SOCIETY'S PREFERENCE CONCERNS WITH CASHLESS AND CARDLESS TRANSACTIONS IN MATARAM, WEST NUSA TENGGARA

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Abstrak

Perkembangan teknologi digital di dalam kehidupan manusia memberikan dampak signifikan di dalam berbagai lini kehidupan termasuk transaksi keuangan digital. Penelitian ini bertujuan untuk mengeksplorasi preferensi masyarakat dalam perilaku transaksi cashless dan cardless. Studi ini menggunakan uji Z untuk menganalisis adanya perbedaan antara pengguna transaksi cashless dan cardless. Penelitian ini menggunakan metode kuantitatif dengan jenis penelitian perbandingan. Pengujian hipotesis dalam penelitian ini menggunakan uji Z yang bertujuan untuk mengkomparasi satu variable dengan dua sampel yang berbeda yaitu pengguna transaksi cashless dan cardless. Jumlah sampel yang digunakan dalam penelitian ini berjumlah 100 responden yang tersebar di Kota Mataram Nusa Tenggara Barat. Variabel yang digunakan dalam penelitian ini diadopsi berdasarkan toeri TAM (Technology Accpetance Models) yaitu; perceived ease of use (PEOU), perceived usefulness (PU), perception of privacy (PP), and perceived risk. Hasil pengujian dengan uji z pada keempat varibel preferensi masyarakat pengguna cardless dan cashless diperoleh bahwa tidak terdapat perbedaan antara preferensi masyarakat dalam prilaku transaksi cashless dan cardless. Penelitian ini memberikan implikasi agar pemangku kebijakan pada Lembaga Jasa Keuangan baik perbankan atau lembaga yang terkait agar meningkatkan layanan variasi fitur teknologi dan peningkatan keamanan dalam bertransaksi.

Kata Kunci: *Preferensi Masyarakat, Cashless, Cardless*

Abstract

Digital technology development significantly impacts every aspect of people's lives, including digital financial transactions. This qualitative study with comparative research aimed to explore society's preference for cardless and cashless transactions by using a z-test to analyze the

differences. This study use quantitative research method with hypothesis testing implements the Z test, comparing one variable with two samples: cashless and cardless transactions users. This study involves about 100 respondents as samples spread across Mataram, West Nusa Tenggara. Moreover, the variables were adapted from Technology Acceptance Models (TAM) theory and are perceived ease of use (PEOU), perceived usefulness (PU), perception of privacy (PP), and perceived risk. The result of the z-test from four variables of society's preference for cardless and cashless transactions obtained no difference between those preferences. This research suggested that financial service institutions, banking, or other related institutions improve the features variation service and security for the transaction.

Keywords: *Society's Preference, Cashless, Cardless*

INTRODUCTION

Corona Virus Disease of 19 (COVID-19) has changed society's behavior and lifestyle only in several months, for instance, working from home, keeping on distancing, and wearing a mask. Limited activities outside causes change people's lives to be more dependent on the digital transaction. Therefore, the pandemic has catalyzed global digital transformation. Cashless transaction development on August 2021 in Indonesia increased by 43.66% annually or became Rp. 24.6 trillion. The simplicity, comfort, security, and efficiency factors are several advantages of cashless transactions.[1] However, the number of cashless transactions in Indonesia is low because people are more familiar with credit cards, debit cards, and ATM cards. This development is caused by numerous factors, such as ecology, economy, social, technology, political, and cellular network.[2] Furthermore, the age factor also affects cashless transactions.[3]

[1] Hirnissa M.T, Zariyawati M.A2, and Fadilla R, 'The Determinant Factors That Influence the Z and Older Generations in Malaysia Toward Cashless Society,' *Advanced International Journal of Business, Entrepreneurship, and SMEs*, 3.9 (2021), 22–35 <https://doi.org/10.35631/aijbes.39003>.

[2] Mimi Sheller, 'Mobile Publics: Beyond the Network Perspective,' *Environment and Planning D: Society and Space*, 22.1 (2004), 39–52 <https://doi.org/10.1068/d324t>.

[3] Nikola Fabris, 'Cashless Society - The Future of Money or a Utopia?', *Journal of Central Banking Theory and Practice*, 8.1 (2019), 53–66 <https://doi.org/10.2478/jcbtp-2019-0003>.

