

# The Mediating Role of Intention to Use E-Commerce Adoption in MSMEs

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**Abstract**—This research placed its goal to cognize gaps found at Micro, Small, and Medium Enterprises (MSMEs) adopting E-Commerce in West Kalimantan, Indonesia. Previously conducted studies referred more to national context. Thus, complexity of implementation frequently appeared. This research applied an explanatory survey method and engaged organizations. The survey was conducted to 112 MSMEs using electronic media and aimed to the management. Nonetheless, only 92 respondents successfully submitted and fully filled out questionnaires. Technology, Organization, and Environment (TOE) Framework Approach was in use to satisfy requirements of E-Commerce Adoption. Data were processed by using the Likert Scales and Structural Equation Modeling-Partial Least Square (SEM-PLS). The analysis instrument was SmartPLS Software. Based on path analysis, improving E-Commerce Adoption can only be actualized through direct relationships and focus on intention to use. The path coefficient is 0.746. The success relies strongly on influencing factors of technology, organization, environment, and individuals mediated by intention to use E-Commerce Adoption in MSMEs in West Kalimantan. Readiness to have intention to use is inseparable from primary indicators and becomes main gaps requiring follow-up actions. It is obviously noted that examination of the research model shows decent results due to 86.2% of predictive relevance.

**Keywords**—E-Commerce Adoption, Intention to Use, TOE Framework, MSMEs

## I. INTRODUCTION

Rapid development of Information Technology (IT) forms platforms of new business transaction and eases personal relationships with customers. This is named as E-Commerce [1]. At the moment, it is developing rapidly and is particularly affecting business models of all industries [2]. Effectiveness of adopting it exists and offers benefits covering broader market range, lower operational costs, updated information, collaboration, business partnerships, flexibility of personal relationships with customers, flexible promotion activities, and use of small amount of investment capital [3,4]. Besides, ordering and distributing mechanisms can become faster and alternative options of payment are available [5]. E-Commerce provides recent platforms facilitating online transaction [6]. Its success is not only perceived from good website and cheap prices of products, but also accurate service quality based on customers' expectation [7], smoothness and accuracy of delivery, security, and appropriateness of products [8].

E-Commerce existing with a number of advantages should become special attraction and bring positive effects to every business without exception to the micro one. MSMEs have become the backbone of economy in Indonesia. The fact shows that there is 5.3% of increase of Gross Domestic Product (GDP) in the second quarterly in 2018 in comparison to the previous year. Meanwhile, private consumption rises by 5.2% [9]. In addition to this, there are contributions of MSMEs in GDP based on prevailing prices respectively in 2014 (5.40%), 2015 (6.46%), and 2016 (6.86%) [10,11]. Such the condition is insignificantly different from business proportion in West Kalimantan where only 28% of 1.1 million users operate MSMEs through E-Commerce [12].

It is quite ironic since there have been 132.7 million or 51.8% of internet users of the whole (256.2 million) citizens in Indonesia and of 97.4% of social media users [13]. It is the truth that E-Commerce cannot be adopted by all Indonesians, especially the lower class yet. Research on E-Commerce Adoption has given numerous crucial criteria. However, only some of them can be implemented well because E-Commerce is only dominated by a small number of MSMEs [14]. Several previous findings represent the fact that MSMEs in Indonesia are affected by relative advantages, compatibility, planning, infrastructure, security, users' IT skills, and staff's turnover [15]. Others broadly include perceived benefits, E-Commerce, human resources, financial resources [16], complexity, management supports [17], perceived usefulness, perceived ease of use, perceived risks, and perceived trust [18]. Furthermore, stating the individual factors is substantial based on perspectives of perceived benefits, technology readiness, owners' innovation, and experiences and skills of IT [19].

Previous findings show no significance of MSMEs in Indonesia. Diversity of sociocultural matters brings irrelevant results in each region [20]. This research focuses on MSMEs in West Kalimantan. It is clearly noted that such the region possesses growth potency of markets and promising investment opportunities as it borders Malaysia. The circumstance provides chances for MSMEs to globally market typical products, build personal relationships with customers, and improve the competitiveness [21].

In addition to gaps of scale composition and big number of MSMEs, this research has novelty that is inclusion of the construct of intention to use with a mediating role. It is adopted from [22,23]. It is essential to cognize to what extent

the users are willing to adopt E-Commerce when running MSME businesses. So far, there has been no direct implementation of the construct named as intention to use in TOE Framework. In this case, it facilitates mediation to expedite another construct that is E-Commerce Adoption as well as antecedent factors consisting of technology, organization, environment, and individuals.

