The Adoption of E-Auction in Indonesia: The Extended Technology Acceptance Model Study

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ABSTRACT

In Indonesia, e-commerce generally associated with online shop. However, e-commerce's scope is bigger than just online shops; there are various other business/transaction forms that existed. Electronic auction or e-auction is one of the major online transaction forms (Huang & Dai, 2006). Nevertheless, some e-auction companies that entered Indonesia is struggling to penetrate Indonesia market (Cosseboom, 2014). This present study focused on the impact of extended Technology Acceptance Model (TAM) constructs (trust, enjoyment, perceived ease of use, and perceived usefulness) (Davis, 1989; Pavlou, 2003; Childers *et al.*, 2001) and the antecedent constructs (security, time consumption, economic gain, and playfulness) in shaping Indonesian Consumers' attitude in the adoption of e-auction.

To collect the data, simple random sampling method was employed. An online survey spread to the e-mail subscribers in an e-auction website, a total of 228 usable responses were obtained. Confirmatory Factor Analysis (CFA) used to assess the measurement model, Structural Equation Modeling (SEM) used to test the hypotheses. Result indicated that Security, Economic Gain, and Playfulness have significant positive impact to extended TAM constructs, while time Consumption has negative, but insignificant impact to extended TAM constructs. In addition, all extended TAM constructs have significant positive impact toward attitude in using e-auction.

Keywords: E-Auction; Attitude; Confirmatory Factor Analysis; Structural Equation Modeling; and Technology Acceptance Model

ABSTRAK

Di Indonesia, bisnis online biasa diasosiasikan dengan toko online. Namun, cakupan bisnis online sebenarnya lebih luas dari sekedar toko online; banyak ragaman bentuk bisnis/transaksi online lainnya. Lelang elektronik atau lelang online adalah salah satu bentuk transaksi online yang pokok (Huang & Dai, 2006). Walaupun demikian, beberapa perusahaan lelang online yang memasuki Indonesia masih mengalami pergumulan dalam menembus pasar Indonesia (Cosseboom, 2014). Penelitian ini berfokus pada pengaruh dari Model Penerimaan Teknologi (MPT) yang diperpanjang (kepercayaan, kesenangan, persepsi kemudahan penggunaan, dan persepsi kegunaan) (Davis, 1989; Pavlou, 2003; Childers dkk., 2001) dan konstrak-konstrak terdahulu (keamanan, konsumsi waktu, keuntungan ekonomi, dan playfulness) dalam membentuk sikap konsumen Indonesia untuk mengadopsi lelang elektronik.

Untuk mengumpulkan data, metode simple random sampling digunakan. Sebuah survey online disebarkan pada langganan surat elektronik sebuah situs web lelang elektronik, dan menghasilkan 228 respon yang dapat dipakai. Analisa Faktor Konfimatori digunakan untuk menilai model pengukuran, Model Persamaan Struktural dipakai untuk menguji hipotesis-hipotesis. Hasil mengindikasikan bahwa Keamanan, Keuntungan Ekonomik, dan playfulness memiliki pengaruh yang positif signifikan terhadap konstrak-konstrak perpanjangan MPT, sedangkan konsumsi waktu memiliki pengaruh negatif tidak signifikan pada konstrak-konstrak perpanjangan MPT. Selain itu, semua konstrak perpanjangan MPT memiliki pengaruh positif signifikan pada sikap untuk menggunakan lelang elektronik.

Kata Kunci: *Lelang Elektronik; Sikap; Analisa Faktor Konfirmatori; Model Persamaan Struktural; dan Model Penerimaan Teknologi.*

INTRODUCTION

The Internet widely launched to the world in 1990s, but before that, Electronic Retail (e-tail) or online shopping has actually invented before, in 1979 by Michael Aldrich (Tkacz & Kapczynski, 2009). Aldrich's concept was using the momentum of increasing cost of transportation and decreasing cost of communication in United Kingdom, as a business opportunity to buy things from their home. At that time, there were no Personal Computer (PC), and no Internet yet. The online shopping was created using the combination of TV networks and telephone line. When the Internet came in 1990, the similar online shopping concept just moved its medium from TV and telephone networks to PC and Internet networks (Aldrich, 2010).