Digital transaction forces the banking industry to create innovation to simplify transactions for their customers with a cardless transaction. A cardless transaction employs an application installed in a smartphone that enables customers to draw cash from their accounts in an ATM (Automatic Teller Machine) without a card.[4] This feature helps to draw cash faster, more efficiently, and needs lower transaction fees.

Some relevant research determines this research gap with other research. The result of the study entitled "The Impact of Consumer's Security, Benefits, and Usefulness towards Cashless Transaction within Malaysian University Student" explains that cashless transaction is affected by benefits and usefulness factors. Nevertheless, the security factor does not affect someone in cashless transactions.[5] The research entitled "The Determinant Generations Z and Older Generations in Malaysia Toward Cashless Society" states that four factors affect generation Z and the older one in cashless transactions: efficiency, amenity, security, and convenience in using technology.[6] Those two generations prefer cashless transactions because they tend to be more convenient than cash transactions. Another research entitled "The Cardless and Cashless Future: The Rise of Mobile Payment" elaborates that consumers are more interested in using mobile payment if there is a discount. They would use another payment method if the discount expired.[7]

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[4] Kitti Phothikitti, 'Factors Influencing Intentions to Use Cardless Automatic Teller Machine (ATM),' *International Journal of Economics and Business Administration*, VIII.Issue 3 (2020), 40–56 <https://doi.org/10.35808/ijeba/485>.

[5] Kawsar Ahmad, 'Research in Business & Social Science Impact of Consumer ' s Security, Benefits and Usefulness towards Cashless Transaction within Malaysian University Student,' 10.2 (2021), 238–50.

[6] M.T, M.A2, and R.

[7] Kejia Hu and others, 'The Cardless and Cashless Future: The Rise of Mobile Payment,' *SSRN Electronic Journal*, 2020, 1–25 <https://doi.org/10.2139/ssrn.3543163>.

Kotler states that consumers' preference depends on their choice the service products.[8] Preference is the willingness of someone to pick something out.[9] It is a decision to like or dislike a product, exemplary, or service. Preference also can be defined as a mental system that consists of a mixture of feelings, hope, stance, prejudice, fear, or another tendency that leads someone to select something.[10] Many investigators have explored and analyzed factors that affect people's behavior and acceptance toward technology, some of them are recorded in several literature and references in informational technology research, for example, TRA (Theory of Reasoned Action)[11] and TBA (Theory of Planned Behaviour).[12] Ajzen et al. found that the user's attitude toward the behavior and subjective norms significantly impact the user's intention[13]. TAM is the most used research model in information and technology literature review from those three models. Davis first explains the Technology Acceptance Model (TAM) in 1989, adopted from the Theory of Reasoned Action (TRA)[14]. He employed this model to discuss the impact of an external variable on personal internal beliefs and attitudes. In addition, the TAM model also considers behavioral intentions influenced by personal attitudes towards applying information systems. Attitudes in the TAM concept are positive or negative feelings or

[8] Philip Kotler, *Manajemen Pemasaran Cet Ke-10* (Prehalindo, 2010).

[9] W. J. S Poerwadaminta, *Kamus Besar Bahasa Indonesia Edisi III* (Balai Pustaka, 2006).

[10] Andi Mappiare, *Psikologi Orang Dewasa Bagi Penyesuaian Dan Pendidikan* (Usana Offsetprinting, 1994).

[11] J Michael Pearson, 'internet Banking Acceptance In Malaysia Based On,' 5.1 (2008), 3–13 <https://doi.org/10.4301/S1807-17752008000100001>.

[12] Icek Ajzen, 'The Theory of Planned Behaviour : Reactions and Reflections,' 0446 (2011) <https://doi.org/10.1080/08870446.2011.613995>.

[13] Ivonne Angelica and others, 'Commonly Used External TAM Variables in E-Learning, Agriculture and Virtual Reality Applications,' 2021.

[14] P C Lai, 'the Literature Review Of Technology Adoption Models And Theories For The Novelty Technology,' 14.1 (2017), 21–38 <https://doi.org/10.4301/S1807-17752017000100002>.

evaluations of an individual when utilizing a new technology[15]. Behavioral intentions are relatively more elevated when someone has a higher positive attitude towards operating the technology determined by perceived usefulness and ease of use. Moreover, Perceived usefulness is how a person believes that employing a particular system improves their job performance. Users will have a positive attitude towards beneficial technology. Meanwhile, perceived ease of use is how a person considers that employing new technology can reduce a person's effort in accomplishing various tasks[16]. The users accept the technology when they find it easy to use and require less effort and time.

