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ORIGINAL

Unlocking Digital Potential: Technological Capability as a Key Moderator-Mediator in Migrant Workers' Use of JMO Mobile

Desbloqueando el Potencial Digital: La Capacidad Tecnológica como un Moderador-Mediador Clave en el Uso de JMO Mobile por los Trabajadores Migrantes

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ABSTRACT

This study aims to examine the factors influencing technology adoption (TA) among Indonesian migrant workers, particularly in the use of the JMO Mobile application. The research integrates technological capability (TC) as both a moderating and mediating variable within the TAM to provide a more comprehensive understanding of adoption behavior. Specifically, the study investigates the impact of Perceived Ease of Use (PEOU), Perceived Benefits (PB), and organizational support on TC and TA. The research employs a quantitative approach using a survey method, collecting data from Indonesian migrant workers who use the JMO Mobile application. PLS-SEM is applied to analyze the links among the variables. The findings reveal that PEOU, PB, and organizational support significantly influence both TC and TA. Furthermore, TC serves as a moderator, strengthening the link between PEOU and TA, as well as between PB and TA. Additionally, TC functions as a mediator between PEOU and TA, and between organizational support and TA, indicating its critical role in facilitating the adoption process. These findings have practical implications for improving the technological engagement of Indonesian migrant workers. By enhancing user-friendly features, providing clear benefits, and offering organizational support through training programs, applications like JMO Mobile can better meet migrant workers' needs. The study contributes to the theoretical expansion of the TAM by incorporating TC as a key factor influencing adoption. The originality of this research lies in its focus on Indonesian migrant workers, a group that has received limited attention in TA studies, and its integration of TC as both a moderating and mediating variable.

Keywords: Perceived Ease of Use; Technological Capability; Technology Adoption; Perceived Benefits; Organizational Support.

RESUMEN

Este estudio tiene como objetivo examinar los factores que influyen en la adopción de tecnología (TA) entre los trabajadores migrantes indonesios, particularmente en el uso de la aplicación JMO Mobile. La investigación integra la capacidad tecnológica (TC) como una variable tanto moderadora como mediadora dentro del Modelo de Aceptación de Tecnología (TAM) para proporcionar una comprensión más completa del comportamiento de adopción. Específicamente, el estudio investiga el impacto de la Percepción de Facilidad

de Uso (PEOU), los Beneficios Percibidos (PB) y el apoyo organizacional en TC y TA. La investigación emplea un enfoque cuantitativo mediante el método de encuesta, recopilando datos de trabajadores migrantes indonesios que utilizan la aplicación JMO Mobile. Se aplica PLS-SEM para analizar las relaciones entre las variables. Los hallazgos revelan que PEOU, PB y el apoyo organizacional influyen significativamente tanto en TC como en TA. Además, TC actúa como un moderador, fortaleciendo la relación entre PEOU y TA, así como entre PB y TA. Asimismo, TC funciona como un mediador entre PEOU y TA, y entre el apoyo organizacional y TA, lo que indica su papel fundamental en el proceso de adopción. Estos hallazgos tienen implicaciones prácticas para mejorar la participación tecnológica de los trabajadores migrantes indonesios. Al mejorar las características de fácil uso, proporcionar beneficios claros y ofrecer apoyo organizacional a través de programas de capacitación, aplicaciones como JMO Mobile pueden responder mejor a las necesidades de los trabajadores migrantes. El estudio contribuye a la expansión teórica del TAM al incorporar TC como un factor clave que influye en la adopción. La originalidad de esta investigación radica en su enfoque en los trabajadores migrantes indonesios, un grupo que ha recibido poca atención en los estudios sobre adopción de tecnología, y en la integración de TC como una variable tanto moderadora como mediadora.

Palabras clave: Percepción de Facilidad de Uso; Capacidad Tecnológica; Adopción de Tecnología; Beneficios Percibidos; Apoyo Organizacional.

