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Integration of the E-Service Quality Model and Service Convenience Model to Measure E-Payment Performance (Empirical Study at Immigration Offices in Medan)

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ABSTRACT

This research was conducted to measure the effect of e-service quality and service convenience on e-payment performance at the Immigration Office in Medan by distributing questionnaires online. Sample collection was carried out using the convenience sampling method, which produced 299 of 361 respondents that could be used. The data processing of 299 respondents used SmartPLS and SPSS. Of the nine hypotheses that have been formulated, all have been declared accepted. So, the results of this study provide empirical evidence supporting the theory of end-user satisfaction, e-SQ, and servcon on nine variables X and Y use. All measurement items in the questionnaire statements have been confirmed valid and reliable. The most decisive influence is on the efficiency variable. At the same time, the weakest effect is the variable post-benefit convenience. The practical contribution of the results of this research can provide input for banks, e-payment providers, and immigration offices.

***Keywords*:** E-service Quality, Service Convenience, E-payment Performance, End-User Satisfaction, and Immigration Offices

INTRODUCTION

Technology has advanced, which has led to the emergence of e-payment innovations, such as credit and debit cards, m-banking, i-banking, and e-commerce. This condition occurs in almost all countries, such as Nigeria, China, India, Malaysia, Thailand, and the United States. E-payments are starting to be in demand in 2021, even though the cash payment method is still in first place. Katadata shows that the value of electronic money transactions circulating in Indonesia increased yearly from 2016-2021.

The government improved the quality of public services by making changes to the online PNBP payment system, including at the Immigration Office in 2013. Payment for passports at the Immigration Office is not only using the e-payment method. Still, it can also be done manually through the Post Office and Indomaret, so only some use e-payment for payment.

Previous research has shown inconsistent results, such as insignificant results on ease of use (Kulathunga & Fernando, 2019) and convenience (Lai, Toh, & Alkhrabsheh, 2020; Ogbanufe & Kim, 2018) on e-payment performance. Other previous studies with different theories (Khayatmoghadam, 2021; Kim, Tao, Shin, & Kim, 2010; Nguyen & Huynh, 2018; Riffai, Grant, & Edgar, 2012; Riskinanto, Kelana, & Hilmawan, 2017). Other studies have shown a positive effect on IS performance (Alhammadi & Tariq, 2020; Barkhordari, Nourollah, Mashayekhi, Mashayekhi, & Ahangar, 2017; Hameed, Nadeem, Azeem, Aljumah, & Adeyemi, 2018; Hutapea, 2020; Tella, 2012; Tella & Olasina, 2014; Tella & Abdulmumin, 2015; Treiblmaier, Pinterits, & Floh, 2006;

Salloum, Al-Emran, Khalaf, Habes, & Shaalan, 2019).

This research follows Dawson (2009) by following research that has been done before but with a different theory and modified with other ideas and with different samples. Most previous studies used the TAM (Technology Acceptance Model) approach (Ardiansah, Chariri, Rahardja, & Udin, 2020; Salloum et al., 2019; Treiblmaier et al., 2006) and UTAUT (unified theory of acceptance and use of technology) (Acharya, Junare & Gadhavi, 2019; Ogbanufe & Kim, 2018; Riffai et al., 2012) and servqual (Alhammadi & Tariq, 2020; Hutapea, 2020; Sharma, 2021) in the use of e-payments.

This study measures e-payment performance at the Immigration Office, which has been implementing it for a long time since 2013, so it is not suitable for using the TAM and UTAUT theory. So, this study integrates the e-SQ theory (Parasuraman, Zeithaml, & Malhotra, 2005) and servcon theory (Seiders, Voss, Godfrey, & Grewal, 2007) with end-user satisfaction theory (Doll, Deng, Raghunathan, Torkzadeh, & Xia, 2004). These three models are used to evaluate e-payment performance at the Immigration Office.

When viewed from the time of use, e-payment at the Immigration Office has been running for a long time, but there has been no research discussing the performance of the e-payment. Therefore, the main question in this study is, "Is there an influence between e-service quality and service convenience on e-payment performance at the Immigration Office in Medan?". So, it is necessary to do further research to measure the effect of e-service quality and service convenience on e-payment performance at the Immigration Office in Medan.