Perceived usefulness and perceived ease of use jointly affect a person's attitude towards system application and behavioral intentions to apply the system, leading to actual system use. In the TAM concept, external variables indirectly affect behavior, such as user personal variables, system characteristics, and environmental variables. The development of another TAM modification by adding the risk variable[17] and the privacy variable[18] Along with the TAM variable. *Risk* is defined as the possibility of an event occurring that results in injury or loss. Certain risks emerge when employing technology undeniable in cashless and cardless transactions. The

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[15] Li-Min Chuang, Chun-Chu Liu, and Hsiao-Kuang Kao, 'The Adoption of Fintech Service: TAM Perspective', *International Journal of Management and Administrative Sciences (IJMAS*, 3.07 (2016), 1–15.

[16] Viswanath Venkatesh and Fred D. Davis, 'Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies', *Management Science*, 46.2 (2000), 186–204 <https://doi.org/10.1287/mnsc.46.2.186.11926>.

[17] Hung Kit Lui and Rodger Jamieson, 'TriTAM: A Model for Integrating Trust and Risk Perceptions in Business-to-Consumer Electronic Commerce,' *16th Bled Electronic Commerce E-Transformation*, September 2001, 2003, 349–64.

[18] Juan Carlos Roca, Juan José García, and Juan José de la Vega, 'The Importance of Perceived Trust, Security and Privacy in Online Trading Systems,' *Information Management and Computer Security*, 17.2 (2009), 96–113 <https://doi.org/10.1108/09685220910963983>.

transaction is dependent on the Internet connection availability and authentication code use. Internet availability and speed of receiving authentication for cardless transactions may deteriorate and affect an individual's intention to use the transactions.[19] Privacy refers to the protection from collecting various data during the user's interaction with the bank.[20] On the other hand, analysis of consumer transactional data allows organizations to understand customer behavior and preferences. Organizations should have a mature plan before leveraging consumer data because data privacy violations can result in a long-term negative reputation.[21] Research conducted by Ahsana Hasan et al.[22] revealed that cardless banking enhances transaction security at ATMs by using a secure biometric system. The system integrates a registered biometric fingerprint when opening an account and a pin button entered in the shuffling keypad. The use of fingerprints is considered privacy in utilizing a cardless system. Users feel more secure in the cardless transaction to avoid risk factors resulting in money loss or losses.

Researchers are interested in examining cashless and cardless transactions as they can influence the amount of money circulating in the community. Likewise, the rapid advancement of financial technology affects the Indonesian economy's condition. The demand for money shifts results from a change in the money market equilibrium that impacts the

[19] Shazia Parveen Qaisar Ali,Zaki Zaini, 'Cardless Banking System in Malaysia : An Extended TAM', *Risks*, 09.41 (2021) <https://doi.org/10.3390/risks9020041>.

[20] R. Mekovec and Ž Hutinski, 'The Role of Perceived Privacy and Perceived Security in Online Market', *MIPRO 2012 - 35th International Convention on Information and Communication Technology, Electronics and Microelectronics - Proceedings*, 2012, 1549–54.

[21] Younghoon Chang and others, 'The Role of Privacy Policy on Consumers' Perceived Privacy', *Government Information Quarterly*, 35.3 (2018), 445–59 <https://doi.org/10.1016/j.giq.2018.04.002>.

[22] A Hassan and others, 'The Biometric Cardless Transaction with Shuffling Keypad Using Proximity Sensor', *2020 Second …*, 2020 <https://ieeexplore.ieee.org/abstract/document/9183314/>.

equilibrium output and prices in the goods market. Thus, cashless transactions affect the increase in demand and the money supply in the community. This research contributes to the government and Bank Indonesia's policies by paying more attention to public understanding of cashless and cardless transaction instruments. Thus, cashless transactions in Indonesia are used for cash withdrawals and are used in every transaction.

Empirically, the research of cardless and cashless transactions has been conducted in several numbers and objects. However, this research explores more about society's preferences in cardless and cashless transactions from the perspective of perceived ease of use (PEOU), perceived usefulness (PU), perception of privacy (PP), and perceived risk.