INTRODUCTION

In the era of digital transformation, technology has become a fundamental element in social and economic life.[1,2] The rapid development of digital technology presents significant opportunities for migrant workers to access financial, social, and labor administration services more efficiently.[3] One initiative designed to meet the needs of migrant workers is the Jamsostek Mobile (JMO) application, which offers various employment-related services, including social security information and claims management.[4] JMO Mobile is an application developed by BPJS Ketenagakerjaan to provide digital services to its participants, including migrant workers.[5] This application allows users to easily and quickly access membership information, social security claims, and other employment-related services.[6] However, the adoption and utilization of this technology are not uniform, depending on various factors, one of which is the individual user's technological capability.[7,8]

Technological capability (TC) encompasses expertise and understanding in accessing and utilizing digital technology effectively.[9] This concept encompasses an understanding of how to use digital devices, access technology-based information, and complete technology-based tasks.[10,11,12] In the context of migrant workers, TC is a critical aspect that determines the extent to which they can optimize the use of digital applications to support their employment needs.[13,14] This factor is often influenced by educational background, access to technological devices, and experience in using digital-based services.[15,16,17]

Although numerous studies have examined digital TA across various sectors, a research gap remains in understanding how TC acts as a moderating factor in mobile application usage by migrant workers. Most previous studies have focused on factors like PEOU,[18,19,20] Perceived Benefits (PB),[21,22,23] and organizational support[24,25] in enhancing TA. However, only a few studies have specifically explored how individual TC can enhance or hinder the use of digital applications in the context of migrant workers.

The novelty of this research resides in its in-depth exploration of the interaction between TC and the utilization of the JMO Mobile application. By understanding how migrant workers with varying levels of TC respond to this application, the study can provide new understanding of the elements that can accelerate or hinder digital transformation in the labor sector. Furthermore, this research offers a new perspective on designing more inclusive and evidence-based policies to improve the digital literacy of migrant workers.

The primary motivation for this study stems from the urgency of enhancing digital literacy and technological inclusion among migrant workers. Migrant workers often face various challenges, such as limited access to information, lack of experience in using digital services, and language barriers that may affect their ability to adopt new technology. Therefore, by understanding the function of TC in the use of JMO Mobile, this research seeks to provide practical contributions in addressing digitalization challenges for migrant workers.

The main objective of this study is to analyze how TC moderates and mediates the link between migrant workers and their use of JMO Mobile. Specifically, the research aims to determine the elements that impact migrant workers' TC levels, understand its impact on application adoption rates, and explore strategies to enhance the effectiveness of this application among migrant workers. Thus, this research is expected to offer a foundation for developing more effective and sustainable digital literacy improvement strategies.

To achieve these objectives, this study seeks to answer several key questions: (1) To what extent does TC influence the adoption rate of JMO Mobile by migrant workers? (2) What factors contribute to differences in TC

among migrant workers? (3) How can TC strengthen or hinder the effectiveness of the application in supporting migrant workers' employment needs? (4) What strategies can be implemented to improve migrant workers' digital literacy in the context of JMO Mobile usage? (5) What are the policy implications of this study's findings in enhancing digital inclusion for migrant workers?

Literature Review

Perceived Ease of Use

Davis (1989) define that PEOU pertain to the extent to which an individual perceives that utilizing a specific technology will be free of effort. This concept is a key component of the Technology Acceptance Model (TAM), which explains how users embrace and utilize new technologies. A system or application with a high level of PEOU is expected to require minimal cognitive effort, making it more accessible and user-friendly.[27] Elements that affect the PEOU include intuitive design, clear instructions, and prior user experience with similar technologies.[28] When a technology is simple to comprehend and use, users are more inclined to engage with it consistently and efficiently. Meanwhile, Salahshour Rad et al. (2018) define that TA is the process through which individuals or organizations come to accept, utilize, and incorporate new technology into their operations. This process involves several stages, including understanding of the technology's existence, evaluation of its benefits, and the decision to use it continuously.

PEOU influences an individual's TC because the easier a person perceives a technology to be, the quicker they are able to master and integrate it into their activities.[30,31] This perception of ease allows individuals to use technology more efficiently, which in turn enhances their technical skills and knowledge. Over time, this can strengthen an individual's TC in addressing various challenges associated with new technologies.

PEOU is a key factor in influencing user decisions regarding TA.[32,33] When individuals find a system is user-friendly, individuals are more likely to accept and incorporate it into their daily activities.[34] Additionally, an intuitive system lowers the learning curve, encouraging users to explore its full potential. As a result, technologies that prioritize ease of use tend to experience higher adoption rates, as users feel more comfortable incorporating them into their routines.[35]

H1a: PEOU impact on TC.