Today, e-commerce's scope is bigger than just online shopping. E-commerce could be widely defined as the use of Internet to facilitate, execute, and process business transaction (DeLone & McLean, 2004). There are many types of business models in e-commerce, but one of the business models that have proven to be one of the greatest web-based services is auction model or electronic auction (Ariely & Simonson, 2003). Electronic auction or known as e-auction or online auction became one of the major transaction form, prompted by eBay's success (Huang & Dai, 2006).

Nowadays, e-auction has received more popularity and acceptance worldwide, especially among larger organizations (Hannon, 2004). Researchers (Dai & Kauffman, 2002; Seidmann & Vakrat, 2003) concluded that e-auction could be used as an effective tool to reduce purchase price, save time, streamline the bidding process, and facilitate a larger pool of suppliers and products.

There are various areas of e-auction that could be researched, but consumer behavior is one of the most popular research areas, considering the number of studies in this area that has been conducted (Cui, Lai, & Liu, 2010). For instance, studies on technology adoption (Stafford & Stern, 2002; Hu et al., 2004; Bonsjak et al., 2006; Zhang & Li, 2006), studies on bidding behavior (Ba et al., 2003; Bapna et al., 2006; Easley & Tenorio, 2004; Namazi & Schadschneider, 2006; Roth & Ockenfels, 2002), and studies on reputation or trust (Ba et al., 2003; Gregg & Scott, 2006; MacInnes et al., 2005; Melnik & Alm, 2002; Standifird, 2001).

In Indonesia, e-commerce market is rapidly growing and forecasted to reach $18 Billion in the end of 2015 (Shu, 2015). The number of online shopper in Indonesia is rapidly increasing, from 5.9 million in 2014, and forecasted to reach 8.7 million by 2016 (Cosseboom, 2014). Indonesia is predicted to be the next big market behind China and India. Several gigantic companies (Alibaba Group, Sequiola Capital, and Softbank) have made big investment ($100 million) in Indonesian e-commerce (Shu, 2015).

LITERATURE REVIEW

E-auction in Indonesia is a new concept. Thus, to be able to investigate thoroughly user's acceptance/adoption of e-auction websites in Indonesia, it's important to understand the concept and definition of e-auction. In addition, this research will use the extended Technology Acceptance Model (TAM) as the main theory in explaining the acceptance process of e-auction.

E-auction

This research investigate users' adoption, of one of the best web-based business models, e-auction (Ariely & Simonson, 2003). Electronic or online auction is defined as a market/service/platform in which auction users or participants sell or bid for products or services, over a specified period of time, following a particular auction model (rule), via the Internet (Lucking-Reiley, 2000; Wang et al., 2002).

Currently, there are several e-auction websites in Indonesia such as rajalelang.com, mrlelang.com, Grivy.com, etc. Nevertheless, there is no major or prominent auction website in Indonesia yet.

E-auction could be divided into three categories, business to business (B2B), business to consumer (B2C), and consumer to consumer (C2C) auctions (Turban, King, Lee, Liang, & Turban, 2011). This study will focus in business to consumer (B2C) e-auction website, specifically in travel and leisure services. In Indonesia, there are several C2C auction websites, but there is only one B2C auction websites. Grivy.com is the first B2C auction websites in South-East Asia that offers travel and leisure services deals (Cosseboom, 2014).

Technology Acceptance Model

E-auction is a part of new information technology; therefore its acceptance/adoption could be explained using Technology Acceptance Model, TAM (Davis, 1989). The Technology Acceptance Model (TAM) is a conceptual model that has been used to investigate and predict user's motivation in adoption of new information technology (Ha & Stoel, 2009). In 1985, Fred Davis proposed TAM as part of his doctoral thesis at the MIT Sloan School of Management (Davis, 1985). The basic conceptual model for TAM is the Stimulus-Organism-Response (SOR) model where response (actual system use) is predicted by the stimulus (system features and capabilities) that affecting organism (user's motivation).

