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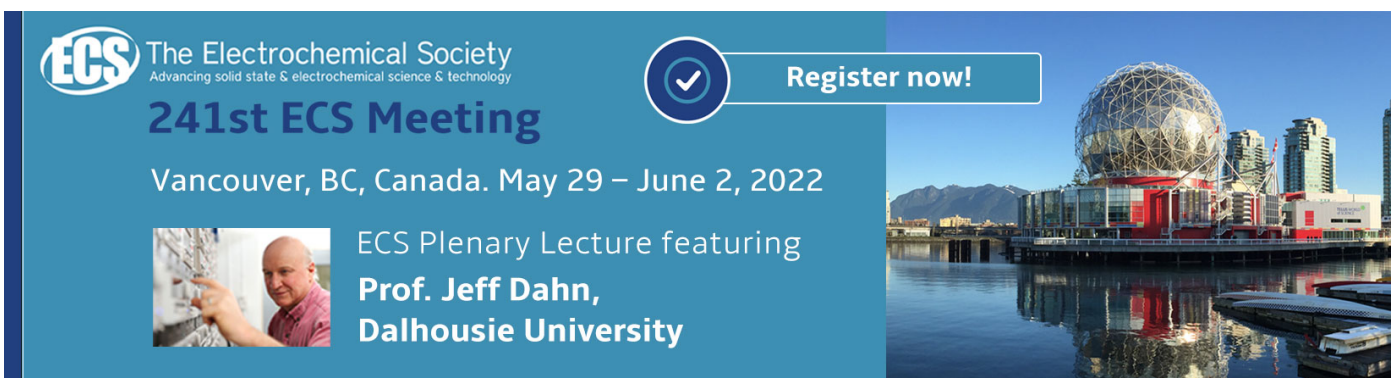
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A Review of E-Payment System in E-Commerce

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Abstract. The Era of Information and Communication Technology (ICT) and digital innovation lead to dynamic changes in the business environment, where business transactions continue to shift from cash-based transactions to electronic-based transactions. The e-payment system was not introduced to replace cash but as a better alternative to cash and trade barter. Electronic payments can be understood as a payment mechanism using electronic media that does not involve cash. Electronic payment system (e-payment) is an important aspect of e-commerce. This study intends to review the available literature for e-payment systems on e-commerce with a view to highlighting the scope of the e-payment system, and the methodology used by previous researchers so as to identify research gaps and recommend for future studies.

1. Introduction

E-commerce grows rapidly and provides an opportunity for companies to increase sales over the internet [16]. Nowadays, every individual and company familiar with e-commerce to make sales and purchase products and services [24]. The advent of e-commerce has created new financial needs that are not effective in many cases met traditional payment systems [2]. An electronic payment system comes to replace a cash payment system [17]. Sales of goods and services increased significantly with the adoption of the use of e-payment systems so that electronic payments became an increasingly important part of the payment system [31].

E-Payment is a system that provides tools for payment of services or goods carried on the internet [10]. E-payment system provides the ease of transaction processing in e-commerce between consumers and sellers [16]. Using the E-payment System has many benefits for payers, payees, E-commerce, banks, organizations and governments. These benefits can lead to widespread electronic payment systems in the world [32]. An efficient and reliable e-payment system enables faster payouts, better tracking, transparent transactions, reduced time use, cost savings and increased trust between sellers and buyers. The development and adoption of technology in the e-payment system involve financial transactions, assimilated users and quality e-payment technology tend to shape their own perceptions and expectations [1]. Electronic payment systems are now commonly used such as transactions via ATM machines, use of credit or debit cards, through online banking and mobile banking. E-payment provides significant cost savings on paper-based payments [31].

The online payment system has many financial risks that may occur during the transaction process. The negative impacts of online payments can occur because of many things. Because of the nature of the internet, authenticity and security of payments can't be guaranteed by technologies that are not designed for e-commerce. We require an electronic payment (e-payment) system that are not only provides secure



payments system but also must have properties such as online customers and seller authentication, proof of transactions authorized by customers to both sellers and banks, customer privacy and transactional data security. For some cases, it raises a sense of uncertainty and takes risks when buying online. Over the years there have been many e-commerce technologies that developed. The security of their hard-earned money is still unanswered [7].