LITERATURE REVIEW

End-User Satisfaction

A user satisfaction measurement instrument is needed to assess the success of increasing computer use. The theory of end-user satisfaction by Doll and Torkzadeh (1988) was proposed by using five instruments (content, accuracy, format, timeliness, and ease of use) and measuring 12 items (Doll & Torkzadeh, 1988). End-user satisfaction is a useful factor for measuring the success of an IS performance system consisting of 5 first-order instruments and 12 second-order measurement items across all population subgroups (Doll et al., 2004).

The end-user satisfaction instrument proved valid as a standard measure for measuring IS performance with different samples and situations on the same set (Doll, Xia, & Torkzadeh, 1994; Torkzadeh & Doll, 1999). The validated end-user satisfaction theory can be used in all population sub-groups without differentiating factors (Doll et al., 2004).

Assessment of user performance through satisfaction has been proven to be the most widely used by researchers in the theory of end-user satisfaction developed by Doll et al. (1988) (Kulathunga & Fernando, 2019). Measurement with five end-user satisfaction instruments is considered vital for measuring the impact of using IS on e-payment performance (Doll et al., 2004; Gelderman, 1998).

Several previous studies on electronic-based have used the use of end-user satisfaction theory IS (Aggelidis & Chatzoglou, 2012; Fitriantoro & Husnah, 2018; Fong & Ho, 2014; Hou, 2018; Kesuma, Saidin & Ahmi, 2017; Kulathunga & Fernando, 2019; Marakarkandy & Yajnik, 2013). Several studies agree that the user satisfaction theory can be applied at any level and area influencing e-payment performance in making decisions (Hou, 2018).

E-Service Quality

Several studies have agreed upon the theory of service quality (servqual) at the outset of the theory. That servqual is the expectation desired by service users with the performance of services provided by the company (performance-expectations) (Parasuraman, Zeithaml & Berry, 1985). Then, the development of the servqual theory by Parasuraman et al. continued and

developed in 1988 and 1991.

The emergence of transactions via the web led to the development of the servqual theory into e-service quality (e-SQ). Servqual is a face-to-face service, while e-SQ uses electronic services. So, using servqual is considered inappropriate for web-based use (Zeithaml, Parasuraman, & Malhotra, 2000). According to Parasuraman et al. (2005), e-SQ is all part of the relationship between customers and IS.

Parasuraman et al. (2005) conducted research by perfecting 11 e-SQ instruments conducted by Zeithaml et al. (2000) into 7 instruments: efficiency, fulfillment, system availability, privacy, responsiveness, compensation, and contact. This instrument has been validated to apply to all research locations. The e-SQ instrument can be measured using 33 measurement items. However, in this study, only 4 e-SQ instruments were used: efficiency, system availability, privacy, and contact.

Several previous studies on electronic-based have used the use of e-SQ theory SI (Ariff, Zakuan, & Ismail, 2013; Choi & Sun, 2016; Kalia & Paul, 2021; Kandulapati & Bellamkonda, 2014; Rathee & Yadav, 2017; Risanty, Kesuma, Agustrisna & Bilqis, 2021; Shah, Shah, & Khaskhelly, 2017; Ting, Ariff, Zakuan, Sulaiman & Saman, 2016; Zavareh, Ariff, Jusoh, Zakuan & Bahari, 2012; Zehir & Narcikara, 2016).

Service Convenience

Research on service convenience (servcon) by Seiders, Berry, and Gresham (2000) produced 4 instruments. Then it was developed into 5 instruments by Berry, Seiders, and Grewal (2002) and moderated by the number of purchases by Seiders, Voss, Grewal, and Godfrey (2005). Seiders et al. (2007) re-conducted service research on e-commerce. The results show that the theory of multidimensional service has been validated in various forms of validity. Servcone can be applied to various characteristics, such as users, companies, or markets (Seiders et al., 2007).

