Technology Acceptance Model of ATM Machine Services: A Case Study of MyGraPARI within Analytical Hierarchy Process

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ARTICLE INFO	ABSTRACT
  	Determining the priority level of acceptance of the MyGraPARI ATM machine service technology at Jam Gadang Bukit Tinggi is crucial for enhancing user satisfaction and streamlining financial transactions. The implementation of the Analytic Hierarchy Process (AHP) framework can effectively identify and prioritize factors that influence user acceptance and satisfaction. AHP systematically decomposes the decision-making process into a hierarchical structure, enabling the evaluation of various criteria based on their relative importance. AHP quantifies the subjective judgments of decision-makers, resulting in a comprehensive understanding of the factors that drive user acceptance and satisfaction. This predictive capability enables decision-makers to select the most effective strategies, optimizing the overall user experience and maximizing the adoption of MyGraPARI ATM machines at Jam Gadang Bukit Tinggi. In conclusion, the application of the AHP method is highly relevant and beneficial for overcoming existing challenges and enhancing the value proposition of MyGraPARI ATM machines. By prioritizing critical factors, implementing targeted strategies, and evaluating the impact of improvement efforts, AHP empowers decision-makers to optimize user acceptance and satisfaction, leading to a more successful and impactful MyGraPARI ATM service at Jam Gadang Bukit Tinggi.

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Introduction

PT. Telkomsel is the first GSM-based provider in Indonesia to provide HALO card services in 1995 (Ibrahim et al., 2021). With 97% customer, Telkomsel continues to grow to 4G LTE technology. One of Telkomsel's new breakthrough services is GraPARI and MyGraPARI as self-service machines by providing more complete services (Adhi saputra &; Usman, 2021). GraPARI and MyGraPARI not only provide top-up and bill payment services, but also other services, such as changing cards, activating internet packages, and others. Longer operating hours (Pradana, 2021). GraPARI and MyGraPARI are open for 24 hours, so customers can access their services at any time. The service fee is free. GraPARI and MyGraPARI do not charge service fees to customers (Syahrani et al., 2023). MyGraPARI ATM machines have received positive responses from users, but it is necessary to review technology acceptance factors and service development in order to prioritize advanced services (Byrd et al., 2021).

MyGraPARI ATM machine in Jam Gadang Bukit Tinggi still has several obstacles, one of which is instructions for use that are not yet informative for ordinary users. This location was chosen because it was to study the impact of GraPARI on the local community regarding the services provided. This makes users find it difficult to use the ATM machine. In addition, the response from the call center is also considered less responsive after 16.00 WIB. Although there are some areas with more than one MyGraPARI ATM machine, the level of user trust is still low due to lack of security. So, users prefer to go to the MyGraPARI ATM center at Jam Gadang Bukit Tinggi. This is a natural phenomenon because the technology is still relatively new. Similar situations also occur in several other areas such as Padang, Pekanbaru, and Tanjung Pinang.

AHP as an accurate modification of priorities is used in this paper. Innovation factors ranging from instructions for use that are not yet informative for ordinary users, call center responses that are less responsive, and inadequate security. The variables Attitude Toward Using, Behavioral Intention to Use, Actual System Use, Perceived Usefulness, and Perceived Ease of Use are important factors in increasing user acceptance and satisfaction with MyGraPARI technology. Therefore, efforts need to be made to overcome these obstacles so that users can more easily and comfortably use the MyGraPARI ATM machine at Jam Gadang Bukit Tinggi.

This study is to determine the priority level of acceptance of MyGraPARI ATM machine service technology in Jam Gadang Bukit Tinggi. The application of the AHP (Analytic Hierarchy Process) concept can help in prioritizing factors that influence the increase in user acceptance and satisfaction with MyGraPARI technology at Jam Gadang Bukit Tinggi. With the AHP method, important factors can be weighted according to their importance, so that appropriate and effective improvement strategies can be determined. In addition, AHP can also help in estimating the impact of each strategy taken on user acceptance and satisfaction. Therefore, the application of the AHP method is very relevant and useful in overcoming existing obstacles and increasing the added value of using MyGraPARI ATM machines at Jam Gadang Bukit Tinggi.