In his original proposal, Davis suggested that user's motivation could be explained by three factors: Perceive Ease of Use (PEOU), Perceived Usefulness (PU), and Attitude toward Using. Since then, many

researchers (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Swanson, 1982; Mathieson, 1991; Venkatesh & Davis, 2000) have developed the TAM by adding more factors. Nowadays, TAM is very popular as has been cited in most of studies related with technology adoption (Lee, Kozar, & Larsen, 2003).

Davis (1989) defined perceived usefulness as "the degree to which using a new technology will enhance performance" and perceived ease of use as "the perceived extent to which using a new technology will require little effort". In early study of TAM, Davis (1989) determined that there are two constructs (perceived usefulness and perceived ease of use) that could affect one's attitude and behavior intention toward using a new technology. Attitude defined as "the degree to which a person has a favorable or unfavorable evaluation of a behavior in question" (Ajzen & Madden, 1986, p. 454).

In addition, researchers (Swanson, 1982; Mathieson, 1991; Taylor & Todd, 1995; Venkatesh & Davis, 2000) have found the same conclusion that perceived usefulness (PU) and perceived ease of use (PEOU) were both important behavioral determinants. The combination of perceived usefulness and the perceived ease of use could affect user's attitude toward new technology usage (Liaw & Huang, 2003).

This research will investigate the acceptance of e-auction in Indonesia through the impact of precedent factors (security, time consumption, economic gain, and playfulness) to extended TAM (Perceived Ease of Use, Perceived Usefulness, Trust, and Enjoyment) and to attitude toward using/participating in e-auction. Figure 1 below shows the proposed relationship between constructs in this study.
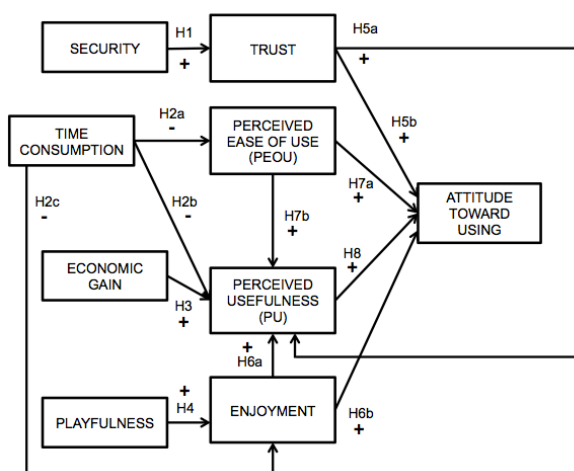

Figure 1. Relationship between Concepts

Precedent Factors

In this study, there are four precedent factors that will be investigated: security, time consumption, economic gain, and playfulness. Researchers (Davis,

1989; Childers, Carr, Peck, & Carson, 2001; Pavlou, 2003) believe that precedent factors impact to the extended TAM study could explain consumers' adoption of e-auction. Li (2013) defined security as e-auction websites features to protect consumer's privacy and financial information. He also defined time consumption as the time spent by user to browsing, searching, bidding, and monitoring. Furthermore he defined economic gain as the financial benefits that consumer gain. Playfulness refers to a situational characteristic of the interaction between an individual and the environment (Moon & Kim, 2001).

Website security plays a vital role in both reducing the perceived risk and increasing trust in the website. O'Cass and Fenech (2003) argue that an Internet user who perceives a website security as insecure is unlikely to shop online. Thus, it's very important and salient to understand user's perception in online security (Vijayasarathy, 2004). Thus, the following hypothesis proposed:

H1:   Perceived Security associated with e-auction websites affects users' trust of e-auction.

Time consumption is a natural factor associated with e-auction, and could be considered as the cost incurred in using e-auction (Li, 2013). If in online shopping customer could directly purchase the items, in e-auction, the participant should wait and see back and forth the current highest bid. A typical online auction could last from couple hours until several days. Li (2013) argues that time consumption has negative impact to perceived ease of use, perceived usefulness, and enjoyment. Therefore, the following hypotheses proposed:

H2a: Time consumption associated with e-auction process affects perceived usefulness of e-auction.

H2b: Time consumption associated with e-auction process affects perceived ease of use of e-auction.

H2c: Time consumption associated with e-auction process affects enjoyment of using e-auction.