METHODS

Comparative research is the type of this research because it compares the data obtained using hypothesis testing. This research compares the users' satisfaction between cashless and cardless transactions. The following figure presents the theoretical framework of this study regarding the customers' preference in using cashless and cardless transactions:

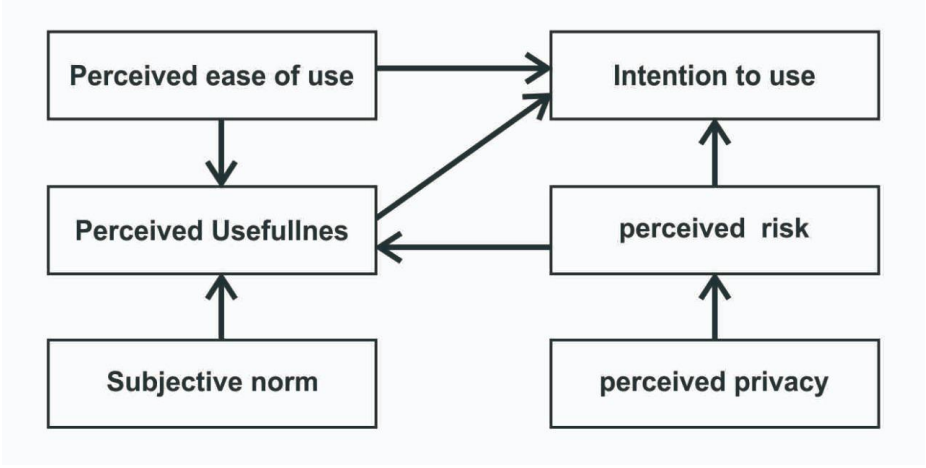

Figure 1: Theoretical Framework

These factors will be hypothesized and tested to examine the preferences that affect people's behavior. The research indicators are sourced from the Technology Acceptance Model (TAM) and modified with the risk and privacy variables. This model is utilized to depict how users accept and use technology.

The hypotheses of this research are:

H1: Suspects that society's preference in the perception of ease of use between cashless and cardless transactions is significant.

H2: Suspects that society's preference in the perception of usefulness between cashless and cardless transactions is significant.

H3: Suspects that there is a significant difference in society's preference in the perception of privacy between cashless and cardless transactions.

H4: Suspects a significant difference in society's preference for risk perception between cashless and cardless transactions.

The population of this research is cashless and cardless transactions users. The sample is the part of the population's number and characteristics. The population number of this research is unknown. Therefore, the researcher uses the Lemeshow formula. [23] The Lemeshow formula is:

$$n = \frac{Z^2 x P x Q}{L^2}$$

With:

N = the number of minimum sampling

Z = the distribution of z-value with the trust level of 95% = 1.96

P = correct estimation (0.5)

[23] & Vici Handalusia Fitriyah, A. tsalasatul, *Statistik Penelitian Ekonomi Dan Bisnis* (Sanabil, 2020).

Q = false estimation (1-P)

L = alpha 0.1 or error 10%

According to the formula, the sample of this research is 96.04, or 100. This study applies a probability sampling technique that gives equal opportunity for every population element to be selected as respondents. The probability sampling technique implemented is a simple random sampling without considering the level of the population. The data were gathered from questionnaires shared for cardless and cashless users. The questionnaire is designed based on the instrument following the TAM (Technology Acceptance Models) theory that has the elements of Perceived Useful of Use (PEOU), Perceived Use (PU), Perceived Privacy (PP), and Perceived Risk (PR). This research implements the Likert scale, where every response of the respondents is valued 1 to 4.

The instruments are as follows:

Tabel 1. Research Instrument

Perceived Ease of Use
I easily understand the features of the cardless/cashless payment method for the transaction.
I can control the transaction by using the facility in the payment service
I do not need a particular skill to use cardless/cashless payment service for transaction
I consider that cardless/cashless payment is easy to use
I consider that cardless /cashless payment is easily understood
I consider that cardless /cashless payment can be used anywhere and anytime
Perceived Usefulness
I consider that cardless/ cashless payment helps my daily activity to be more efficient.
I consider that my working performance increases because of cardless /cashless payment transactions.