## II. LITERATURE REVIEW

### A. E-Commerce Adoption

E-Commerce refers to purchase, sale, transfer, and information through the internet network. According to [24], transition of traditional commerce through email is influenced by digitization of products sold, processes, and delivery methods. The term 'E-Commerce' is understood in several ways based on context and research aims [25]. Generally, it refers to the use of IT communication and application in relation to supports of business activities. E-Commerce Adoption should be mainly concerned since organizations are explicitly independent, have full control, and are free of accepting or rejecting recent forms of innovation [26]. A number of studies have adopted TOE Framework to support innovation when organizations are limited by external control and depend on resource availability. The dependent construct of this research is E-Commerce. It can be adapted from the definition of [27] emphasizing that E-Commerce includes information exchange with customers and suppliers. Sale and online transaction are conducted. One of the principal criticisms of previous studies is inclusion or exclusion of E-Commerce Adoption of online businesses seen as a result dichotomy [28].

### B. Intention to Use

Intention to use becomes the best predictor representing cognition of one's readiness to have certain behavior [29]. Referring to [30], in order to evade difficulties of interpreting multidimensional aspects of the use of system, DeLone & McLean (2003) indicate that such the intention remains a very important alternative. Early use of system and future intention to use can be dissimilar. In terms of IT, this intention reflects awareness of benefits and easiness. More specifically, it is the tendency to apply work system, direct ways to reach goals, and improve performance in work environment [31]. Belief determining intention to use E-Commerce Adoption pertains to awareness of benefits and easiness [32].

### C. Technology, Organization, and Environment (TOE)

TOE Framework has attracted a large amount of implementation for the success of businesses in adopting IT including E-Commerce [33]. The evidence shows that TOE Framework [34] includes conformity of diffusion theory of technology innovation [35] exploring the prediction on intensity of IT services. Unlike other framework focusing on one's actions, TOE Framework is appropriate for levels of organization analysis.

The framework used in this research refers to [36]. The whole constructs are based on literature review given by [15,16,17,18,19]. They cover perceived benefits, perceived barriers, top management, technological readiness, financial readiness, competitor pressure, and government supports. The following definitions are present. Perceived benefits are real advantages that can be directly perceived or obtained.

Perceived barriers are negative effects possibly existing during adoption activities. Top management is full awareness appearing at each managerial level. Technological readiness is ownership of human resource knowledge on IT and the capability to configure infrastructure technology. Financial readiness is readiness to conduct funding, installation, and so forth. Competitor pressure is business pressure of E-Commerce proven by competitors. Government supports are the supports of local government regulations. TOE Framework is inseparable from substance and accuracy of research results encouraged by individuals' perspectives. It is further noted that strategic decisions made by MSMEs adopting E-Commerce also depend on owners and managers [37].

## III. RESEARCH METHOD

This research applied an explanatory survey method and engaged organizations [38] of MSMEs. It involved background, literature review, problem formulation, design, hypotheses, data collection, data analysis, results, and conclusion [39]. Primary data were obtained through questionnaires filled out and submitted by 112 respondents applying application portfolios of IT services to process all transaction data. Besides, they had internet connection and interact with consumers and suppliers through social media. Only 92 respondents successfully submitted completed questionnaires to the researchers. In other words, there was 82.14% of response rate.

Completion of questionnaires was conducted through Google Forms and data were processed with Likert Scales 6 (strongly agree) to 1 (strongly disagree). The reason was that ordinal use of these scales could ensure more accurate data without the factor of hesitation tendency [40]. The validity and reliability of questionnaires were tested [41]. Secondary data, however, were obtained from internal reports of MSMEs. After all data were collected, analysis and interpretation through descriptive and inferential statistics were conducted. Specifically, SEM Method and PLS Approach were implemented.

