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Analysis of Gen Z Preferences Towards Digital Payment Qris for Motorcycle Parking Fees

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Abstract: In recent years, digital payments have transformed the way people manage financial transactions, including for small-scale payments such as motorcycle parking fees. This study investigates the preferences of Generation Z towards using QRIS (Quick Response Code Indonesian Standard) for motorcycle parking fees. This article discusses a study that analyzes the adoption of QRIS (Quick Response Code Indonesian Standard) payments among Generation Z in the motorcycle parking fee sector on the island of Java. The research method used is a survey with a questionnaire, and data processing employs the Rasch Model, a theory of item response that describes the relationship between respondents' abilities and the difficulty level of the items. The research results indicate that performance expectations and social support significantly influence Generation Z's decision to adopt QRIS, while the main challenges faced are related to personal data security and internet network infrastructure. QRIS is considered a practical and efficient payment solution that helps address cash issues in situations like parking payments. The research is limited to Gen Z preferences, QRIS payment methods, and specific areas, so the results may not be representative of the broader population. Respondent bias and limited access to technology and data also affect outcomes. This research examines how QRIS can bolster the digital economy during challenging times by promoting financial inclusion and supporting small to medium-sized businesses. It offers valuable insights for stakeholders to enhance QRIS adoption and address these challenges.

Keyword: Digital Payment, QRIS, Financial Technology, Rasch Model.

INTRODUCTION

QR code-based payments have become one of the leading innovations in the financial sector in Indonesia (Widayat & Masudin, 2023). This is evidenced by the legality of the Quick Response Indonesian Standard system (Puspitasari & Salehudin, 2022). QRIS offers many advantages, leading to a significant increase in public interest in its adoption. One of its advantages is the ease of use, where consumers only need to scan a QR code to make transactions, thus speeding up and simplifying the payment process (Rachman et al., 2024). QRIS also supports interoperability, allowing all types of digital payment applications, whether from banks or non-banks, to be used with the same QR code. This not only makes it easier for users, but also broadens the reach of acceptance across various segments of society (Gunawan

et al., 2023). In addition, this system is secure because every transaction is protected by advanced encryption technology, thereby reducing the risk of fraud. QRIS also supports financial inclusion by facilitating access for people who previously did not have bank accounts to participate in the digital payment ecosystem. Thus, QRIS is not just a technological innovation, but also a tool to promote the growth of the digital economy and financial inclusion in Indonesia (Tan & Hung, 2024).

The phenomenon of paying parking fees using the QRIS method is currently a hot topic of discussion and has become a controversy (A. Lesmana, 2019). The region with the highest number of motor vehicle owners in Indonesia is on the island of Java, which makes Java a growing area for QRIS payment transactions for motorcycle parking (Darmawan, 2024). This research aims to explore the factors influencing the adoption of QRIS-based payments among e-wallet and mobile banking users, specifically regarding motorcycle parking fee payments on the island of Java. Through a quantitative approach using a five-point Likert scale questionnaire, data was collected via social media. The findings of this research indicate that users' attitudes towards QR code payments are influenced by social factors, facility support, and performance expectations. Social support from the surrounding environment, such as family and friends, as well as the availability of adequate infrastructure, also contributes to a positive attitude towards QRIS-based payments (Rachman et al., 2024). This positive attitude acts as a mediator, subsequently influencing users' intentions to adopt QR code payments. Therefore, it is important for financial institutions and technology innovators to pay attention to these factors in their efforts to enhance the adoption of QRIS-based payments among the public.