I consider that my productivity enhances due to the cardless /cashless payment transactions.
I consider that my job is more efficient with cardless /cashless payment transactions.
I consider my transaction more accessible by using a cardless /cashless payment system.
I consider that a cardless /cashless payment system is highly beneficial
Perceived Privacy
I consider that my data privacy is protected when using cardless /cashless payment for transactions.
I am confident that my personal data is only used for the transaction process.
I am sure that my personal data is secured
I feel secure when giving my personal data
The cardless /cashless payment system provider is attentive to consumers' critiques.
I am confident that a cardless /cashless payment provider does not misuse my data privacy.
Perceived Risk
I consider controlling my finance by using the cardless/ cashless payment system.
I seek information before using the cardless /cashless payment system
I use a cardless /cashless payment system because the transaction cost is lower
I prefer a cardless /cashless payment system because the risk is lower than cash payment in a transaction
I consider that cardless /cashless payment system is a new lifestyle
Time is my first consideration in selecting cardless /cashless payment

Source: Technology Acceptance Model[24]

This research analyzes any significant difference in satisfaction between cardless and cashless transactions users. The data analysis uses a z-test. The analysis of the prerequisite test consists of normality and

[24] Vantakesh and Davis.

homogeneity tests. The hypothesis test uses a z-test where the usage emphasizes that two independent samples are significantly different. The assumption of z-test is: the whole observation of independent sampling, number or size of the sample must more than 30, normal z distribution, with mean of 0 and variants of 1. The z-test is two-way. The z-test is done by comparing the z-score with the z-table score. The criteria for determining z-test is "H0 is rejected if the z-score< -Zα/2 or z>Zα/2". α or significant value chosen in this research is 0.05 score of Z0.025 is 1.96. Therefore, the determining criteria "H0 is rejected if the z-score<-1.96 or z>1.96.

RESULT AND DISCUSSION

The data analysis utilizes a z-test because the researcher analyzes the differences in society's preferences when using cashless and cardless transactions. Four aspects are used to observe the users' satisfaction in using cashless and cardless payment transactions. Those four aspects are ease of use, usefulness, privacy, and risk.

a. Perceived Ease of Use

Table 1

Independent Sample Test of Variable Perceived Ease of Use

Variable	N	Mean	Standard Error	Standard Deviation	[95% Conf. Interval]	
PEU Cashless	50	24.32	0.1414214	1	24.04282	24.59718
PEU Cardless	50	24.02	0.1414214	1	23.74282	24.29718
Diff		0.3	0.2		-0.0919928	0.6919928
					z =	**1.5**

Source: Data Analysis Stata 16

The result of data analysis using z-test obtained that the z-value is 1.5<1.96 (Z/2, 0.025), which means that there is no difference in perceived ease of use. The customers experienced that cashless and

cardless transactions are more practical than cash transactions. Nowadays, several applications like Shopee, OVO, and Dana support cashless transactions, cooperating with trading service providers even bill payments. Meanwhile, the users experienced ease of use for the cardless transaction because they did not need to bring cards. Moreover, the users are worry-free of skimming risks or losing the cards. The users need to only bring their smartphones with m-banking installed. Ease of use preference positively affects and has the most significant impact on using cardless Malaysians. [25]

b. Perceived Usefulness

Hypothesis testing for data survey of perceived usefulness states that there is no difference between the perception of cashless and cardless users. The z-test depicted a z-score value of 1.30 is less than the z-value (0.025) = 1.96, or the H0 is accepted. The result of STATA output are:

Table 2

Independent Sample Test of Variable Perceived Usefulness

Variable	N	Mean	Standard Error	Standard Deviation	[95% Conf. Interval]	
PU Cashless	50	24.34	0.1414214	1	24.06282	24.61718
PU Cardless	50	24.08	0.1414214	1	23.80282	24.35718
Diff		0.26	0.2		-0.1319928	0.6519928
					z =	**1.3**

Source: Data Analysis Stata 16

The use of cashless and cardless payments is highly advantageous. For cardless users, they do not have to be afraid of losing the ATM cards or skimming risk. These risks are some reasons banks created a cardless mode for the transaction. This perceived

[25] Qaisar Ali and others, 'Cardless Banking System in Malaysia: An Extended Tam,' *Risks*, 9.2 (2021), 1–16 <https://doi.org/10.3390/risks9020041>.

usefulness significantly affects Thailand customers' tendency to use cardless transactions.[26] Meanwhile, the cashless transaction also benefits its users. For instance, they do not need to bring along cash, quickly select financial products, and record financial transactions automatically in the used applications. There is a significant rise in cashless transactions because of the low cash in Mumbai.[27] Furthermore, the discounts given by the application are also becoming the primary motivation in using cashless transactions in Vietnam.[28] In Japan, the development of cashless transactions is increasing because of the discounts offered for payments.[29] Generally, the use of cashless and cardless transactions satisfies the perceived usefulness for their users.

c. Perceived Privacy

Table 3

Independent Sample test of Variable Perceived Privacy

Variable	N	Mean	Standard Error	Standard Deviation	[95% Conf. Interval]	
PP Cashless	50	23	0.1414214	1	22.72282	23.27718
PP Cardless	50	23.14	0.1414214	1	22.86282	23.41718
Diff		-0.14	0.2		-0.5319928	0.2519928
					z =	**-0.7**

Source: Data Analysis Stata 16

[26] Phothikitti.