One of the main advantages to shop in online stores is competitive price (Ha & Stoel, 2009), mostly because of lower operating cost and taxes. In addition, e-auction usually has a very low starting price to attract more bidders, and bidders have control over the price that they want to pay within their own reasonable price limit. Therefore, bidders/users have chance to get a product at a lower price than by normal channel, which equal economic gain. This might increase consumer's perceive usefulness of e-auction.

The action involved in bidding process may offer positive experience as fun and excitement, no matter the result of the auction. The thrill involved in competition with other bidders could bring an

excitement, which is called the "opponent effect" (Heyman, Orhun, & Ariely, 2004). The opponent effect could increase a bidder's willingness to pay, as bidder's perception or value of an item also increases. Thus the hypothesis below proposed:

H3: Economic gain associated with e-auction affects perceived usefulness of e-auction.

Playfulness is defined as a situational characteristic resulted from the interaction between an individual and the environment (Moon & Kim, 2001). In this study, playfulness is defined as the excitement and fun generated from the competitiveness inside the bidding process. Thus the hypothesis below proposed:

H4: Playfulness associated with using e-auction affects enjoyment of using e-auction.

Trust-enhanced TAM

Ba and Pavlou (2002) argued that trust could help reduced the social complexity in online auction, by allowing the user to subjectively rule out undesirable behavior attitude. The incorporation of trust into TAM, give a better understanding and more accurate prediction of user's attitude and behavioral intention towards the adoption of the new technology (Suh & Han, 2002; Dahlberg et al., 2003; Pavlou, 2003; Chen & Tan, 2004), specifically e-auction (Gefen & Straub, 2003). Thus this study will include trust as one of the constructs predicting user's attitude.

Increase in trust in certain technology will increase their likeability to use the technology. Trust was concluded to be a strong factor that affects perceived usefulness (Dahlberg et al., 2003; Pavlou, 2003) and attitude (Suh & Han, 2002; Chen & Tan, 2004). Thus, here is the hypotheses proposed for this study:

H5a: Trust associated with using e-auction affects perceived usefulness of e-auction.

H5b: Trust associated with using e-auction affects user's attitude toward e-auction.

Enjoyment-enhanced TAM

Novak et al. (2000) believes that the enjoyment positively impact intention to use on the computer-mediated environment. In the context of online shopping, enjoyment could be defined as shopping enjoyment; the degree to which user's believes that shopping will generate pleasure (Childers et al., 2001; Bauer, Falk & Hammerschmidt, 2006). Davis, Bagozzi, and Warshaw (1992) proposed enjoyment as additional construct that could affects perceived usefulness and user's attitude.

Enjoyment could be associated with the positive and pleasurable experience involved in e-auction process, such as social experiences, gaming experiences, and winning experiences. Researchers (Venkatesh, 1999; Childers et al., 2001; Van der Heijden, 2003; Li, 2013) concluded that perceived enjoyment positively affects perceived usefulness and

attitude in adopting a new online technology. Thus, the hypotheses below proposed:

H6a: Enjoyment associated with using e-auction affects perceived usefulness of e-auction.

H6b: Enjoyment associated with using e-auction affects user's attitude toward e-auction.

Main factors of TAM

The original TAM was developed to investigate technology (personal computer) acceptance in working environment. In addition, studies related to the successfulness of original TAM (PU and PEOU) explain technology adoption, were conducted in areas such as e-shopping, e-banking, mobile commerce, and e-learning (Shih, 2004; Bruner & Kumar, 2005; Lee et al., 2005; Peng, 2007; Ha & Stoel, 2009; Tong, 2010). Nevertheless, as the original TAM's underlying assumption is user's voluntariness of using a new technology (Yen et al., 2010), Vijayasarathy (2004) argued that the constructs in the original TAM are better suited to situations with few options involved.

Thus, in other situations and conditions, like e-auction and group buying, where there are many options following different forms of online transactions, using PU and PEOU only is not enough (Li, 2013). There is a need to add new variables to create a better understanding of user's adoption in various online (Childers et al., 2001; Dahlberg et al., 2003). In this study, there will be variables added to refine the original TAM, from trust-enhanced TAM and enjoyment-enhanced TAM.