H1b: PEOU impact on TA.

Perceived Benefits

Indulska et al. (2009) explain that PB refer to an individual's belief in the advantages and positive outcomes of using a particular technology. These benefits can be functional, such as improved efficiency and productivity, or psychological, such as increased convenience and confidence in performing tasks. In the context of TA, PB play a crucial role in affecting users' readiness to incorporate new devices into their routines.[37] When users recognize tangible advantages, they are more prone in adopting and consistently utilize the technology.[38] Factors that shape PB include enhanced performance, cost savings, accessibility, and ease of achieving desired outcomes.

PB impact an individual's TC by motivating them to engage more actively with new technologies.[39,40] When individuals believe that a technology will bring significant advantages, such as improving efficiency or simplifying tasks, they are more likely to invest time and effort in learning and mastering it. This increased motivation leads to a greater understanding and skill in using the technology, ultimately enhancing their TC. As individuals experience the PB, they become more proficient and confident in utilizing the technology, which further boosts their overall technological competence.[41]

PB significantly impact the likelihood of TA by shaping user attitudes and motivations.[21,42] When individuals perceive that a technology offers meaningful improvements over existing methods, they become more inclined to adopt it. The perception of benefits can reduce resistance to change and encourage experimentation with new digital tools.[43] Additionally, technologies that demonstrate clear value propositions, such as time savings or enhanced communication, tend to gain higher adoption rates. Organizations and developers can facilitate adoption by emphasizing the real-world benefits of their innovations, ensuring that users recognize the practical advantages of integrating the technology into their daily activities.[44]

H2a: PB impact on TC.

H2b: PB impact on TA.

Organizational Support

Rhoades & Eisenberger (2002) define that Organizational Support encompass the level of support offered by the organization to employees in the form of resources, training, and policies to help them adapt to changes or innovations, including new technologies. This support includes aspects such as guidance, facilities, and communication that enable employees to work more efficiently and embrace change. Organizational support impacts an individual's TC by providing the necessary resources, training, and encouragement to effectively

adopt and utilize new technologies.[46,47] When an organization offers strong support, such as access to tools, guidance, and a conducive environment for learning, individuals are more likely to develop their technological skills. This support helps individuals overcome challenges, boosting their confidence and proficiency in using technology. As a result, the TC of individuals within the organization is enhanced, enabling them to leverage technology more effectively in their roles.

Organizational support plays a crucial role in facilitating TA by providing training and resources necessary for employees to master new technologies.[48,49,50] This support also creates a conducive environment for change, encouraging employees to be more receptive to the technology introduced. When the organization demonstrates clear commitment through policies and supporting communication, the level of technology acceptance among employees increases, thereby accelerating the adoption process and reducing barriers that may arise during implementation.

H3a: Organizational Support impact on TC.

H3b: Organizational Support impact on TA.

Technological Capability as Moderator

Coombs & Bierly III (2006) state that TC refers to an organization's ability to develop, implement, and effectively utilize technology. It encompasses the technical knowledge, resources, and infrastructure needed to support the use of technology in daily operations. Organizations with high TC are able to leverage new technologies more efficiently, which in turn enhances performance and competitiveness.[52] TC impacts TA by determining how well individuals or organizations can understand, implement, and utilize new technologies. When individuals or organizations have a high level of TC, they are more likely to embrace new technologies quickly and efficiently.[55] A strong technological foundation allows them to handle technical challenges, integrate new systems smoothly, and maximize the benefits of adoption.

TC acts as a moderating variable in the link between factors such as PEOU, PB, and Organizational Support towards TA. When an organization has strong technological capacity, the impact of these factors on TA becomes more significant.[56] For example, if employees find the technology easy to use and beneficial, and receive adequate organizational support, an organization with high TC will be more likely to successfully implement the technology.[57]

In this context, TC not only enhances the effectiveness of TA but also accelerates the process of acceptance and use within the organization. Greater TC allows organizations to more quickly address challenges that may arise when adopting new technologies, both technically and operationally. Therefore, organizations with strong technological capacity are better equipped to optimize the link between ease of use, PB, and organizational support, leading to more successful TA.[58]

H4: TC impact on TA.

H4a: TC moderates the link between PEOU and TA.