[27] Joyojeet Pal, Priyank Chandra, and Vaishnav Kameswaran, 'Digital Payment and Its Discontents : Street Shops and the Indian Government ' s Push for Cashless Transactions Digital Payment and Its Discontents : Street Shops and the Indian Government ' s Push for Cashless Transactions,' December, 2018 <https://doi.org/10.1145/3173574.3173803>.

[28] The Ninh Nguyen Van Son Dinh, Hoang Viet Nguyen, 'Cash or Cashless ?', *STRATEGIC DIRECTION PAGE*, 34.1 (2018), 1–4 <https://doi.org/10.1108/SD-08-2017-0126>.

[29] W L Chang, L M Chen, and T Hashimoto, 'Cashless Japan: Unlocking Influential Risk on Mobile Payment Service', *Information Systems Frontiers* (Springer, 2021) <https://doi.org/10.1007/s10796-021-10160-6>.

The data analysis obtained no difference in the satisfaction between cashless and cardless users in the perceived privacy. It is shown in the z-score of -0.70 or more than the z-table of -1.96, which means that the H0 is accepted. The users agree to submit their data to the service providers for cashless and cardless use. It means that it increases the risks of misuse of customers' data. However, the service providers conducted several actions to overcome those problems, such as giving random numbers in the credit cards, using blockchain to monitor the individual transactions, and giving information for the users related to the privacy risks to be more cautious before interacting with an unknown or third party.[30] Generally, cashless and cardless users trust the service providers by giving their data for ease of transaction.

d. Perceived Risk

Like other services, the use of cashless and cardless transactions is also risky. According to the result of data analysis of users' satisfaction in the perceived risk, they are:

Table 4

Independent Sample test of Variable Perceived Risk

Variable	N	Mean	Standard Error	Standard Deviation	[95% Conf. Interval]	
PR Cashless	50	24.08	0.1414214	1	23.80282	24.35718
PR Cardless	50	24.12	0.1414214	1	23.84282	24.39718
diff		-0.14	0.2		-0.4319928	0.3519928
					z =	**-0.2**

Source: Data Analysis Stata 16

[30] Karen Donohue, Özalp Özer, and Yanchong Zheng, 'Manufacturing & Service Operations Management Behavioral Operations : Past , Present , and Future Behavioral Operations : Past , Present , and Future,' February 2022, 2020.

Based on the result of data analysis, the perceived risk of the using of cashless and cardless transactions obtained a z-score of -0.20 or higher than -1.96, which means that the H0 was accepted or, in other words, that there is no difference in the perceived risk of cashless and cardless users' satisfactions. One of the risks in using cashless and cardless transactions is the leakage of customers' data. However, this is riskier than using cash. The users can escape from losing ATM cards, card skimming, and other risks in using cardless. On its implementation, the users use cardless transactions by using mobile banking. The provider sends the OTP code to the registered number for verification, valid only for several minutes to avoid hacking. The OTP code has successfully convinced the users to trust the service providers.[31]

Meanwhile, for cashless users, some services involve third parties such as GoPay, Ovo, or LinkAja, which means that the users agree with the interactions of banks, customers, and third parties that increase the risk of customers' data leakage. Moreover, the risk of hacking is high. However, this is anticipated by doing several alternatives for payment validations, such as using code, fingerprint, or face scan. Cashless users are also free from the lack of cash. Generally, cashless users have reviewed the risks, but they agreed to trust the service providers. In the previous research, financial literature and perceived risks positively and significantly affected using cashless transaction services.[32]

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[31] Imran Khan and others, 'Brand Engagement and Experience in Online Services,' January, 2020 <https://doi.org/10.1108/JSM-03-2019-0106>.