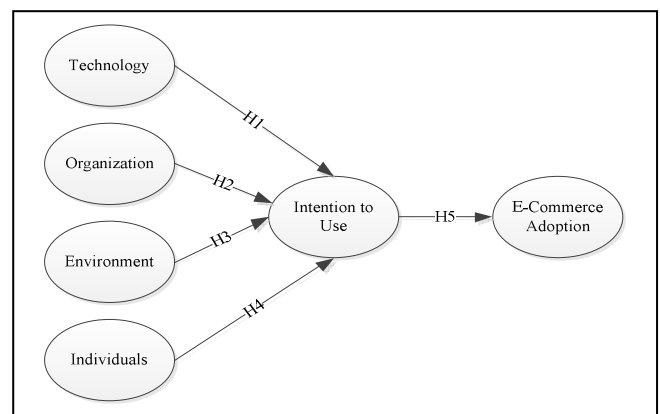


Fig. 1. Research Model

Examination of SEM-PLS comprised a conceptual model, algorithm analysis, bootstrapping, path diagram, and model evaluation [42]. Following these, conclusion and recommendations were provided. This research focused on exploration needs and influences of constructs of technology, organization, environment, and individuals or adopters of E-Commerce mediated by intention to use (see Figure 1). Hypothesis testing includes H1: technology has a positive

influence on intention to use; H2: organization has a positive influence on intention to use; H3: environment has a positive influence on intention to use; H4: individuals have a positive influence on intention to use; and H5: intention to use has a positive influence on E-Commerce Adoption.

#### IV. RESULTS AND DISCUSSION

The initial result was obtained through the outer model of path analysis. The design of the research model involved latent, exogenous constructs (technology, organization, environment, and individuals) as well as a latent, endogenous construct (intention to use). The following elaboration was given: technology (T1) included indicators of perceived benefits (T1.1), perceived barriers (T1.2), and top management (T1.3); organization (G1) included indicators of IT resources (G1.1), infrastructure configuration (G1.2), financing (G1.3), and installation funding (G1.4); environment (L1) included indicators of competitor pressure (L1.1) and government regulations (L1.2); individuals (D1) included indicators of IT experiences (D1.1) and IT capabilities (D1.2); E-Commerce Adoption (EC1) included indicators of adoption conduct (EC1.1) and non-adoption conduct (EC1.2); as well as intention to use (IU1) included indicators of awareness of benefits (IU1.1) and awareness of easiness (IU1.2).

Referring to computation of SEM-PLS, an additional stage taken was to make estimation through algorithm of PLS and bootstrapping. Analysis further engaged examination of convergent and discriminant validity based on Average Variance Extracted (AVE). Processed respondents' data indicated influences of constructs represented in the path diagram of research model in Figure 2.

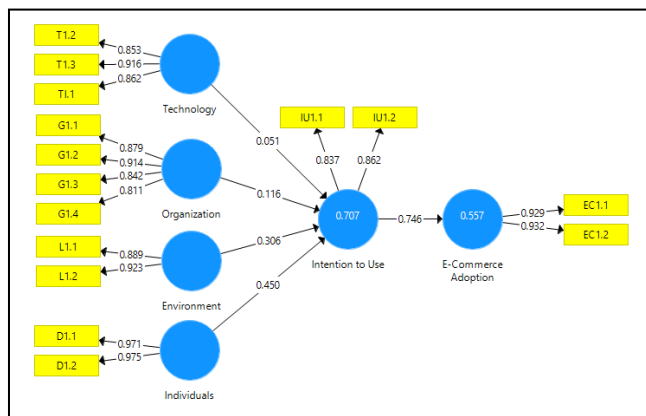


Fig. 2. Path Diagram of Research Model

Examination results of the path diagram of research model showed that outer loading scores of all indicators (loading factors) were valid. It was found that they were greater than 0.70. Therefore, all indicators could be in use in this research [43]. Validity of research results could also be seen from the test of Fornell-Larcker Criterion. The discriminant validity of construct levels could be examined by comparing the root of AVE and construct correlation. Table I showed examination results of discriminant validity at construct levels. Moreover, reliability and validity of the whole constructs indicated this:  $AVE > 0.50$ . Besides, the root of scores was greater than the correlation coefficient of other constructs. Table II additionally indicated results of reliability examination through Cronbach's Alpha, where

obtained scores were greater than 0.60. The same thing occurred to composite reliability with coefficients which were greater than 0.80 and, hence, could be used in hypothesis examination [43,44].