According to Berry et al. (2002), servecon is a person who gets a product/service with little time and effort but greatly impacts the decision to purchase goods/services. According to Seiders et al. (2007), users will feel comfortable when the price of time and effort spent when receiving services is associated with 5 instruments (decision convenience, access convenience, transaction convenience, benefit convenience, and post-benefit convenience) with 17 measurement items. The five instruments used in this study

Several studies have been conducted previously to prove the importance of servcon for electronic technology users (Al-Gasawneh, Al-Adamat, Almestrihif, Nusairat, Anuar & Aloqool, 2021; Almarashdeh, Jaradat, Abuhamdah, Alsmadi, Alazzam, Alkhasawneh & Awawdeh, 2019; Bi & Kim, 2020; Benoit, Klose & Ettinger, 2017; Chen, Chang, Chen, & Chen, P., 2019; Choi & Sun, 2016; Jiang, Yang, & Jun 2012; Lai, Ulhas, & Lin, 2014). Previous studies have shown good results in applying service theory to IS performance based on user satisfaction. So previous research agreed on the right servcon theory to measure e-payment performance.

Framework

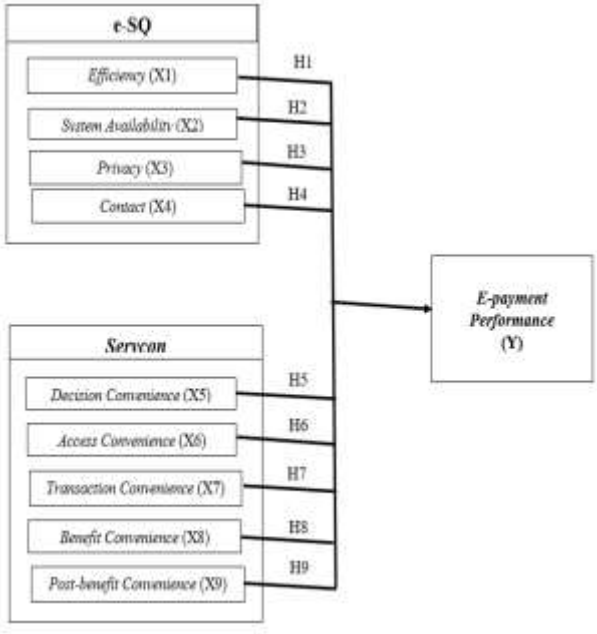

Figure 1. Framework

H1: Efficiency affects the performance of e-payments at the Immigration Office in Medan
H2: System availability has a positive effect on e-payment performance at the Immigration Office in Medan
H3: Privacy has a positive effect on e-payment performance at the Immigration Office in Medan
H4: Contact has a positive effect on e-payment performance at the Immigration Office in Medan
H5: Decision convenience positively affects e-payment performance at the Immigration Office in Medan.
H6: Access convenience positively affects e-payment performance at the Immigration Office in Medan.
H7: Transaction convenience positively affects e-payment performance at the Immigration Office in Medan.
H8: Benefit convenience positively affects e-payment performance at the Immigration Office in Medan.
H9: Post-Benefit convenience positively affects e-payment performance at the Immigration Office in Medan.

MATERIALS & METHODS

This study used a descriptive-analytic study design with a survey research type and the time period of the study was cross-sectional (Sekaran, 2014; Sugiyono, 2014). The dependent variable used in this study is e-payment performance using end-user satisfaction instruments. The independent variables used in this research are efficiency, system availability, privacy, contact, decision convenience, access convenience, transaction convenience, benefit convenience, and post-benefit convenience. The variable measurement scale in this study uses a 5-point Likert scale (Widhiarso, 2010).
The population in this study were passport users at the TPI Medan Special Class 1 Immigration Office, with a total of 4,709 users for the period January-March 2022. Meanwhile, the sample based on the Cohen, Manion, and Morrison table (2018) totaled 357 samples. The sampling method in this study used nonprobability sampling with the type of convenience sampling (Sekaran, 2011).
Data collection techniques in this study used online questionnaires using Google Forms. The feasibility of the questionnaire was tested by conducting a pilot study on 28 respondents who showed valid and reliable results with a correlation coefficient > r table and Cronbach's Alpha > 0.6.
The data analysis technique used is a descriptive statistical analysis using IBM SPSS Statistics 16.0 and PLS-SEM statistical analysis, which consists of the outer model (composite reliability (CR), convergent and discriminant validity), and the inner model (hypothesis testing based on R2 value, path coefficients, and P values) using SmartPLS 3.0. The types of constructs used are formative (servcon) and reflective (e-SQ and e-payment performance) models.