The main factors of TAM, both perceived ease of use and perceived usefulness affects behavioral intentions (Liaw & Huang, 2003). In addition, perceived ease of use also affects perceived usefulness in adopting a new technology (Davis, 1989). Ha and Stoel (2009), argued that perceived usefulness effect on behavioral intention may be mediated by attitude.

H7a: Perceived ease of use of e-auctions affects perceived usefulness of e-auction.

H7b: Perceived ease of use of e-auctions affects user's attitude toward e-auction.

H8: Perceived usefulness of e-auctions affects user's attitude toward e-auction.

RESEARCH METHOD

This study will use Structural Equation Modeling (SEM) to test the proposed hypothesis and conceptual model. In SEM, there are two components, a structural model and a measurement model:

Variables in structural model are divided into exogenous and endogenous. Exogenous variables are independent constructs that predict other variables. There are several exogenous variables in this study such as Security, Time Consumption, Economic Gain, Subjective Norm, and Playfulness. Endogenous variables are constructs that are predicted by other

variables. In this study, the endogenous variables are Trust, Enjoyment, Ease of Use, Usefulness, and Attitude.

Variables in measurement model are divided into observed and unobserved. Manifest or observed variables are constructs that are directly measured. In this research, the observed variables are Security, Time Consumption, Economic Gain, Subjective Norm, and Playfulness. Latent or unobserved variables are hypothetical constructs that are not directly measured. In this research, the latent variables are Trust, Enjoyment, Ease of Use, Usefulness, and Attitude.

This study will use simple random sampling as the sampling method. To fulfilled research objective, the population is people who have knowledge regarding e-auction. Thus, sample will be acquired through an e-auction company (Grivy.com) e-mail subscribers, using assumption that they are the population that most likely understand e-auction.

In SEM, reliability and validity test are highly related to the use of Confirmatory Factor Analysis (CFA). One of the advantages in using CFA is it's the ability to measure it's construct validity; how an indicator from the sample could reveal the real condition of the population. Researchers (Hair *et al.*, 1998; Ferdinant, 2002; Dimitrov, 2003; Hwang, 2004; Arbuckle, 2010; Hisyam, 2010; Idris, 2010; Lawson, 2010; Ghozali, 2011) have concluded that there are four indicators that generally used.

Convergent validity is a parameter that aims to check whether or not two constructs that theoretically related, are in fact related. Convergent validity could be seen from the loading value and the critical ratio of a latent construct. First of all, loading factor of the construct should be significance. It's standardized loading estimate should be equal or greater than to 0.50 and it's recommended to reach 0.70 (Ghozali, 2011, p. 138). Beside, the critical ratio should be equal or greater than to 0.05 (Igbaria *et al.*, 2003).

Average Variance Extracted (AVE) is used to see the average percentage of items or indicators in a latent construct. The high value of AVE shows that the indicators used, have represent the variable. Value for AVE should be greater than or equal to 0.50 to show a great convergent (Ghozali, 2011, p. 138). The formula of variance extracted is shown below. Standardized loading will be taken from each indicator. Where εj is measurement error = 1- (standardized loading)^2.

$$AVE = \frac{\sum \text{standardized loading}^2}{\sum \text{standardized loading}^2 + \sum \varepsilon j}$$

For construct reliability, Ghozali (2011) suggested 0.70 as recommended values, but 0.60 is acceptable if other indicators are accepted (p. 140). Below is the formula to get construct reliability.

$$CR = \frac{(\sum \text{standardized loading})^2}{(\sum \text{standardized loading})^2 + \sum \varepsilon j}$$

The summary of indicators' cut-off value and desirable value of each indicator is shown in table 1.

Table 1. Summary of Indicators

Indicators	Cut-off value	Desirable Value
Loading Factor	≥ 0.30	≥ 0.70
Critical Ratio	≥ 0.05	≥ 0.05
Construct Reliability	≥ 0.70	≥ 0.70
AVE	≥ 0.50	≥ 0.50

Source: Igbaria *et al.*, 2003; Ghozali, 2011, p. 137

In this study, analysis toward the conceptual model and constructs will be conducted using Structural Equation Modeling (SEM). SEM is a combination between two statistical methods, which are factor analysis and simultaneous equation modeling (Ghozali, 2011, p. 3). Cooper and Schindler (2014) defined SEM as a series of statistical method that "uses analysis of covariance structures to explain causality among construct" (p. 667).