This discovery has relevant implications, especially in the context of the role of Generation Z in the fintech realm during the tech winter era. Understanding the factors that influence the adoption of financial technology can provide valuable insights for a businessperson in planning marketing strategies or product development in the future (Žurbi & Gregor-Svetec, 2023). QRIS becomes a solution in the context of "tech winter" in Indonesia due to its ability to enhance financial inclusion and payment efficiency. QRIS simplifies transactions by reducing the need for specialized hardware and different applications, while also offering low transaction costs. This helps solve the parking attendant's problem when dealing with customers who do not have change or when there is a shortage of coins for change. In addition, QRIS enhances transaction security through strong encryption and authentication, which can certainly help avoid fraud such as counterfeit money cases. In difficult economic situations or technological uncertainty, QRIS provides a stable and reliable payment solution while keeping business operations running and reducing the negative impact on cash flow. By understanding the importance of user attitudes, social support, and the availability of infrastructure in driving technology adoption, Generation Z can prepare themselves to face the challenges and opportunities in an ever-evolving market. This also provides insights for Generation Z in processing benchmarks for career opportunities to confront fearmongering regarding the necessary evils in the job market due to the tech winter, such as layoffs and career switching (Fauzianto, 2022). Thus, this research not only provides academic contributions such as significant financial literacy but also has strong practical relevance for Generation Z and other stakeholders in the socio-economic industry. This study examines performance expectations, social factors, and facilitation conditions that influence the intention to adopt QRIS payments, as well as the mediating role of Generation Z's attitudes in motorcycle parking fee payment activities in Indonesia.

METHOD

This research is a quantitative descriptive study that examines the facts in the field (Hermanto & Miftahuddin, 2021). The variables used in this research consist of the variable of travel experience. Data was collected through an online survey. The research location is in West Java, Indonesia. The population of this study is Generation Z on the island of Java, with a sample size of 272 people as described in Table 1. Researchers use a systematic and sophisticated theoretical approach. The way to achieve the objectives of this report consists of eight stages, as shown in Figure 1. The research procedure includes: 1) the preparation stage of the research; 2) identification and selection of the research problem; 3) choosing the procedures and sampling techniques to be used; 4) preparing the questionnaire statement or online interview guide according to the research problem; 5) adding questions according to the respondents; 6) creating a Google Form as a data collection medium; 7) data collection; 8) conducting data analysis or performing a comprehensive evaluation of the variables used with Rasch analysis; 9) preparing the research report; and 10) drawing conclusions. The subject of this research is Generation Z residing on the island of Java. Based on the theoretical model, 19 construction experiences are proposed as part of Generation Z's attitude towards motorcycle parking payments using the QRIS method, as shown in Table 1. The reference questions used by the researcher for the questionnaire are derived from an article titled "QR-code-based payment." "Does the consumer intend to adopt a retail buying transaction? as follows:"

Table 1 The Preferred Attributes

Conscruct	Items Cod	de
User Preferences and	I tend to use QRIS for parking service transactions. N1	
Experiences	QRIS is a payment method that has many advantages for N2	
	parking payments.	
	Using QRIS for motorcycle parking service transactions is N3	
	more practical and hassle-free compared to cash payments.	
	Utilizing QRIS in the payment process for motorcycleN4	
	parking services saves more time than cash payments.	
	The way to use QRIS for parking service transactions is N5	
	easy to understand and implement.	
	QRIS helps alleviate concerns about the similarity betweenN6	
	the new two-thousand-rupiah banknote and the old fifty-	
	thousand-rupiah banknote.	
	Parking payments using QRIS help reduce worries aboutN7	
	not having small change.	
External Influence	The influence of mass media and digital platforms hasN8	
	encouraged me to use QRIS for parking payments.	
	I use QRIS for parking because of the influence of friendsN9	
	and family.	
	I use QRIS for parking due to the situation at the parking lot N10	1
	and cashier.	
Institutional Support	Banks or financial institutions in my area support the use of N11	
11	QRIS for motorcycle parking payments.	
User Preferences and Experiences	So far, QRIS is a very good method for motorcycle parkingN12	
Oser Treferences and Experiences	transactions. I enjoy using QRIS to pay for parking.	
	I am worried that using QRIS for parking could jeopardizeN13	
	my personal data.	
Concerns and Security	I have adequate knowledge about using QRIS for parking N14	
2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	payments.	
Knowledge and Use	I feel that using QRIS for parking feels more modern and N15	
S	convenient.	
User Preferences and Experiences	I believe that QRIS is the preferred payment method for N16	
1	those who value convenience in parking.	

