associated with the online transaction as still manageable because they consider that e-commerce startups have more experience than they do. As a result, they can minimize initial investment for their e-commerce development. The ease of use from the e-commerce platforms also had not been optimized for improving the business process of carved furniture SMEs. In addition, external factors (i.e., competitors) instead of their initiative become the primary factor that drives respondents to adopt e-commerce platforms.

5. Conclusion

Carved furniture SMEs in the Jepara regency were influenced mainly by an external factor (i.e., competitors) both in the initial and the later phase. Respondents tend to respond more reactive rather than anticipate the trend. As competitors implement e-commerce platforms for business, they imitate the same strategy and expect substantial benefits. Another factor, trust, becomes a relevant predictor of e-commerce adoption in the later phase. A positive experience of using e-commerce platforms, although only generate a small portion of total sales, create a certain amount of confidence that enables them to continue using the e-commerce platforms.

The role of government is not significant in influencing e-commerce adoption in the setting of the initial and later phases. The basic infrastructure (i.e., internet service) has been available and provided by both state-owned and private enterprises. This situation made carved furniture SMEs in the regency of Jepara not to have to be dependent on government support. In addition, although the government made efforts to support the SMEs, the scope and the number of resources dedicated to the e-commerce development for the SMEs are still limited.

Technology factors, namely compatibility and system quality, did not affect the e-commerce adoption in the initial and the later phase. First, respondents feel they could not evaluate the technology aspect due to their knowledge and expertise limitation in e-commerce platforms. Therefore, they did not utilize technology factors as a basis for adopting an e-commerce platform. They did not pay attention to the system compatibility and quality when they decided to adopt an e-commerce platform. Second, e-commerce platforms use standard technology (mobile-based or internet-based platforms), which leads to less requirement for compatibility.

The ownership of resources, relative advantage, and manager/owner support did not influence the e-commerce adoption for both phases. The existence of available e-commerce apps is considered to be sufficient for respondents when they conduct online business. They can utilize standard features of e-commerce apps without having to commit a large number of resources. Also, respondents share e-commerce activities with the help of external e-commerce startups to conduct particularly local sales.

Perceived benefit, convenience, risk, and initiative did not influence e-commerce adoption in both initial and later phases. This situation indicates that small proportions of online sales did not inhibit the adoption of e-commerce platforms. On the one hand, handling a small proportion of online sales is associated with lower risk because the sales are still manageable. On the other hand, respondents consider competitors that motivate them to conduct e-commerce rather than depend on their report.

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