The Confirmatory Factor Analysis (CFA) is an extension of factor analysis that test specific hypotheses related to the concept/model. CFA is designed to test the multidimensionality of a theoretical construct. CFA will determine whether or not the indicators/manifest that are used to create latent variable are valid.

SRM is the hybrid of a structural model and measurement model. It is one of the basic models in SEM. In path analysis, SR is able to test the hypotheses both direct and indirect causal effects. One of the advantages in using SRM is capability to test hypotheses in both structural and measurement in a single model. SRM is also has both measurement errors and disturbances.

RESULTS AND DISCUSSION

The concept of e-auction is new in Indonesia, therefore there are many people who still don't understand the concept of e-auction thus will not able to answer the measurement questions, as they don't have the knowledge or experience to answer. Grivy.com is an e-auction website, thus it's mailing list member are more likely to understand the concept and has experience e-auction than random people on the Internet.

The result from the questionnaires shows that 62.33% of respondents are female. As for the age, 35.43% of respondents are between 18 to 22 years old, 39.91% of respondents are between 23 to 32 years old, and 19.28% are between 33 to 42 years old. Only 5.38% are above 42 years old. Most of the

respondents (73.54%) held Bachelor degree (S-1), 13.45% held Master degree (S-2), and 1.35% held Doctoral/PhD degree (S-3).

Regarding the profession, 53.81% of the respondents described themselves as a professional or an employee, while 13.45% described themselves as an entrepreneur, and 29.60% as student. The majority of the respondents (65.47%) are currently living in Jabodetabek area (Jakarta, Bogor, Depok, Tangerang, Bekasi) and 24.66% in Surabaya. The complete demographic characteristic of the sample, including gender, age, education, profession, and city, are shown in table 2.

Table 2. Demographic Characteristic of the sample

Demographic Characteristic	n	%
Gender		
Female	139	62.33%
Male	84	37.67%
Age		
18-22	79	35.43%
23-32	89	39.91%
33-42	43	19.28%
>42	12	5.38%
Education		
SMA	11	4.93%
Diploma	15	6.73%
Bachelor (S-1)	164	73.54%
Master (S-2)	30	13.45%
Doctor/PhD (S-3)	3	1.35%
Profession		
Professional/Employee	120	53.81%
Student	66	29.60%
Entrepreneur	30	13.45%
Housewife	6	2.69%
Others	1	0.45%
City		
Jabodetabek	146	65.47%
Surabaya	55	24.66%
Bandung	6	2.69%
Yogyakarta	3	1.35%
Others	8	3.59%

This study using an existing measurement model or set of measures that already tested and proved in other study (Li, 2013), thus there is no need to conduct Exploratory Factor Analysis (EFA). In this study, CFA used as a first step to examined the proposed measurement model in structural equation modeling.

In SEM, the validity of the data will be measured by Loading Factor and CR value. Reliability will be measured using Construct Reliability and Average Variance Extracted (AVE). Indicator that has Loading Factor more than or equal to 0.50 is considered acceptable and more than or equal to 0.70 is considered to have great validity value. However, indicators with loading factor less than 0.50 but still ≥ 0,30 is acceptable as long as the other indicator within same variable has good value (Igbaria, Zinatelli, Cragg, & Cavaye, 1997).

All indicators are proven to be valid and reliable. The validity and reliability of both endogenous and exogenous constructs are shown in table 3 and table 4.