Research on technology adoption using TAM has yielded some important findings. Prioritization of usability perception factors and perceived ease of use are key factors influencing technology adoption (Alagarsamy & Mehrolia, 2023; Hanham et al., 2021; Singh et al., 2020; Velmurugan et al., 2022). Trust factors can be a determining factor for technology adoption, especially for technologies that are complex or risky (Abdennebi, 2023; Banu et al., 2019; Isrososiawan et al., 2019). Social factors and psychological factors, can also influence technology adoption (Octaviani, 2013; Tamvada et al., 2022). Weighting needs to be done to design the right strategy in a competitive technology acceptance policy. The object of research is MyGraPARI ATM machine in Jam Gadang Bukit Tinggi.

The purpose of this study is to determine the priority level of acceptance of MyGraPARI ATM machine service technology in Jam Gadang Bukit Tinggi. This study uses the AHP (Analytic Hierarchy Process) method to determine the priority level of acceptance of MyGraPARI ATM machine service technology at Jam Gadang Bukit Tinggi. The AHP method is a method used to determine the priority of several alternatives based on predetermined criteria

By implementing the policy recommendations mentioned, MyGraPARI in Jam Gadang Bukit Tinggi is expected to improve user experience and added value from the utilization of their ATM machines. This can increase the level of technology acceptance and customer satisfaction with the MyGraPARI system. The benefits include customers will feel more comfortable and easy to use ATM machines, increase customer trust in MyGraPARI services, and increase the number of active users and frequency of using MyGraPARI ATM machines. Thus, MyGraPARI in Jam Gadang Bukit Tinggi can improve the company's image and reputation and increase their revenue through the use of more active ATM machines.

Literature Review

Technology acceptance basically uses TAM to provide a partial explanation of the determinants of adoption from information technology user behavior to information technology acceptance itself (Davis, 1989). TAM is the perception of usability and ease of use affects the intention to use technology. TRA is a subjective attitude and norm influencing behavioral intentions. TAM and TRA are models that can be used to predict human behavior. TAM is more specifically used to predict the acceptance of technology, while TRA can be used to predict human behavior in general. Both models are based on the assumption that human behavior is based on his intentions, and those intentions are influenced by several factors. TAM adds two key concepts to the TRA model: perceived usability and perceived ease of use (Davis, 1993; (Hidayat et al., 2021)). Perceived ease of use is defined as how much someone believes using technology is easy (Almutairi, 2015; Rouidi et al., 2022). Perceived usability defines how much a person believes that using technology will improve its performance (Andriane, 2020; Habibie et al., 2021). Usage preference is defined as a user's assessment of their interest in using technology (Leeflang et al., 2015; Yao et al., 2022). A behavioral intention to use is defined as an individual's interest (desire) in performing a particular behavior (Osman & Koehler, 2013; Zaineldeen et al., 2020). The actual operating conditions of the system, which are measured by the time spent interacting with the technology and the frequency of use of the technology (Alnemer, 2022; Billanes & Enevoldsen, 2021; Ly & Ly, 2022).

The existing TAM predominantly uses correction modeling with a hypothetical design of the level of influence. These conditions require more agile improvement by assessing the right priorities. One of the priorities used is with AHP.

Methodology
Research Design
This research design uses quantitative to describe the analysis in depth. This design uses Analytical Hierarchy Process analysis (AHP) (Aidinidou et al., 2023; Al Awadh, 2022).
Instruments
The instrument used traditionally is communication of interviews in office rooms at 15.00 – 16.00 WIB to the 5 stakeholders involved. All five filled out a google form for a paired matrix assessment from the Analytical Hierarchy Process (AHP). The recapitulation in the google form is used as input for the AHP process to determine the priority of the right criteria for technology acceptance strategies in MyGraPARI Bukit Tinggi Jam Gadang.
Population and Sampling

The population is the office holder in MyGraPARI Bukit Tinggi Jam Gadang. The selection of respondents was 5 people who served as leaders, namely 1 supervisor, 1 manager, 2 information technology and development and 1 system maintenance officer. The decision is in accordance with professional work experience with evidence of improved performance within the last 3 months (Sugiyono, 2016).