Personal Preferences	I believe that QRIS is the preferred payment method forN17
	those who value convenience in parking.
Knowledge and Use	I intend to continue using QRIS for parking payments in the N18
	future.
	I prefer to use parking facilities that offer payment optionsN19
	with QRIS.

The application of QRIS for motorcycle parking fee payment transactions in Java Island: using the Rasch Model.

Table 2 The Profile of Research Respondents

Table 2 The Profile o	i Kesearch Kespo	onaents
Variabe	Frequency	Per Cent
Gender		
Female(F)	156	57,4%
Male(M)	116	42,6%
Age		
17-19	47	17,3%
20-22	109	40,1%
23-26	116	42,6%
Residence		
Banten(B)	34	12,5%
Jakarta(J)	62	22,8%
West Java(W)	67	24,6%
Central Java(C)	39	14,3%
Yogyakarta(Y)	29	10,7%
East Java(E)	41	15,1%
Social Media Used		
Instagram	249	91,5%
Facebook	77	28,3%
Tik-Tok	214	78,7%
Twitter	155	57%
Frequency of Social Media Use		
< 1 hour/day	14	5,1%
1-3 hours/day	74	27,2%
3-5 hours/day	102	37,5%
> 5 hours/day	82	30,1%
Source of Digital Balance		
Mobile Banking	192	70,6%
E-Wallet	228	83,8%

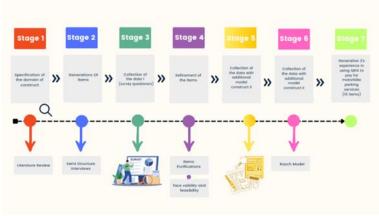


Figure 1. Research Design and Process

RESULTS AND DISCUSSION

This research uses a quantitative approach, which quantifies respondents' answers on a Likert rating scale and then inputs the statistical data into a master table or tabulation processed with Winstep software from the Rasch Model (Hermanto & Miftahuddin, 2021). The research design used is explanatory descriptive. That is to describe the characteristics of the respondents and the quality of the statements developed from each variable, and then to present the research results based on Winstep software. The data source in this study is respondents who use QRIS on the island of Java. The number of respondents is 272 people, selected using purposive sampling as shown in Table 2. The data analysis technique employs the Rasch Model, which measures and analyzes the quality of statements developed from each research variable and assesses the quality of respondents based on their answers to the provided statements. Next, we will discuss and conclude the research findings. The framework of this research is a quantitative method that is pre-experimental in nature to evaluate phenomena. The collected data will be processed according to the standards that will be established between empirical observation and basic quantitative mathematical observation. The primary data is obtained through questionnaires that are created and provided online. Data collected through the questionnaire is analyzed using Rasch analysis and the test method allows the Likert data collected via the questionary to be converted into intervals (Bond & Fox, 2013).

The Rasch model transforms the number of items measured on a Likert scale (which is ordinal data) into an interval scale known as the logarithmic probability scale. (logit). The statistical fit of items and individuals indicates the extent to which the obtained data is appropriate, reliable, and follows basic steps, as well as providing information about the quality of measurement. The results have been tabulated using Microsoft Excel and processed using Winstap 3.7 software. Data with acceptable measurement intervals for validity and reliability of the system were analyzed using the Rasch Model.

Summary Statistics

This statistical summary presents cumulative information regarding the overall quality of respondents, the quality of resources used, and the interaction between objects and people in the context of using QRIS for motorcycle parking payments. A person size value of 1.62 logit indicates that, on average, respondents have a positive tendency towards statements related to the use of QRIS, suggesting that their overall experience is good. In addition, a Cronbach's Alpha value of 0.93 confirms the reliability or consistency of the instrument used to measure respondents' preferences. This indicates that the instrument is capable of reliably evaluating users' experiences and attitudes towards QRIS. With a reliability of 0.87 for the actual model and 0.89 for the predictive model, this instrument is sufficiently able to differentiate between varying levels of satisfaction among respondents. Overall, the results indicate that the majority of respondents feel comfortable and satisfied using QRIS for parking payments, with the instruments used having a very good level of reliability.