H4b: TC moderates the link between PB and TA.

H4c: TC moderates the link between Organizational Support and TA.

Technological Capability as Mediator

TC acts as a mediator in the link between PEOU, PB, and Organizational Support towards TA. This means that TC can influence how the ease of use, PB, and organizational support affect the decision to adopt new technology. The greater the TC of an organization, the more it can bridge the gap between these factors and successful TA.[59]

When an organization possesses strong TC, the link between PEOU and TA becomes more apparent.[60] For instance, even if employees perceive a technology device to be user-friendly or beneficial, the presence of strong technological infrastructure and expertise enhances their ability to integrate the technology into their workflows.[61] This creates a smoother transition and faster adoption process, as the organization can effectively support and troubleshoot any challenges that may arise. Supportive policies and resources, when paired with strong TC, enable employees to confidently navigate new technologies.[62] As a mediator, TC ensures that organizational support and PB are fully realized, resulting in a higher likelihood of successful TA within the organization.

H4d: TC mediates the link between PEOU and TA.

H4e: TC mediates the link between PB and TA.

H4f: TC mediates the link between Organizational Support and TA.

Figure 1 illustrates the links between key variables in the study of TA. It highlights how PEOU, PB, and Organizational Support influence TA, either directly or indirectly. The framework also shows the role of TC as a mediating and moderating factor that enhances the impact of these variables on the adoption process. This conceptual framework functions as a reference for comprehending the dynamics that drive TA within an organization.

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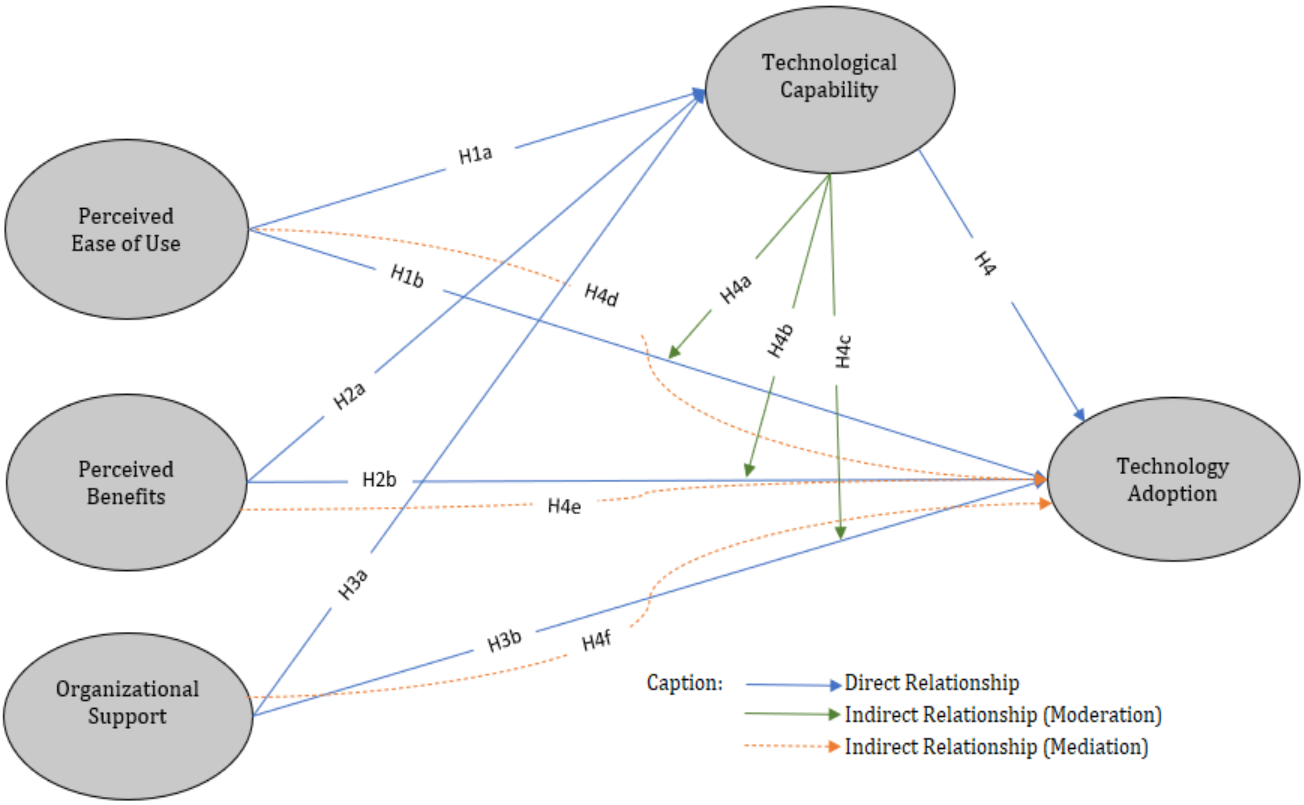