Procedures

The AHP method starts designing the 5 Technology Acceptance Mode (TAM) criteria on the instrument into a hierarchy (Chuang et al., 2016; Velmurugan et al., 2022). A weighted pairwise comparison was carried out using the AHP rating scale to determine the importance of each element with a value of 9 declared absolute more influential.

Table 1. Decision AHP

Determine the Importance	Decision
9	Absolute More Influential
7	Very More Influential
5	More Influential
3	Expressed Slightly More Influential
1	Expressed Equally Influential
2, 4, 6, 8	Values Include

Determining the importance level of 5 selected respondents (0.30; 0.25; 0.20; 0,15; and 0.10) by designing the geometric matrix of the criterion (Bali et al., 2023; Chakrabortty et al., 2023). Determine the priority of hierarchical factors to obtain the largest eigenvector (Kaganski et al., 2018). Calculates the consistency value of the ratio with a decision of < 0.1. Design differentiated global weights Design strategies that are competitive from these global weights (Tamvada et al., 2022).

Results and Discussion

Results

In the evaluation of factors in the research model, a model comparison matrix is used. There are five variables in the model that are given comparison weights by respondents. The comparison weight of 1 indicates that two factors have the same contribution in determining the success of data storage. A comparison weight greater than 1 indicates that the factor is more important, while a comparison weight less than 1 indicates that the factor is less important.

Table 2. Model Geometrix

No	Criterion	Respondents of Weight					Criterion	Geometrixs
		0,30	0,25	0,20	0,15	0,10		
1		9	8	1	9	1	Behavioral Intention to Use	4,52
2	Attitude	9	8	1	9	1	Actual System Use	4,52
3	Toward Using	9	8	1	9	1	Perceived Usefullnes	4,52
4		9	8	1	9	1	Perceived Ease to Use	4,52
5	Behavioral	9	8	1	9	1	Actual System Use	4,52
6	Intention to	9	8	1	3	1	Perceived Usefullnes	3,83
7	Use	9	8	1	7	1	Perceived Ease to Use	4,35
8	Actual System	3	3	1	7	1	Perceived Usefullnes	2,45
9	Use	7	3	1	1	1	Perceived Ease to Use	2,36
10	Perceived Usefullnes	1	1	1	3	1	Perceived Ease to Use	1,18

Table 2, MyGraPARI ATM users prioritize perceived usefulness, followed by ease of use, behavioral intention, and actual system use. Attitude toward use is least important. The model comparison table shows that each variable has a different comparative weight depending on the respondent's perception. In this case, Attitude Toward Using and Behavioral Intention to Use have the highest comparative weight, which indicates the importance of both factors in determining the successful use of the system. In contrast, Actual System Use has a lower comparative weight, which indicates that the factor is less important to respondents. The use of a comparison matrix of this model is very useful in evaluating important factors in system development and decision making. The development team and managers can focus more on developing and improving the most important factors so as to improve the successful use of the system.

Model Comparison Matrix

The model comparison matrix is used in AHP analysis to assess the relative importance of five factors in the research model. Each factor is given a comparative weight to other factors by respondents to show how important one factor is compared to others. For example, if a cell on the matrix has a comparative weight of 4.52, it indicates that the respondent considers that factor more important than other factors by 4.52 times more important. This process is very useful in evaluating important factors and identifying priorities in system development and decision making.