 Table 3. Summary Statistics of 272 Measured (Extreme and Non-Extreme) Person

	Total	Count	Model		Infite		Outfit					
	Score	Count	Measure	Error	MNSQ	ZSTD	MNSQ	ZSTD				
Mean	75.9	19	1.62	0.36	0	0	0	0				
S.D.	11.7	0	1.26	0.2	0	0	0	0				
MAX.	95	19	6.49	1.84	0	0	0	0				
MIN.	28	19	-2.53	0.25	0.11	-4.5	0.12	-4.3				
Real RM	ISE .46	True SD	1.17 Separ	ration 2.5	66 Person	Reliabil	lity .87					
Model F	Model RMSE .42 True SD 1.19 Separation 2.86 Person Reliability .89											
S.E. of I	S.E. of Person MEAN $= .08$											
Person I	RAW Scor	e-to-Meas	sure Correla	tion = .93								

Cronbach Alpha (KR-20) Person RAW Score "Test" Reliability = .93

Rating Scale

Table 4 shows a summary of the rating scale from the category structure using the Rating Scale Model "R". It illustrates the respondents' assessment patterns towards the items on a specific scale. In the first category with a score of 1, there are 89 observations (2%) with an average observed value of -0.47. The infinite and outfit values of 1.62 and 1.87 indicate that this choice is less consistent and may not be valid for the respondents. In the second category, there are 421 observations (8%) with infit and outfit values close to 1 (0.95 and 0.99), indicating better consistency and higher validity. The third category, with 710 observations (14%), shows more consistent assessments with infit and outfit values of 0.86, thus this category is considered valid. The fourth category, which was the most frequently chosen by respondents (42% or 2182 observations), demonstrates high consistency with infit and outfit values close to 1 (0.97 and 1.02), making this choice very valid. The fifth category, which was only used by 34 respondents (2%), has an infit and outfit of 1.01, indicating a fairly high level of consistency despite being rarely chosen. Based on this fact, it can be said that it is still valid for the respondents who selected it. Overall, the majority of respondents provided consistent ratings, particularly in categories 3 and 4, indicating that the rating scale used is valid for measuring respondents' experiences with the use of QRIS in parking payments.

Table 4. Rating Scale Summary of Category Structure Model="R"

Category		Observed		Obsvd	Sample	Infit	Outfit	Andrich	Category	
Label	Score	Count	%	Average	Expect	MNSQ	MNSQ	Threshold	Measure	
1	1	89	2	-0.47	-1	1.62	1.87	None	(-3.28)	1
2	2	421	8	-0.12	-0.08	0.95	0.99	-2.07	-1.34	2
3	3	710	14	0.63	0.75	0.86	0.86	-0.18	-0.05	3
4	4	2182	42	1.58	1.57	0.97	1.02	0.05	1.32	4
5	5	•	34	2.41	2.39	1.01	1.01	2.21	(3.39)	5

Item Measure

Based on the Rasch Model analysis in Table 3, it was found that each item related to Generation Z's preferences and experiences with digital payments using QRIS has varying levels of difficulty and accuracy in measuring responses. The item coded N14, which pertains to concerns about personal data security when using QRIS, has a relatively high mean square outfit (MNSQ) value of 2.50, indicating an anomaly or inconsistency in the response patterns of respondents to this question. This suggests that security remains a significant concern for users, particularly Generation Z.

Meanwhile, item N12, which asks whether QRIS is a good payment method for parking transactions, shows more stable results with a lower MNSQ value (0.62). This value indicates that the majority of respondents have a positive perception of the advantages of QRIS in the context of parking payments. Other items, such as N9 and N1, which relate to the influence of friends and family as well as the use of QRIS for parking transactions, show a fairly strong relationship with user behavior tendencies, as reflected in the relatively high PT-MEASURE CORR. value.