Figure 1. Conceptual Framework

METHOD

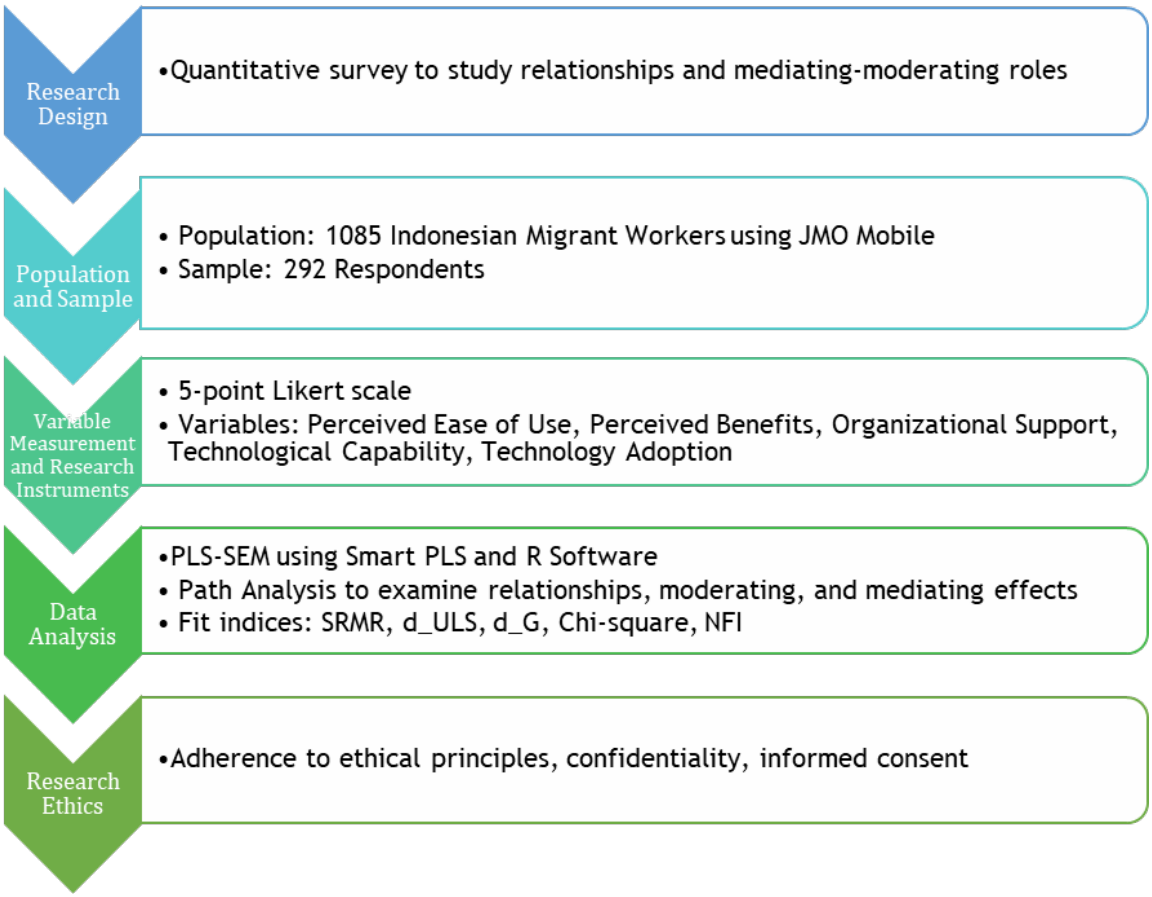

Figure 2. Methodology Flow Chart

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Research Design

The methodology section outlines the systematic approach used in the research, detailing the research design, measurement of variables, data analysis, and ethical considerations. It provides a structured plan for how the study will be conducted, ensuring that data is collected and analyzed rigorously and ethically. This section is crucial for validating the research process and ensuring the integrity and reliability of the study's findings (figure 2).