Table 3. Validity and Reliability of Endogenous Variable

Variable	Loading Factor	C.R.	Construct Reliability	Variance Extracted
Trust	0.752			
	0.854	12.035	0.864	0.679
	0.862	12.188		
Enjoyment	0.924			
	0.906	21.907	0.931	0.818
	0.883	20.411		
Perceived usefulness (PU)	0.873			
	0.837	13.595	0.931	0.818
	0.996	16.071		
Perceived ease of use (PEOU)	0.872			
	0.789	11.941	0.848	0.651
	0.755	10.433		
Attitude toward using	0.868			
	0.885	14.992	0.927	0.809
	0.944	15.591		

Table 4. Validity and Reliability of Exogenous Variable

Variable	Loading Factor	C.R.	Construct Reliability	Variance Extracted
Security	0.831			
	0.726	11.549	0.880	0.649
	0.816	13.563		
	0.843	9.633		
Time consumption	0.728			
	0.581	7.564	0.809	0.518
	0.695	9.605		

	0.850	7.605		
Economic gain	0.604			
	0.677	10.776	0.744	0.537
	0.876	5.413		
	0.398	16.385		
Playfulness	0.911			
	0.664	9.223	0.873	0.635
	0.706	9.139		
	0.879	10.749		

This study used structural regression model as the method to understand the adoption of e-auction. The figure 4.6 below shows the full structural regression model for this study. Full structural regression model consisted of both measurement model and structural model. Figure 2 shows the full structural model of this study.
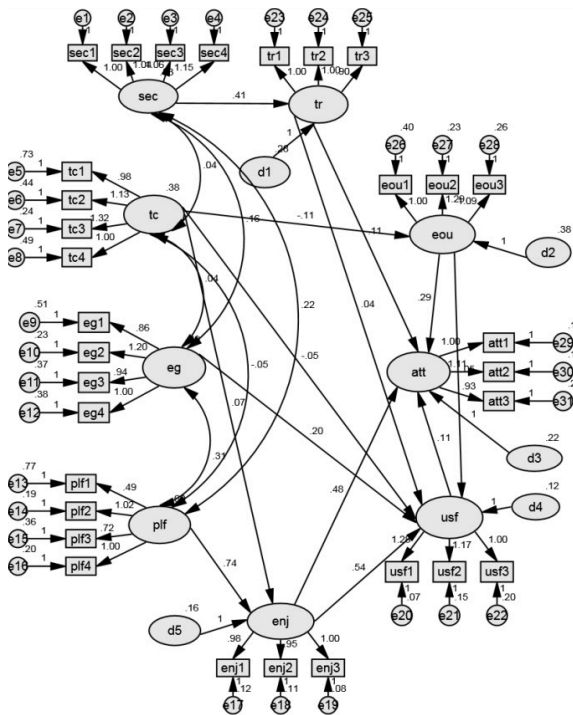

Figure 2. Full Structural Regression Model

From the original structural equation model, it is known that the covariance matrix of the population is not equal to covariance matrix of the estimated model. Therefore the modification was performed based on the modification indices in Amos output.

Then, the modified model tested using goodness of fits again. The new goodness of fits evaluation result of the modified model is shown at table 5 below. The modified model is proved to be a good model fit to explain correlation among constructs in this research model.

Table 5. Summary of Model Fit

Criteria	Result	Critical Value	Model Evaluation
CMIN	1,077	$\leq 2,00$	Good
p-value	0,149	$\geq 0,05$	Fit
RMSEA	0,069	$0,05 - 0,08$	Good
GFI	0,997	$\geq 0,90$	Good
AGFI	0,960	$\geq 0,90$	Good
TLI	0,992	$\geq 0,90$	Good
NFI	0,994	$\geq 0,90$	Good
CFI	0,994	$\geq 0,93$	Good

Hypotheses of this research were tested using SEM structural model with maximum-likelihood (ML) estimation. The result of the hypotheses concluded by observing the critical ratio and the *p*-value of each regression. Table 6 below shows the parameter estimate, standardized estimate, critical value, as well as p-value of each regression.

Path analysis examines the impact between constructs, both direct and indirect effects. Table 6 shows the standardized total effects and table 7 shows the standardized indirect effects. We can see the Enjoyment has the biggest impact to attitude (0.413) with 0.341 from direct impact. As for the indirect impact from precedent constructs, playfulness has the highest impact (0.331).