TABLE I. DISCRIMINANT VALIDITY

Fornell-Larcker Criterion	E-CA	EVM	IND	ITU	ORG	TEC
E-Commerce Adoption (E-CA)	0.931					
Environment (EVM)	0.689	0.906				
Individuals (IND)	0.811	0.822	0.973			
Intention to Use (ITU)	0.746	0.784	0.807	0.850		
Organization (ORG)	0.637	0.701	0.686	0.670	0.862	
Technology (TEC)	0.443	0.528	0.511	0.514	0.612	0.877

TABLE II. CONSTRUCT RELIABILITY AND VALIDITY

Fornell-Larcker Criterion	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
E-Commerce Adoption	0.846	0.846	0.928	0.866
Environment	0.784	0.802	0.902	0.821
Individuals	0.943	0.946	0.972	0.946
Intention to Use	0.615	0.617	0.838	0.722
Organization	0.884	0.887	0.920	0.744
Technology	0.850	0.861	0.909	0.769

Following these, a structural model (an inner model) was in analysis through bootstrapping and SmartPLS Program. Bootstrapping aimed to examine significance of indicators of each construct and obtain t-value reflecting existence or non-existence of relationships. An indicator was significant provided that t-statistics was greater than 1.96 (z-score of Confidence Interval (CI) 95% = 1.96) [44]. Figure 3 showed the bootstrapping outputs of the path model. It was extremely crucial to cognize the significance value of each indicator.

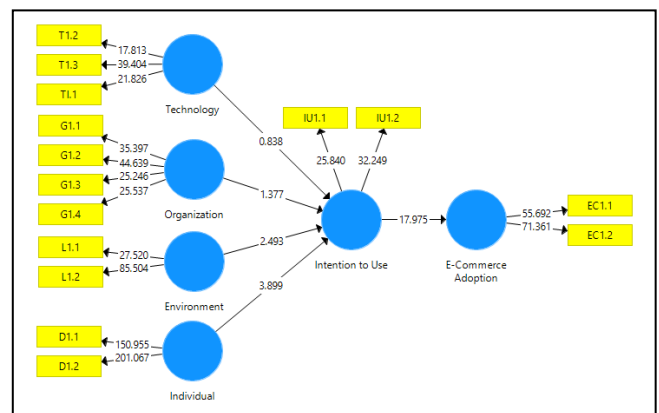


Fig. 3. Bootstrapping Outputs of Path Model

Calculation results of the significance test of each indicator indicated that the whole original scores were positive. Understandably, indicators representing each

construct had positive influences. The scores meant the quality of exogenous and endogenous constructs. Meanwhile, it was shown that t-statistics influenced independent constructs and the dependent one. Based on Table III, all constructs reflected this:  $t\text{-statistics} > t\text{-table}$  (1.96). Comprehensibly, they had positive, significant influences. It was further found that there were two probability values which were greater than 0.05 meaning to be insignificant [44].

TABLE III. PATH SIGNIFICANCE TEST

Fornell-Larcker Criterion	Original Sample (O)	T Statistics ((O/S TDEV))	P Values
Environment → Intention to Use	0.306	2.395	0.017
Individuals → Intention to Use	0.450	3.875	0.000
Intention to Use → E-Commerce Adoption	0.746	18.246	0.000
Organization → Intention to Use	0.116	1.357	0.175
Technology → Intention to Use	0.051	0.873	0.383

Next, R-squared value was computed. It was used to test the inner model of goodness of fit. Findings revealed that the value of E-Commerce Adoption was 0.552 (55.2%). The interpretation was that E-Commerce was influenced by technology, organization, environment, and individuals through intention to use. The influences were, nevertheless, not very strong due to the fact that the rest were influenced by other factors not concerned in this research model (0.448 or 44.8%). Meanwhile, R-squared-adjusted value of intention to use was 0.693 or 69.3%. Understandably, similar to E-Commerce, intention to use was influenced by technology, organization, environment, and individuals. The rest of values reflected not examined factors (0.307 or 30.7%). In order to find out R-squared predictive relevance [45], the formula  $Q^2 = 1 - (1 - R^2 \text{ E-Commerce Adoption}) * (1 - R^2 \text{ intention to use})$  was applied. This produced 0.862 or 86.2% meaning that the research model possessed relatively big predictive relevance and deserved to be in use.

Another analysis indication of the path model was that constructs of technology, organization, environment, and individuals directly and positively influenced intention to use. The coefficients were respectively 0.051, 0.116, 0.306, and 0.450. Furthermore, intention to use with coefficient = 0.746 had direct, positive influences on E-Commerce Adoption. To sum up, all values represented that hypothesis testing showed direct, positive influences of all constructs used in this research. The constructs remained fundamental factors and affected E-Commerce Adoption through intention to use.