Electronic payments will be discussed in this paper starting from the definition, type, evolution, to the risks that might occur in the use of electronic payment systems. The final result in this paper is an analysis of various studies conducted on the application of electronic payment systems in various countries based on the methods used, factors that can influence, and the scope so that this research can be a reference for future research.

2. Electronic Payment (E-Payment) System

2.1. The Definition of E-Payment

The use of technology in modern banking services that we know as electronic payment systems makes banking performance more optimal, various activities can be implemented quickly and accurately while impacting productivity[37]. Electronic payments is a payment mechanisms that use electronic media that do not involve cash [13]. Electronic payment systems can also define as a type of inter-organizational information related to transaction systems, linking various associations, and linking to individual clients. Need for complex interaction require between partners, the technology and environment. According to the Federal Financial Institutions Examination Council (2010), electronic payment is a new payment practice for retail where a merchant retrieves payment information for goods and services and places this information in an electronic template that creates electronic files for processing over the network.

Electronic payments may be defined as an electronic value transfer of a payment from the payer to the recipient through an electronic payment mechanism. The e-payment service comes with a web-based user interface that allows customers to access, manage their bank accounts and transactions remotely [14]. In general, e-payment refers to electronic payment in the context of e-commerce online transactions conducted over the Internet. Electronic payments can also be defined as a paperless payment process [16].

2.2. Types of Electronic Payment

Types of e payments include electronic cash: transactions are settled via electronic currency exchange, prepaid cards are customers using prepaid cards for a certain amount by making entries from unique card numbers on merchant sites, credit cards are servers authenticate consumers and verify the bank whether sufficient funds are available before purchasing, the debit card is the customer maintains a positive balance in the bank account and the money deducted by the account when the debit transaction is made, electronic check is an electronic institution completing the transaction between the buyer's and the seller's bank in the form of an electronic check [14].

The electronic payment system composed by the online credit card transactions, e-wallets, e-cash, value systems online stored, digitally collecting balance systems, wireless payment systems and digital check payment systems [16]. Elektronik payment instruments commonly used in retail business are credit cards, card fees, debit cards, and e-money [1].

2.3. The Evolution of the Electronic Payment System

The payment system has grown significantly along with technological advances. In 1914 a shopping center, oil company, western union issued a customer card to provide convenience to customers in making payments for the goods or services they would use, along with this, the banking industry issued credit cards. [17]. Initially, all paper-based credit card payments, until the 1990s when the card was fully transformed into electronics [35]. The evolution of electronic payments began in 1918 when the Federal

Reserve Bank first transferred currency via telegraph [20]. With the evolution of e-commerce and technological advancements, electronic cashless payments are now used conventionally even though they have been designated in 1960. The research community has made tireless efforts so in the development of various online payment models such as Model Asokan N. and JW models [35].

3. Research Methodology

In this study, the researcher used a meta-analysis. That is one attempt to summarize the various research results quantitatively. Meta-analysis as one of the techniques aimed to re-analyze the results of statistically processed studies based on primary data collection [39]. In this study, the researcher conducted a review of literature conducted with Google Scholar search engine in July 2018 amounting to 44, the research conducted on e-payment system on e-commerce between the years 2008-2018 from various countries. This research was conducted with the aim to highlight the scope of the e-payment system, the methodology used in elektronik payment system by previously researchers to identify the gaps of research and recommendation for the future studies.

4. Result Analysis

Previous research reviewed for this research was carried out quantitatively. Meta analysis used for its unique power in seeing the "full picture" in the research context by combining for analyzing quantitative results from many empirical research (Glass, 1976) is research that addresses issues of e-payment systems in different countries. The analysis based on the scope, methodology and model of the adapted Information System. The scope of this study focuses on research published in journals and conferences. There are two research models that have been used by researchers is an empirical model and conceptual model. Research based on many conceptual approaches is done for example by Bukhori [6], Shahazad [36], Maroofi [23], Maqableh [22], Bezhovski, [6], Junadi [15], Premchan [30] and many empirical approaches are done by Khan [20], Dastan [7], Karismariyanti [18], Igudia [15], Seno [35], Kabir [17], Junadi [16], Singh [38], Mathur [25], Masihuddin [24], Fung [9], Hidayanto [14], Hanzaee [12], Zokaee [43], Yang [42], Hascaryani [13], Kaur [19], Aigbe [2], Niousha [27], Gandawati [10] and so forth.