RESULT

PLS-SEM Statistical Analysis

Figure 1 shows the PLS-SEM statistical model used in this study as follows:
The results of distributing the questionnaires resulted in a total of 299 respondents. The answers of the 299 respondents show the demographic profile of the respondents (table 5.1). The results show that most of the demographic profiles of respondents using e-payment passports are women with the last bachelor's degree in the age group of 21-30. Then the majority work as private employees and have submitted < 2 times or 2 passport applications within > 1 year.

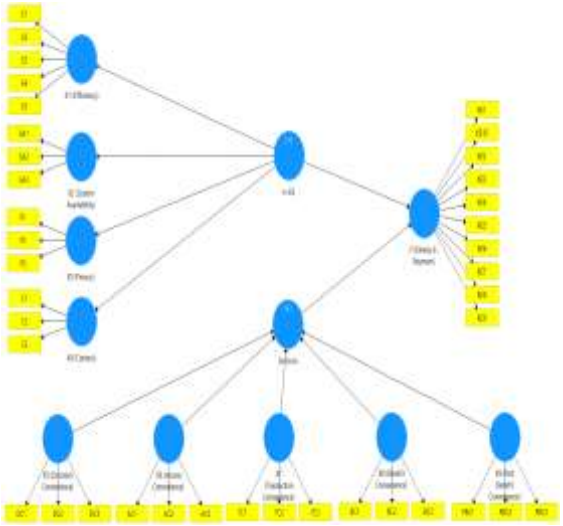

Figure 2. PLS-SEM Statistical Model

1. The Outer Model

In table 1, the results of the reflective model research show that in the first and second order, all CR values > 0.70 and Cronbach's alpha > 0.60 (Hair, Howard, & Nitzl., 2020; Salloum et al., 2019; Sekaran & Bougie, 2016). So that all research variables based on internal consistency reliability values are declared reliable. Based on its validity, the AVE value is > 0.50 for all first and second-order research variables (Hair, Matthews, Matthews, & Sarstedt, 2017). These results indicate that each variable is valid because it meets the criteria and can be confirmed as adequate convergent validity.

Table 1. Convergent Internal Consistency Reliability and Validity

Variable (Instrument)	*Cronbach's Alpha*	CR	AVE
E-payment performance	0.938	0.933	0.738
Efficiency	0.910	0.915	0.782
System Availability	0.860	0.938	0.834
Privacy	0.900	0.944	0.849
Contact	0.911	0.932	0.819
Decision Convenience	0.890	0.932	0.821
Access Convenience	0.891	0.937	0.833
Transaction Convenience	0.899	0.939	0.837
Benefit Convenience	0.903	0.947	0.856
Post-Benefit Convenience	0.916	0.947	0.642
e-SQ (*second order)*	0.955	0.960	0.632

If the square root AVE value (Fornell-Larcker criteria) in the analyzed variable is greater than all the correlations between other variables (Ogedengbe & Talib, 2020; Salloum et al., 2019). These results indicate that each variable is declared valid because it meets the criteria and can be confirmed as having adequate convergent validity (table 1).