Table 6. Standardized Total Effect

	PLF	EG	TC	SEC
ENJ	0.801	0	-0.129	0
TR	0	0	0	0.317
EOU	0	0	-0.008	0
USF	0.359	0.216	-0.007	0.015
ATT	0.331	0.035	-0.044	0.047
	ENJ	TR	EOU	USF
ENJ	0	0	0	0
TR	0	0	0	0
EOU	0	0	0	0
USF	0.448	0.047	0.185	0
ATT	0.413	0.149	0.158	0.16

Table 7. Standardized Total Effect

	PLF	EG	TC	SEC
USF	0.359	0	0.059	0.015
ATT	0.331	0.035	-0.044	0.047
	ENJ	TR	EOU	USF
USF	0	0	0	0
ATT	0.072	0.007	0.03	0

Table 8. Regression Weight of The Model

			Estimate	SE	CR	P
TR	<---	SEC	.266	.054	4.886	***
EOU	<---	TC	-.009	.080	-.108	.914
ENJ	<---	TC	-.145	.061	-2.366	.180
ENJ	<---	PLF	.730	.058	12.674	***
USF	<---	TC	-.079	.052	-1.514	.130
USF	<---	TR	.058	.080	.722	.470
USF	<---	EG	.258	.072	3.569	***
USF	<---	ENJ	.472	.101	4.684	***
USF	<---	EOU	.202	.101	2.004	.045
ATT	<---	EOU	.137	.104	1.322	.046
ATT	<---	TR	.173	.087	1.977	.048
ATT	<---	USF	.157	.070	2.252	.024
ATT	<---	ENJ	.353	.120	2.936	.003

Hypothesis testing conducted with observing the critical ratio in regression weights resulted from AMOS 22 (Table 8). From the total of 13 hypotheses, majority (9 hypotheses) was accepted; nevertheless, there are four hypotheses that were rejected. One hypothesis (Trust to Perceived usefulness) has insignificant effect, similar with previous study conducted in China (Li, 2013).

CONCLUSION

This study investigated the adoption of e-auction in Indonesia, using the five antecedent factors (i.e., security, time consumption, economic gain, playfulness) on the extended TAM variables (i.e., perceived usefulness, perceived ease of use, enjoyment, and trust). This study also investigates the impact of those factors to attitude. Table 9 shows the summary of hypothesis result.

Table 9. Summary of Hypothesis Result

Hypothesis		Effects	Result
H1	Security > Trust	+	S
H2a	Time Consumption > Usefulness	-	N
H2b	Time Consumption > Ease of Use	-	N
H2c	Time Consumption > Enjoyment	-	N
H3	Economic Gain > Usefulness	+	S
H4	Playfulness > Enjoyment	+	S
H5a	Trust > Usefulness	+	N
H5b	Trust > Attitude	+	S
H6a	Enjoyment > Usefulness	+	S
H6b	Enjoyment > Attitude	+	S
H7a	Ease of Use > Usefulness	+	S
H7b	Ease of Use > Attitude	+	S
H8	Usefulness > Attitude	+	S

Note: + = positive effect; - = negative effect; S = significant; N = not significant.

Hypothesis 1 forecasted that the Perceived Security has significant positive impact to trust. All of Hypotheses 2 (2a, 2b, and 2c) have negative impact as proposed, nevertheless the impact proven to be insignificant. Hypothesis 3 is accepted, proving that Economic Gain is significantly and positively impact Perceived Usefulness. Hypothesis 4 proposed that Playfulness has significant positive impact to Perceived Enjoyment of e-auction user.

Trust is proven to have significant positive effect to both Perceived Usefulness (H5a) as well as Attitude toward using e-auction (H5b). Another significant variable is enjoyment, which positively affect both Perceived Usefulness and Attitude. Furthermore, variable Perceived Ease of Use (PEOU) and Perceived Usefulness are proven to be an important and significant factor in the adoption of new technology.

The result of the hypotheses has achieved the research objectives of this study. This present study has investigated the adoption of e-auction in Indonesia using the extended TAM model, and found that the result is aligned with previous researches; precedent factors of TAM and the extended TAM are able to explain the adoption of e-auction in Indonesia.

This research proves the validity of the extended TAM model in explaining new technology adoption in Asia, especially in Indonesia. In addition, this present research also contributing to the growing number research of e-commerce in Indonesia, and pioneering specifically in e-auction.

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