4.1 Scope Analysis

The scope of demography is using to develop causal relationships between population development with various aspects of social organization, economics, culture, environment and others (Landry, 1945). Many studies have been conducted for example by Gandawati [10], Mulyasari [26], Roy [33], Hascaryani [13], Kabir [17], Junadi [16], Kaur [19], Hidayanto [14], Preetha [8], Suwunniponth [40], Khan [20] developing countries in Asia, most of this research is conducted to identify the various factors that are considered very important in creating trust among customers of online electronic payment systems, investigating consumer intentions to use electronic payments. Mathur [25], Masihuddin [24] conducted research on awareness about security in electronic payment systems.

Research by Ayo [4], Singh [38], Nwaolisa [28], Aigbe [2], Hamza [11], Igudia [15], Okifo [29], Antwi [3], Tella [41], Omotubora [30] conducted in Africa. Singh [38] reviewing secure electronic payment systems for Internet transactions. Electronic payment system should be safe for Internet transaction participants such as payment gateway server, Bank deciding and the Merchant server. Aigbe [2] conducted the study with a security level analysis in relation to fraud and vulnerability to determine how the relationship affects or improves user trust. Research conducted by Yang [42], Bezhovski [6] in Europe introduces the current state, challenges and expectations for the future of electronic payment systems. Doing future research can focus on the validation of factors that can contribute to the successful adoption of mobile payment methods around the world. Research conducted in the Middle East by Dastan [7], Hanzaee [12], Zokaee [43], Maadi [21]. Maqableh [22], Maroofi [23], Qatawneh [32] largely discusses factors affecting the adoption of electronic payment systems.

Thus, there is a need for more research on how to create trust in electronic payment systems, customer interest in using electronic payment systems and about the importance of security in electronic payment systems as they can affect user trust, and research on the future of electronic payment systems.

Table 1. Place of research and publication

Place	Total Research
Africa	10
Asia	20
The Middle East	9
Europe & America	4
Sum	43

Table I shows that almost 46% of empirical e-payment system research on e-commerce is done in Asia. Africa is 23%, the Middle East region shows 20% while the rest of the research conducted in Europe & America shows fewer numbers that could be as result of their progress in technology adoption using elektronik payment system from developed countries.

4.2 The Methodology Analysis

Methodology in previous studies is very substantial because it provides rocks for research. The research design used in the review studies has something in general because most of the studies used survey research design. Research Methodology of this research shows that 76% of the literature under study uses survey methodology and the others used an inquiry methodology. This suggests that many empirical studies are conducted on using e-payment survey methods. Thus, future research will be strongly recommended to use other methods of data collection.

Table 2. Research instrument

Instrument	Total Research
Questionnaire	23
Interview	2
Interview & Questionnaire	2
Observation	8
Experiment	4
Others	8

Further analysis relates to the methodology of research instruments used by previous researchers. Table II shows that almost 50% of the literature studied using the questionnaire instrument, the dominant instrument used in collecting data is questionnaire from all empirical studies and several research combined the use of questionnaires with other data sources method. Other studies also use observational instruments conducted by Junadi [16], Bezhovski [5], Okifo [29], Fung [9] a qualitative study which in further research will improve and produce solutions of hidden problems related with some things especially issues about electronic payments in the future.

Table 3. Respondent

Respondent	Number of Research
Customer	4
Employee	3
Students	7
Profesional	3
Demographics	11
Academic & Non Academic staff	1

Further analysis relating to the methodology is the composition of respondents used in previous research. Table III shows the analysis on the respondents aspect indicating that most of the respondents used in the previous study were all based on demographics including gender, age, education level, study program, job status as done by Antwi [3], Dastan [7], Hamza [11], Maadi [21], Mathur [25], Mulyasari [26], Sanghita Roy [34], Ab Hamid [1] this suggests that research is widely conducted among sectors public.

5. Conclusion

Overall, this research has been researching past researches, this research emphasizes on the scope of research and publication, research methods used by previous researchers. In the scope aspect there is a need for more research on how to create trust in electronic payment systems, customer interest in using electronic payment systems and about the importance of security in electronic payment systems as they can affect user trust, and research on the future of electronic payment systems. In future research methods it's highly recommended for the data collection to use other methods, improving and generating solutions to hidden problems with regard to several issues, especially issues concerning future electronic payments.

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