Table 2. Fornell-Larcker criteria

	X1	X2	X3	X4	X5	X6
E (X1)	0.859					
SA (X2)	0.833	0.884				
P (X3)	0.761	0.710	0.913			
C (X4)	0.669	0.682	0.670	0.921		
DC (X5)	0.811	0.741	0.703	0.621	0.905	
AC (X6)	0.776	0.751	0.737	0.600	0.838	0.906
TC (X7)	0.765	0.736	0.712	0.590	0.800	0.840
BC (X8)	0.784	0.756	0.673	0.616	0.791	0.800
PBC (X9)	0.603	0.621	0.508	0.649	0.605	0.612
KE (Y)	0.830	0.762	0.749	0.655	0.753	0.750
e-SQ	0.939	0.905	0.876	0.830	0.818	0.810

	X7	X8	X9	Y	e-SQ
E (X1)					
SA (X2)					
P (X3)					
C (X4)					
DC (X5)					
AC (X6)					
TC (X7)	0.913				
BC (X8)	0.815	0.915			
PBC (X9)	0.577	0.697	0.925		
KE (Y)	0.742	0.708	0.579	0.801	
e-SQ	0.793	0.802	0.666	0.850	0.795

In the formative model, the way to evaluate the outer model is by looking at VIF values, outer weights, and P values. Table 2 shows that the VIF value < 5.0 so that multicollinearity will not cause problems among service variables that use a formative model (Hair et al., 2020). In addition, the outer weights and P values show positive results. So that the 5-second order service variables are maintained, and no deletions or withdrawals are carried out and are suitable for using the formative model (Amar & Romdhane, 2020; Hair et al., 2020).

Table 3. Formative Model

Variable (Instrument)	Measurement Items	*Outer Weights*	*Outer Loa-dings*	P *Values*	VIF
Decision Convenience	DC1	0.086	0.830	0.000	4.058
	DC2	0.085	0.826		
	DC3	0.083	0.818		
Access Convenience	AC1	0.083	0.825	0.000	4.832
	AC2	0.088	0.845		
	AC3	0.085	0.841		
Transaction Convenience	TC1	0.086	0.840	0.000	4.396
	TC2	0.086	0.840		
	TC3	0.083	0.816		
Benefit Convenience	BC1	0.084	0.840	0.000	4.388
	BC2	0.083	0.827		
	BC3	0.086	0.868		
Post-Benefit Convenience	PBC1	0.071	0.728	0.000	1.995
	PBC2	0.071	0.712		
	PBC3	0.070	0.701		
Servcon		-	0.012		4.283

2. The Inner Model

Table 4 shows a value of > 0.67 for all research variables. This proves that the independent variable can influence the dependent variable well (Hair et al., 2020; Putri, 2021).

There are 9 hypotheses formulated in the research, and the results can be seen in table 5. By showing the relationship of all variables, X and Y have a positive and significant effect. The effect of e-SQ on e-payment performance at the Immigration Office in Medan shows path coefficients (0.653), t-statistic (6990) > 1.64, and P values (0.000) < 0.05. These results mean that e-SQ positively and significantly affects e-payment performance at the Immigration Office in Medan. This is in line with the 4 e-SQ instruments used. So, it supports 4 hypotheses from 4 e-SQ instruments (table 4).

The effect of servcon on e-payment performance at the Immigration Office in Medan shows path coefficients (0.225), t-statistics (2.511) > 1.64, and P values (0.012) < 0.05. These results mean that e-SQ positively and significantly affects e-payment performance at the Immigration Office in Medan. This is in line with the 5 service instruments used. So that supports 5 hypotheses of 5 service instruments (table 5). Based on the results of this study, the 9 hypotheses formulated have been accepted.

The strongest effect is the efficiency variable because respondents consider that if the system can continue going forward, the user must evaluate the system as efficient (Parasuraman et al., 2005). Then the influence of system availability, privacy, benefit convenience, access convenience, transaction convenience, contact, decision convenience, and post-benefit convenience variables follows below. The weakest effect is on the post-benefit convenience variable. This is because post-benefit is a stage when users face obstacles. It is possible that the user does not feel any obstacles when using it, so the effect is not too strong for the user.