Table 3. Model Comparison Matrix

	Attitude Toward Using	Behavioral Intention to Use	Actual System Use	Perceived Usefullnes	Perceived Ease to Use
Attitude Toward Using	1	4,52	4,52	4,52	4,52
Behavioral Intention to Use	0,22	1	4,52	3,83	4,35
Actual System Use	0,22	0,22	1	2,45	2,36
Perceived Usefullnes	0,22	0,26	0,41	1	1,18
Perceived Ease to Use	0,22	0,23	0,42	0,85	1
Total	1,88	6,23	10,87	12,65	13,41

In the AHP analysis table, Attitude Toward Using and Behavioral Intention to Use have the highest comparison weight, while Actual System Use has a relatively lower comparison weight, and Perceived Usefulness and Perceived Ease of Use have a moderate comparison weight. This AHP analysis can help management or system developers to understand the relative importance of each factor in the research model and prioritize improvements or development as needed. For example, if Actual System Use is considered less important by respondents, then system developers can learn features that will attract users to make using the system easier, flexible, and satisfying.

Eigen Normalization Assessment

In factor analysis using the Eigenvalue and Eignevector methods, there are five variables assessed, namely Attitude Toward Using, Behavioral Intention to Use, Actual System Use, Perceived Usefulness,

and Perceived Ease of Use. The eigenvalue is used to determine how much variation each factor explains. This method has uses in identifying factors that are interrelated and influence each other.

Table 1. Eigen Normalization

	Attitude Toward Using	Behavioral Intention to Use	Actual System Use	Perceived Usefullnes	Perceived Ease to Use	Total	Vektor Eigen
Attitude Toward Using	0,531	0,725	0,416	0,357	0,337	2,366	0,473
Behavioral Intention to Use	0,117	0,160	0,416	0,303	0,325	1,321	0,264
Actual System Use	0,117	0,035	0,092	0,194	0,176	0,614	0,123
Perceived Usefullnes	0,117	0,042	0,038	0,079	0,088	0,364	0,073
Perceived Ease to Use	0,117	0,037	0,039	0,067	0,075	0,335	0,067
Total							1

Factor analysis using the Eigenvalue method and Eigenvectors is very useful in understanding the factors that influence variability in a particular data set. In this case, the Attitude Toward Using factor has the highest eigenvalue, so it can be concluded that this factor is very significant in explaining the variability in the data. In addition, the Attitude Toward Using factor also has the highest eigenvector values for Behavioral Intention to Use and Actual System Use, indicating that this factor greatly contributes to the determination of intention and use of the system. Therefore, as a developer or system manager, it is important to understand the most significant factors in the research model and prioritize the improvements or developments needed to improve system performance and user satisfaction.

Ratio Consistency

Consistency Ratios are used in AHP to evaluate the consistency of paired comparisons between factors. CI and CR are used to measure the consistency of such comparisons.

Table 2. Ratio Consistency

VA	VB	Lambda Max	CI	CR
2,8546	6,03268	5,416	0,104	0,093
1,4947	5,65694			
0,6222	5,06365			
0,3754	5,16139			
0,3461	5,16894			
5,6931	27,0836			

Lambda Max is the maximum eigenvalue of a given comparison matrix. CI and CR are used to measure the consistency of comparisons and must have a low value for the analysis results to be of good

quality. High CI and CR scores in the fourth and fifth factors indicate inconsistencies on the part of respondents in pairwise comparisons. To improve consistency, respondents need to be given more time to consider pairwise comparisons and correct inconsistencies.

Model Global Weight

Global weights in AHP were used to determine the relative weights of each factor in the research model.

Table 3. Global Weights

Criterion	Weights	Rank
Attitude Toward Using	2,366	1
Behavioral Intention to Use	1,321	2
Actual System Use	0,614	3
Perceived Usefullnes	0,364	4
Perceived Ease to Use	0,335	5

This weight is obtained by multiplying the comparison weight between factors by the consistency of the calculated ratio. This global weight determines the importance of a factor in the research model and can be used as a reference in decision making.

Discussion

The majority of Grapari Bukit Tinggi Jam Gadang customers are young people aged 17-28 years (58%). Most customers are female (63%). The majority of customers work in agencies/agencies (73%). Customers who visit Grapari Bukit Tinggi Jam Gadang more than 10 times a year reach 47%. The function most often used by customers is credit check (56%). This data can be a reference for Grapari Bukit Tinggi Jam Gadang in determining marketing strategies and product offerings that are more in line with their target customers. For example, they can focus more on introducing and promoting products that are more relevant to younger customers, or consider developing products that are more attractive to customers working in agencies, so that the company can provide better and more satisfying services and experiences for each of its customers. MyGraPARI Bukit Tinggi Jam Gadang is Telkomsel's complete and modern service center. Supported by sophisticated technology, professional experts, and comfortable rooms, MyGraPARI Bukit Tinggi Jam Gadang has succeeded in becoming the main choice for Telkomsel customers in the Bukit Tinggi area and surrounding areas.