Table 5. Item Person Statistic: Measure Order

Entry	try Total Model Infite		Cotal Total		ite	Ou	tfit	Pt-Mea	asure	Exact	_ Item		
No	Score	Count	Measure	S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%	- 110111
14	851	272	1.45	0.07	2.50	9.9	2.9	9.9	0.25	0.67	25	44.7	N14
9	975	272	0.76	0.08	1.35	3.6	1.37	3.8	0.61	0.65	44.4	48.5	N9

1	991	272	0.66	0.08	1.00	0.1	1.12	1.4	0.64	0.65	54.1	49.4	N1
11	1056	272	0.25	0.08	0.87	-1.5	0.89	-1.2	0.66	0.63	53	51	N11
12	1073	272	0.13	0.08	0.62	-4.8	0.68	-3.9	0.73	0.62	59.7	51.8	N12
8	1081	272	0.07	0.08	1.19	1.0	1.1	1.1	0.6	0.62	52.2	51.7	N8
3	1090	272	0.01	0.09	0.92	-0.9	0.96	-0.4	0.66	0.61	51.1	52.1	N3
4	1094	272	-0.02	0.09	0.96	-0.4	0.97	-0.3	0.65	0.61	50.7	52.3	N4
19	1096	272	-0.03	0.09	0.97	-2.4	0.82	-2	0.69	0.61	57.5	52.6	N19
2	1102	272	-0.08	0.09	0.77	-2.7	0.8	-2.3	0.68	0.61	57.8	52.7	N2
15	1105	272	-0.10	0.09	0.79	-2.5	0.84	-1.8	0.66	0.6	61.1	52.6	N15
18	1110	272	-0.14	0.09	0.63	-4.6	0.72	-3.2	0.71	0.6	61.2	52.5	N18
13	1119	272	-0.21	0.09	0.69	-3.8	0.7	-3.5	0.71	0.6	57.8	53	N13
10	1120	272	-0.22	0.09	0.89	-1.2	0.86	-1.5	0.62	0.6	57.1	53	N10
17	1128	272	-0.28	0.09	0.70	-3.5	0.72	-3.2	0.66	0.59	60.8	52.9	N17
5	1138	272	-0.36	0.09	0.77	-2.6	0.76	-2.7	0.66	0.59	56.7	54.4	N5
16	1150	272	-0.46	0.09	0.75	-2.8	0.79	-2.3	0.62	0.58	60.4	55.5	N16
6	1178	272	-0.71	0.10	1.33	3.1	1.31	2.8	0.46	0.56	53.4	58.5	N6
7	1178	272	-0.71	0.10	0.99	-0.1	1.09	0.9	0.47	0.56	59	58.5	N7
MEAN	1086.1	272	0	0.09	0.97	-0.8	1.02	-0.4			54.4	52.5	
S.D.	75	0	0.5	0.01	0.41	3.4	0.49	3.2			8.2	3	

Person Measure

Respondents with maximum measurement scores and very high compatibility percentages tend to be easy to target. In this case, respondent number 123 is a female residing in Jakarta, 188 is a female residing in Banten, 221 is a female residing in Jakarta, and 264 is a female residing in Yogyakarta. They have a maximum measurement size of 6.49 and a compatibility percentage of 100%, indicating that their data aligns perfectly with the model. This suggests that they can be considered the most accessible respondents for the model used, as their data is entirely consistent with the model's expectations.