Table 4.Value R^2 in *Inner Model*

Variable	R^2
Efficiency (X1)	0.882
System Availability (X2)	0.819
Privacy (X3)	0.767
Contact (X4)	0.689
Kinerja *E-payment* (Y)	0.732
Servcon	1.000

Table 5. Value T-Statistik and P *Values* in *Inner Model*

Variable	*Original Sample*	Std. Deviation	T-Stat	P *Values*
e-SQ → KE (Y)	0.653	0.093	6.990	0.000
E (X1) → e-SQ	0.939	0.011	87.988	0.000
SA (X2) → e-SQ	0.905	0.015	60.890	0.000
P (X3) → e-SQ	0.876	0.021	42.242	0.000
C (X4) → e-SQ	0.830	0.026	31.452	0.000
Servcon → KE (Y)	0.225	0.090	2.511	0.012
DC (X5) →*Servcon*	0.230	0.007	30.877	0.000
AC (X6) →*Servcon*	0.232	0.006	36.237	0.000
TC (X7) → *Servcon*	0.233	0.007	34.459	0.000
BC (X8) → *Servcon*	0.231	0.006	41.306	0.000
PBC (X9) →*Servcon*	0.196	0.007	27.301	0.000

CONCLUSION

This research was conducted to measure the effect of e-SQ and servcon on e-payment performance at the Immigration Office in Medan by distributing questionnaires online. The sample collection was carried out using the convenience sampling method, which resulted in 299 of the 361 valid respondents used.

Data processing of 299 respondents used SmartPLS and SPSS, with the study's results stating that all measurement items in the questionnaire statements had been confirmed as valid and reliable. Of the 299 respondents, e-payment passports are popular among women with bachelor's degrees and graduates aged 21-30 who work as private employees.

The study results show that e-payment performance measurement is valid, reliable, and appropriate by simultaneously combining e-SQ and servcon instruments. The theoretical contribution is associated with evaluating e-SQ and servcon instruments, which show that all e-SQ and servcon instruments used as research variables are determinants of user satisfaction to improve e-payment performance.

Based on the 9 hypotheses that have been formulated show satisfactory results. The study's results stated that the 9 hypotheses were acceptable and supported the theory used. All X variables positively and significantly influence e-payment performance at the Immigration Office in Medan. Overall, the strongest effect is the efficiency variable of the e-SQ instrument with the largest T-statistic value. At the same time, the weakest effect is the variable post-benefit convenience.

The results of this study are in line with previous research, which showed that variable X (efficiency, system availability, privacy, contact, decision convenience, access convenience, transaction convenience, benefit convenience, and post-benefit convenience) has a positive and significant effect on variable Y (performance e-payment). The results of this study provide empirical evidence to support the theory of end-user satisfaction, e-SQ, and servcon on the 9 X and Y variables used.

The practical contribution of the results of this research can provide input for banks and other e-payment providers. The e-payment provider is expected to be able to further improve the infrastructure by inputting user information to a minimum to make it easier and faster. Meanwhile, input for the Director General of Immigration to further expand e-payment by adding e-wallets such as Gopay, Dana, OVO, and Shopeepay, as well as Regional Government Banks to complete the passport payment process. This is done so that passport payments can more easily reach various groups accessed in all regions in Indonesia. This is because the efficiency variable has the strongest influence on improving e-payment performance so that in the future, e-payment is felt to be more efficient in completing the passport payment process.

RESEARCH LIMITATIONS

This research is still far from perfect, so it has some limitations, such as the distribution of questionnaires distributed via barcode scans randomly carried out to respondents who will go abroad at the airport. So that the possibility of respondents answering the questionnaire was not serious and dishonest because of the limited time to fill in while at the passport control counter at the airport. In addition, this research was conducted based on the perceptions of passport e-payment users in Medan so that it cannot be generalized widely.

SUGGESTION

Based on the limitations of the research, the suggestions that can be put forward in this study are that further research can distribute questionnaires and conduct short interviews with respondents so that the respondent's answers can be ascertained.

Then further research can expand the population and research samples in

different areas because the perceptions of respondents in Medan are not necessarily the same in other areas. After all, the assessment of the questionnaire is subjective and situational.

Suggestions and input are also given for future research to expand the range, not specifically for passport e-payment payments, for example, payment for residence permits for foreigners. In addition, it is also expected to be able to evaluate e-payment performance using different measurements using The Theory of Planned Behavior (TPB) or Trusted Third Party (TTP) models in measuring e-payment performance.

Declaration by Authors

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