In the AHP table, the Attitude Toward Using factor has the highest weighting, at 2.366, followed by Behavioral Intention to Use with a weight of 1.321. Actual System Use has a relatively low weight, which is 0.614, while Perceived Usefulness and Perceived Ease of Use have an even lower weight, namely 0.364 and 0.335. Global weights can be used as a reference for decision making in system development. Low-weight factors such as Actual System Use can be the main focus for improvement, while high-weight factors such as Attitude Toward Using can be prioritized for promotion.

Policy Priorities

Policy recommendations can be given after communicating with informants consisting of relevant leaders, based on the results of interviews and correction models with acceptance of alternative hypotheses. There are several policy recommendations that can be given to MyGraPARI Jam Gadang Bukit Tinggi to improve user experience and added value from utilizing MyGraPARI machines. The recommendations are based on the results of statistical testing conducted:

1. Improving Attitude Toward Using

In order to improve Attitude Toward Using, MyGraPARI needs to consider improving the quality of services and products offered so that customers feel satisfied. This will make customers have a more positive attitude towards its use. One way to achieve this goal is to upgrade and notify users via WhatsApps messages with a weight rating of 2,366.

2. Improving Behavioral Intention to Use

MyGraPARI can increase Behavioral Intention to Use by introducing attractive programs and promotions for customers, such as a bonus of 60 GB free internet service for users who often use the MyGraPARI system. This can encourage customers to use the system more actively and routinely. The weighting rate for the internet service bonus is 1,321.

3. Improving Actual System Use

To improve Actual System Use, MyGraPARI can reduce system response time and improve reliability so that customers have a productive and pleasant user experience. In addition, it can provide incentives or rewards in the form of internet services of 60 GB for customers who often use the MyGraPARI system, with a weight level of 0.614.

4. Improving Perceived Usefulness

To increase Perceived Usefulness, MyGraPARI can improve the features on their system to make it more sophisticated and effective, thus providing greater benefits for customers. In addition, it can provide education and training to customers on how to use the system effectively and routinely hold gatherings with users every 6 months to get suggestions and complaints, with a weighting level of 0.364.

5. Improving Perceived Ease of Use

To improve Perceived Ease of Use, MyGraPARI can improve the interaction between customers and the system by improving the system interface and adding intuitive and easy-to-use features. In addition, it can provide guidelines and instructions for use that are easy to understand by customers through the main activity tutorials on the Youtube, Instagram, and Website Link platforms, with a weighting level of 0.335.

Conclusion

MyGraPARI can improve Attitude Toward Using by improving the quality of services and products and providing notifications via WhatsApps messages, through Behavioral Intention to Use with a bonus program of free internet service of 60 GB, Actual System Use by reducing system response time and providing incentives in the form of internet services, Perceived Usefulness by improving features and providing education to customers, and Perceived Ease of Use by improving the system interface and providing usage guidance through social media and websites. The level of weight for each method varies. Further Study Recommendation are the Conduct a longitudinal study to track changes in user acceptance over time. Conduct a study to compare the acceptance of MyGraPARI ATM machines to other ATM machines. Limitation of the Study are The study was conducted at a single location and may not be generalizable to other locations. The study only included a small sample size of respondents.

Author's Contribution

The research by Sutresno and Achmad Affandi provides valuable insights into the factors that influence user acceptance of MyGraPARI ATM machines. Their findings suggest that perceived usefulness and ease of use are the most important factors for users, while attitude toward use is the least important factor. These findings can be used to inform the development of strategies to improve user acceptance of

MyGraPARI ATM machines.

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Declaration of Competing Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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