[32] Nashirah Abu Bakar, Sofian Rosbi, and Uzaki Kiyotaka, 'E-Wallet Transactional Framework for Digital Economy : A Perspective from E-Wallet Transactional Framework for Digital Economy : A Perspective from Islamic Financial Engineering', March, 2020

There is no difference between people's preferences for using cashless and cardless because using cashless provides convenience and reduces the risk for users. As well as research conducted by Husnayeti et al., it was concluded that the most dominant factor for millennials in the city of Tangerang using cashless is the convenience factor because users do not need to carry cash and wait for change.[33] Cardless users also feel the convenience. Research conducted by Kinsman revealed that unbanked users have positive perceptions of complexity, trialability, and appropriate benefits when using cardless transactions.[34]

Discussion

This study refers to the Technology Acceptance Model (TAM) theory proposed by Davis (1989). The TAM model is determined by perceived usefulness and perceived use.[35] People's preferences in utilizing financial technology cashless and cardless are not solely affected by these four variables. In this study, the model was developed by adding perceived risk[36] and privacy variable.[37] Thus, the findings suggested that perceived risk and TAM (perceived ease of use) variables are proven to partially and simultaneously influence people's preferences for using cashless.[38] Similarly, Qaisar Ali (2021) argues that the expanded TAM theory can be applied in

<https://doi.org/10.18775/ijmsba.1849-5664-5419.2014.63.1005>.

[33] H Husnayetti, E Sestri, and I Novida, 'Analisis Faktor Penentu Preferensi Masyarakat Milenial Dalam Menggunakan Sistem Pembayaran Secara Cashless Di Tangerang Selatan', *Jurnal Teknologi Informasi* …, 2020 <http://ojs.itb-ad.ac.id/index.php/JUTECH/article/view/851>.

[34] J E Kinsman, 'Cardless Banking in the Nelson Mandela Metropole: A Means of Financial Inclusion for the Excluded', *Journal of Economic and Financial Sciences*, 2019 <https://doi.org/10.4102/jef.v12i1.182>.

[35] c

[36] Lui and Jamieson.

[37] Roca, García, and de la Vega.

[38] L Padmawidjaja, TFCW Sutrisno, and ..., 'Student Preference towards Ovo as a Cashless Payment Facility (Study at Students of Faculty of Business in Surabaya City)', *Jurnal Aplikasi* …, 2020 <https://jurnaljam.ub.ac.id/index.php/jam/article/view/1954>.

assessing people's preferences in cardless banking to provide bankers input in enhancing effective marketing strategies as the users want a secure and easily accessible technology.[39]

This study aimed to analyze the differences in costumer's preference behavior in cashless and cardless transactions by examining the TAM version of perceived ease of use and perceived usefulness. Moreover, it modified with external perception variable of privacy and perceived risk to empirically explore the preferences of both transactions. The findings indicated no preference differences in cashless and cardless transactions in terms of four aspects. Besides the technological advances, the customers chose the two systems due to a more accessible payment system. According to C.K Ayo et al. (2021), the cardless and cashless policies implemented by the Nigerian government were able to reduce the use of cash and facilitate and simplify the e-payment distribution system.[40]

Findings H1 indicated no differences in people's preferences in the perceived ease of use variable in using cashless and cardless. This is consistent with the research of Yang et al.,[41] which confirmed that perceived ease of use in cashless transactions is a consideration for someone choosing to use it again in the next transaction because of its attractive appearance and features, easy-to-understand functions, and ease of operation.

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[39] Q Ali et al. l, 'Cardless Banking System in Malaysia: An Extended TAM,' *Risks*, 2021 <https://www.mdpi.com/999470>.

[40] C K Ayo et al. l, 'Developing a Multi-Factor Authentication-Based Cardless Electronic Payment System,' International Conference on Energy and SustainableEnvironment, *IOP Conference Series: Earth and Environmental Science 665*, 2021 <https://doi.org/10.1088/1755-1315/665/1/012009>.

[41] Marvello Yang and others, 'Cashless Transactions: A Study on Intention and Adoption of e-Wallets', *Sustainability (Switzerland)*, 13.2 (2021), 1–18 <https://doi.org/10.3390/su13020831>.

On the other hand, Chuang et al.'s findings[42] related to H2 showed that perceived usefulness has a positive and significant influence on customer attitudes toward Fintech Services. Overall, the findings aligned with the previous studies showing that perceived ease of use and usefulness have the most decisive praising result on behavioral intention. Then, perceived ease of use has a significant positive impact on perceived usefulness. Johnson et al.'s findings[43] for H3 confirmed that perceived security influences users' intention to use transactions. This study defined *privacy perception* as the individual's perception of personal information security from potential crime.