This research utilizes a quantitative design through a survey-based approach. This design was chosen to collect empirical data on the link between PEOU, PB, Organizational Support, and TA. The study also aims to explore the role of TC as a mediator and moderator in this relationship. Data collected through structured questionnaires distributed to randomly selected respondents from the defined population.

Population and Sample

In this research, the target population comprises of 1085 Indonesian Migrant Workers (IMW) using JMO Mobile, and the sampling technique used is stratified random sampling. The first step is to divide the population into strata based on specific characteristics deemed relevant to the research, such as age, gender, or the duration of JMO Mobile usage. Once the strata are defined, samples will be randomly drawn from each stratum according to its proportion, ensuring that each subgroup in the population is properly reflected. The sample size will be determined using a specific technique, such as a sample size calculation formula or an estimation method aligned with the research objectives. By employing stratified random sampling, this study aims to acquire a sample that accurately reflects the population, allowing the results to be generalized effectively and reflect the diversity within the population of IMW users of JMO Mobile.

The Slovin formula is applied to calculate the necessary sample size for this research, which is commonly applied to calculate the sample size from a large population with a desired margin of error. The Slovin formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

By applying this formula with a population size of N=1085, and a margin of error of e=0,05, the calculation produces an approximate required sample size of 292 people. Therefore, for this study, the sample size to be drawn from the population of IMW users of JMO Mobile is about 292 respondents.

Variable Measurement and Research Instruments

In this study, the measurement of key variables— PEOU, PB, Organizational Support, TC, and TA—was based on established scales from previous literature to ensure reliability and validity. The questionnaire was shared through an online survey using Google Forms, a platform that is easy to access and use by respondents. The questionnaire link was shared via social media or messaging applications to facilitate participant engagement. By using Google Forms, data collection can be done automatically and efficiently, while ensuring the confidentiality and security of respondent data.

PEOU was assessed using a Likert scale, following Davis's (1989) TAM. This scale measured how easy users perceived a system to be, with items such as "I found the system easy to use" and "I believed the system was user-friendly" (Al-Abdullatif, 2022; Davis, 1989; Shirazi et al., 2022). PB, which referred to the perceived advantages or positive outcomes from using the technology, was measured through items such as "The system improved my performance" and "Using this technology brought benefits to my work" (Dubey & Sahu, 2021; Venkatesh et al., 2003). Organizational Support was measured by assessing the resources, training, and assistance provided by the organization to support TA, with items like "The organization provided adequate training for using this system" and "Management supported the use of this technology".[67,68,69]

TC, referring to an individual's skills and confidence in using technology, assessed using indicators like "I was confident in my ability to use the system" and "I was skilled at navigating technology".[70,71] Finally, TA was measured based on the intention to use and the actual use of the technology. Items such as "I intended to use this technology" and "I regularly used this technology" were used to assess this variable (Smidt & Jokonya, 2022; Venkatesh et al., 2003). These instruments were validated through a pre-test and refined to ensure accuracy in measuring the constructs. Data collected through these scales Offered understanding of the elements that impact TA among Indonesian migrant workers using JMO Mobile.

Data Analysis

The data that was collected is examined using PLS-SEM with the statistical software Smart PLS and R Software. Path analysis is employed to examine the links between the independent variables PEOU, PB, and Organizational Support) and the dependent variable is TA. Additionally, the mediating and moderating role of TC

in these relationships is tested. The model's fit indices are assessed using key metrics, including Standardized Root Mean Square Residual (SRMR), Unweighted Least Squares Discrepancy (d_{ULS}), Geodesic Discrepancy (d_G), Chi-square (x^2), and Normed Fit Index (NFI) to ensure the robustness and reliability of the proposed model.[73,74] SRMR measures the difference between the observed and predicted correlations and is calculated as:

$$SRMR = \sqrt{\frac{\sum_{i=1}^{p}\sum_{j=1}^{p}(s_{ij}-\sigma_{ij})}{p(p+1)/2}} \quad (1)$$