Referring to each path coefficient, the greatest value was possessed by intention to use on E-Commerce Adoption. It could be interpreted that such the intention was the most critical factor and should be comprehensively monitored and sustainably improved. The indication was that the success of E-Commerce Adoption relied on high intention to use. Therefore, socialization and real actions by the government should be taken for the sake of the public in order to improve businesses of MSMEs in West Kalimantan through E-Commerce. The indicator requiring serious attention was awareness of benefits (0.837) as the value was less than

awareness of easiness (0.862). It was realized that the society's awareness of running MSME businesses through E-Commerce was still low despite very significant intention to use. The complexity was on internet providers giving optimal service benefits to the whole users of online transaction media. Awareness of benefits, nevertheless, depended on offered guarantees of products based on customers' needs. Also, benefits conveyed should be actualized to encourage attitude and motivation of improving MSMEs through E-Commerce.

In relation to latent, exogenous constructs towards the latent, endogenous construct of intention to use, it was found that path coefficients of technology, organization, environment, and individuals were consecutively 0.051, 0.116, 0.306, and 0.450. The greatest coefficient was possessed by influences of individuals on intention to use (0.450). It measured indicators of experiences and human resource capabilities in IT. In addition, recruitment of employees for business needs of MSMEs should be concerned in particular to encourage intention and motivation of running E-Commerce. This indicator reflected that human resources empowering MSME businesses were suggested to have experiences, capabilities, and knowledge of IT professionally. Meanwhile, the smallest indicator coefficient (0.051) was possessed by technology. The circumstance indicated that the majority of MSMEs in West Kalimantan encountered technical difficulties of readiness and configuration appropriateness of IT. It was found that frequently unstable internet connection reduced users' intention and motivation of usage for business needs and caused problems of online transaction. Another kind of concrete problem was that a lot of regions in West Kalimantan had no internet access. These should be put into regional government consideration. Finally, other constructs, i.e. organization and environment had influences on intention to use to adopt E-Commerce well.

Regarding indicators, the smallest values were possessed by installation funding (G1.4), funding (G1.3), perceived barriers (T1.2), perceived benefits (T1.1), IT knowledge (G1.1), and competitor pressure (L1.1). They were consecutively 0.811, 0.842, 0.853, 0.862, 0.879, and 0.889, and were, thus, less than 0.900. Attention was particularly required to influence intention to use to actualize the success of E-Commerce. The lowest values represented consideration of by the private organizations and the government when starting MSME businesses through E-Commerce. It could be recognized that funding of installation was the first priority of changing traditional businesses into digital businesses through E-Commerce. Meanwhile, the biggest values (loading factors) were possessed by IT capabilities (0.975), IT experiences (0.971), government regulations (0.923), top management (0.916), and infrastructure configuration (0.914). Based on the composition, it was noted that IT capabilities became the main focus for the success of MSME businesses in implementing E-Commerce. Consequently, improvement of intention to use should start by owning professional human resources. The government regulations and licensing were keys to actualize intention to use and expedite E-Commerce Adoption.

Based on analysis of the path diagram, it can be clarified that strategy of improving E-Commerce Adoption of MSME businesses in West Kalimantan can only have actualization

through direct relationships of roles of intention to use. Strongly possessing intention and behavior make it expedited. The foundation is to importantly enhance intention to use through awareness of benefits. Readiness of devices and configuration of IT are requirements to properly improve E-Commerce. They pertain to upgrade of internet connection and stability of internet network at each location in West Kalimantan. Reliability and ascertainment of IT devices rely on readiness of human resources as well as capabilities and knowledge of IT. Also, to rephrase, government regulation system should be reformulated to support business growth of MSMEs through E-Commerce.

These existing research results strengthens previous studies. It is claimed that the lateness of business growth of MSMEs through E-Commerce happens due to aforesaid basic factors [15,16,17,18,19] requiring serious attention. The emphasis is on the construct of intention to use to socialize the importance of awareness of benefits and easiness of transaction in MSME businesses through E-Commerce in West Kalimantan. These two indicators are crucial supports that should be immediately applied to have ascertainment.

## V. CONCLUSION AND FUTURE RESEARCH

Pertaining to previous elucidation of findings, to conclude, intention to use really determines the success of E-Commerce Adoption. The emphasis is that such the intention can properly become perspectives to expedite it. Also, the success depends on readiness of professional human resources based on knowledge and experiences of IT. Therefore, the mediating role of intention to use to improve E-Commerce Adoption is influenced by IT particularly regarding availability configuration and stability of internet connection, as well as individuals with capabilities and experiences of IT. Such findings can further be enhanced through in-depth investigation on levels of criteria, complements of all constructs, and determination of remapped indicators. This can, accordingly, bring greater success to E-Commerce Adoption in West Kalimantan.

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