Table 6. Person Measure

		Tuble of Leibon Medical											
Entry	Total	T	Total Model		Model Infite Outfit			Pt-Mea	asure	Exact	Person		
No	Score	Count	Measure	S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%	Person
123	95	19	6.49	1.84	l	Maximun	n Measure		0	0	100	100	123FJ
188	95	19	6.49	1.84	l	Maximun	n Measure		0	0	100	100	188FB
221	95	19	6.49	1.84	l	Maximun	n Measure		0	0	100	100	221FJ
226	95	19	6.49	1.84	l	Maximun	n Measure		0	0	100	100	264FJ
222	94	19	5.24	1.03	1.05	0.4	1.29	0.6	-0.07	0.15	94.7	94.8	222MY
265	93	19	4.49	0.75	2.00	1.4	1.28	0.6	0.31	0.19	94.7	89.6	265MJ
50	92	19	4.03	0.62	2.66	2.4	1.20	0.5	0.68	0.22	94.7	84.6	050MJ
51	92	19	4.03	0.62	2.66	2.4	1.20	0.5	0.68	0.22	94.7	84.6	051MB
148	92	19	4.03	0.62	0.81	-0.2	0.75	-0.3	0.44	0.25	84.2	84.6	148FW
30	91	19	3.68	0.55	1.08	0.3	1.12	0.4	-0.06	0.25	73.7	79.7	030FJ

Variable Map

The variable map shows the distribution of items based on the level of difficulty and individual skills. Items such as N14 and N9 are located on the right side of the map at the highest positive logits, indicating that they are considered very difficult by most individuals. Conversely, items like N1 and N11 are positioned on the left side of the map at negative logits, suggesting that they are viewed as easier. Most individuals are on the left side of the map, indicating below-average skills. However, individuals with high skills, situated at the highest positive logits, demonstrate very good experience or skills. Items like N10, N13, N15, and N18 are positioned relatively in the middle, with varying difficulty levels between positive and negative logits. The recommendation from this map is to evaluate very difficult items such as N14 and N9 to ensure appropriate relevance and difficulty levels, as well as to add items with

a wider range of difficulty to cover a broader spectrum of participants' skills. The illustration can be seen in the following Figure 2:

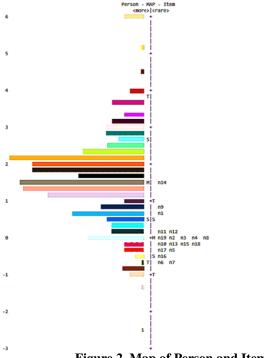


Figure 2. Map of Person and Item

CONCLUSION

This research concludes that the adoption of QRIS as a payment method for parking fees among Generation Z in Java Island is driven by various factors such as performance expectations, social support, and the availability of facilities. QRIS is considered a practical solution due to its ease of use, transaction speed, and interoperability, which allows a single QR code to be used across various digital payment applications. Users only need to scan the QR code to make payments, which not only simplifies the transaction process but also helps address issues related to change or the scarcity of small denominations in situations like parking.

However, although the majority of respondents showed a positive attitude towards QRIS, significant challenges still remain. One of the main challenges is the security of personal data, which is a major concern for Generation Z. The questionnaire items related to security have a higher outfit mean square value, indicating that respondents show inconsistency or concern in this regard. In addition, other challenges include infrastructure readiness, support from financial institutions, and the reliability of internet networks, which affect the smoothness of transactions and the overall user experience. Some respondents also reported frustration when facing technical difficulties, which can affect their loyalty to using QRIS.

In the context of a tech winter, QRIS can be seen as one of the solutions that has the potential to support the stability of the digital economy. This system not only enhances payment efficiency but also plays a role in financial inclusion by providing access to those without bank accounts to participate in the digital ecosystem. QRIS helps keep business operations running smoothly despite the economic challenges faced, such as reducing transaction costs and eliminating the need for specialized hardware. In a tech winter, when many technology companies are facing difficulties and mass layoffs, QRIS provides a reliable solution to maintain operational stability for small to medium-sized businesses, including those in the parking and other service industries.

By understanding the adaptive behavior of Generation Z towards new technology, QRIS can continue to evolve as a secure, efficient, and flexible digital payment solution. Support from financial institutions, enhanced data security, and the development of better infrastructure will be key factors in strengthening the adoption of QRIS and supporting the digital economy amid technological uncertainties. This research makes an important contribution to the academic literature as well as practical insights for business practitioners and stakeholders in facing challenges in the tech winter era.

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