Where:
s_{ij} represents the observed correlation between indicators.
i, j and σ_{ij} represents the predicted correlation.

d_{ULS} measures how well a model fits the data by calculating the squared differences between the elements of the observed covariance matrix and the elements predicted by the model. The formula is:

$$d_{ULS} = \sum_{i=1}^{\frac{p(p+1)}{2}} (\sigma_i - \hat{\sigma})^2 \quad (2)$$

Where:
σ_i is an element of the observed covariance matrix.
$\sigma\hat{}$ is the corresponding element from the covariance matrix predicted by the model.
p is the number of observed variables.

d_G measures the geodesic distance between the observed covariance matrix and the covariance matrix predicted by the model in the space of symmetric positive-definite matrices. The general formula is:

$$d_G = dist\ (\Sigma, \hat{\Sigma}) \quad (3)$$

Where:
Σ is the observed covariance matrix
($\Sigma\hat{}$) is the covariance matrix predicted by the model
(Σ, $\Sigma\hat{}$) represents the geodesic distance between the two covariance matrices.

The Chi-square (x^2) test examines the model's overall fit by comparing the observed covariance matrix:

$$X^2 = (N-1).tr\ (S^{-1}\Sigma) \quad (4)$$

Where:
N is the sample size.
S is the observed covariance matrix.
Σ is the model-implied covariance matrix.

The Normed Fit Index (NFI) compares the fit of the proposed model to a null model and is calculated as:

$$NFI = \frac{X^2_{null} - X^2_{model}}{X^2_{null}} \quad (5)$$

These indices collectively provide a comprehensive evaluation of how well the proposed model fits the observed data, guiding the interpretation of the links between PEOU, PB, Organizational Support, TC, and TA.

Research Ethics

This study followed established standards to protect participants' rights and uphold the credibility of the research process. Consent was acquired from all participants, ensuring they were thoroughly informed about the study's objectives, methods, and any possible risks. Participation was free to withdraw at any point without facing any repercussions. Data collected was kept confidential, used solely for the purposes of this research, and stored securely to protect privacy. The study received ethical approval from the appropriate ethics committee to ensure compliance with ethical standards.

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RESULTS

Descriptive Statistics

The respondent distribution in this study consists of 292 individuals with various characteristics based on gender, age, years of work, workplace, and hometown (see table 1). Regarding gender, most of the respondents were female (58,9 %), while male respondents made up 41,1 %. Age-wise, the majority of respondents were in the 26-35 years range, comprising 41,1 %, followed by the 36-45 years group at 27,4 %. Regarding years of work, the largest group of respondents had between 1 to 10 years of work experience, with 34,2 % working 1-5 years and 30,8 % working 6-10 years. Concerning the workplace, most respondents worked in Taiwan (27,4 %) and Malaysia (24 %), followed by Hong Kong (20,5 %), with smaller numbers in South Korea, Japan, and other countries. As for their hometowns, respondents came from Ponorogo (47,9 %) and Malang (52,1 %), reflecting a diverse geographical background among the Indonesian migrant workers using JMO Mobile.

Table 1. Respondent Distribution Based on Gender, Age, Years of Work, Workplace, And Hometown

Category	Number of Respondents	Percentage (%)
Gender		
Male	120	41,10
Female	172	58,90
Age		
18-25 years	50	17,10
26-35 years	120	41,10
36-45 years	80	27,40
46-55 years	32	11,00
56 years and above	10	3,40
Years of Work		
1-5 years	100	34,20
6-10 years	90	30,80
11-15 years	60	20,50
16 years and above	42	14,40
Workplace		
Hong Kong	60	20,50
Taiwan	80	27,40
Malaysia	70	24,00
South Korea	30	10,30
Japan	25	8,60
Other Countries	27	9,30
Hometown		
Ponorogo	140	47,90
Malang	152	52,10
Total	292	100

In addition, table 2 shows that all variables have a mean above 3,5, indicating a general tendency for respondents to provide positive assessments. TA has the highest mean (4,10), suggesting a strong acceptance of technology among respondents. PB also has a relatively high mean (4,02), reflecting the significant advantages perceived by users in adopting the technology. Meanwhile, PEOU (3,85) suggests that most respondents find the technology fairly easy to use. Organizational Support (3,78) indicates a moderate level of support from organizations, whereas TC (3,92) represents a relatively good level of individual TC. The standard deviation ranges between 0,65 and 0,75, indicating that the data distribution is relatively stable without extreme variations. These findings confirm that PEOU, PB, and organizational support contribute to enhancing individual TC and promoting TA.