The last hypothesis proved that H4 risk perception affected an individual's intention to use transactions. This concurs with research by Alalwan et al.[44] regarding the risk of financial transactions on performance, social, economic, or psychological losses that can affect users' intentions. The results are consistent with the research of Al-Jabri and Sohail[45] and Eliyaz Mahamad et al.[46] who found that risk was considered the main obstacle to the use of financial transactions. Financial transaction users have concerns about the security of the PIN code, which might be lost and end up in the wrong hands so that the user's transaction information can be known to others. Financial institutions must address this to guarantee that

[42] Chuang, Liu, and Kao.

[43] Vess L Johnson and others, 'The Impact of Perceived Privacy , Accuracy and Security on the Adoption of Mobile Self-Checkout Systems,' 31.1 (2020) <https://doi.org/10.3917/jie.031.0221>.

[44] M.D Alalwan, A.; Dwivedi, Y.K.; Rana, Nripendra P.; Williams, 'Consumer Adoption of Mobile Banking in Jordan : Examining the Role of Usefulness , Ease of Use , Perceived Risk and Self-Efficacy', c, 2022.

[45] Ibrahim M Al-jabri, 'mobile Banking Adoption : Application of Diffusion of Innovation Theory,' 13.4 (2012), 379–91.

[46] E Mahammad and others, 'Internet of Things-Based Cardless Banking System with Fingerprint Authentication Using Raspberry Pi', … *Conference on Soft* …, 2021 <https://doi.org/10.1007/978-981-16-7088-6_61>.

all transactions are safe and trusted by users. Therefore, the use of cardless and cashless reduces the risk factor that users of banking services will accept because transaction information without using cash or cards is sent through a server with a secure internet network, and further processing is carried out.

This research examined the consumer preferences in using cashless and cardless transactions to utilize a more accessible, cheaper, faster, less risky, and secure transaction. It is easier to reach financial products with technological advancement, knowledge, and awareness of the digital environment. Likewise, economic transactions experience transitions in payment patterns and systems that impact people's behavior. This study positively impacted the perceived usefulness, ease of use, security, and risk of using cashless and cardless. The behavior of the transactions affects economic development in Indonesia. The growth of cardless and cashless transactions in Indonesia is snowballing. However, Indonesia's readiness to evolve into a cardless and cashless country still takes a long time due to the heterogeneous people, and education is not adequately distributed.[47].

The research novelty contributed to the previous literature where no one has done a cashless and cardless study at the same time. The first contribution, this study extends the TAM model by explaining the variables that affect a person's intention and behavior in using cashless and cardless. This study offers significant theoretical contributions to TAM, mainly financial technology theory in general, from exploring the use of cashless and cardless in terms of speed, convenience, security, efficiency, and effectiveness among users. The theory scope is expanded by including risk

[47] L Marlina, A Mundzir, and H Pratama, 'Cashless Dan Cardless Sebagai Perilaku Transaksi Di Era Digital: Suatu Tinjauan Teoretis Dan Empiris', *Jurnal Co Management*, 2020 <https://journal.ikopin.ac.id/index.php/co-management/article/view/424>.

variables on preferences in using cashless and cardless following perceived usefulness and ease of use. Furthermore, this study contributes to the theoretical domain by providing empirical evidence of the relationship between perceived usefulness and perceived ease of use and consumer experience in using cashless and cardless transactions. In addition, this research is used as a mapping material for consumer preferences in measuring interest and level of trust in security and convenience in financial transactions. Finally, this study examines the scarcity of research that focuses on cardless transactions. Therefore, this study adds to the existing literature review, especially in developing countries. The results of this study can serve as a reference for managers in the financial industry or other online platform providers to design strategic plans in terms of development, marketing, and accurate decision-making in the field of financial technology.

CONCLUSION

The result of data tests and analysis concluded that there is no difference between society's preferences in transactions using cashless and cardless services. The result of the z-test for four society's preferences aspects of the users of cashless and cardless transactions showed that those four aspects obtained no difference between cashless and cardless users' preferences. Financial Service Institution and related ones are expected to improve society's inclusive financial by improving users' security to increase the number of users in cashless and cardless transactions. The research limitation is that it was only carried out in Mataram, West Nusa Tenggara. Therefore, future research can be conducted in the broader scopes. Moreover, only a few research studies discuss the satisfaction of cashless and cardless users, which leads to limited references for this study.

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