Table 2. Descriptive Statistics

Variable	Min	Max	Mean	Standard Deviation
Perceived Ease of Use	1	5	3,85	0,75
Perceived Benefits	1	5	4,02	0,68
Organizational Support	1	5	3,78	0,72
Technological Capability	1	5	3,92	0,70
Technology Adoption	1	5	4,10	0,65

Validity and Reliability

The results of the Exploratory Factor Analysis (EFA) presented in table 3 show that the research instrument has excellent validity and reliability. Each construct has a significant outer loading, all above 0,70, indicating that the indicators used to measure each construct effectively represent the intended construct.[75] These values suggest good convergent validity, meaning that the indicators consistently measure the intended variables.[76] Regarding reliability, the Cronbach's Alpha (α) values ranging from 0,92 to 0,94 indicate very high internal consistency. This suggests that the items within each construct are highly correlated and reliable for measuring the intended constructs.[77] Similarly, the Composite Reliability (CR) values, all above 0,90, further indicate high reliability (Bagozzi & Yi, 1988). The rhoA values, which align with the values of Cronbach's Alpha and CR, further support the indication that the instrument is highly consistent in measuring the intended constructs. Furthermore, the Average Variance Extracted (AVE) for each construct is above the threshold of 0,50, with values ranging from 0,76 to 0,80. This means that more than 50 % of the variance in the indicators for each construct is explained by the respective construct, indicating very good convergent validity.[76]

Table 3. Exploratory Factor Analysis

Construct	Items	Indicators	Outer Loading	α	rho_A	CR	AVE
Perceived Ease of Use	PEOU1	I find JMO Mobile easy to use for accessing my employment-related information.	0,87	0,93	0,93	0,95	0,78
	PEOU2	Learning to use JMO Mobile does not require much effort.	0,90				
	PEOU3	The navigation and features of JMO Mobile are clear and understandable.	0,91				
	PEOU4	I can perform transactions and check my benefits on JMO Mobile without difficulties.	0,86				
	PEOU5	I feel confident using JMO Mobile without needing external help.	0,89				
Perceived Benefits	PB1	JMO Mobile helps me easily access information about my social security and benefits.	0,86	0,93	0,93	0,95	0,79
	PB2	Using JMO Mobile saves me time in managing my employment-related documents.	0,90				
	PB3	JMO Mobile allows me to monitor my insurance and claims more efficiently.	0,91				
	PB4	I feel more secure knowing I can check my financial and employment status anytime through JMO Mobile.	0,87				
	PB5	JMO Mobile provides convenience in handling administrative tasks remotely.	0,89				
Organizational Support	OS1	My employer encourages the use of JMO Mobile for managing employment matters.	0,86	0,93	0,93	0,95	0,79
	OS2	I received training or guidance from my employer on how to use JMO Mobile.	0,91				
	OS3	Support is available when I face issues using JMO Mobile.	0,91				

	OS4	My employer provides internet access or other resources to help me use JMO Mobile effectively.	0,87				
	OS5	My organization acknowledges and promotes the benefits of JMO Mobile for employees.	0,90				
Technological Capability	TC1	I can independently troubleshoot basic issues when using JMO Mobile.	0,86	0,94	0,94	0,95	0,80
	TC2	I have the skills to explore and utilize the features of JMO Mobile effectively.	0,88				
	TC3	I can integrate JMO Mobile with other applications or digital tools when needed.	0,90				
	TC4	I quickly adapt to new updates or features introduced in JMO Mobile.	0,85				
	TC5	I actively seek information or training to improve my ability to use JMO Mobile efficiently.	0,87				
Technology Adoption	TA1	I actively use JMO Mobile for checking my employment and financial status.	0,87	0,92	0,92	0,94	0,76
	TA2	I plan to continue using JMO Mobile for managing my social security benefits.	0,91				
	TA3	I recommend JMO Mobile to fellow Indonesian Migrant Workers.	0,92				
	TA4	I feel comfortable relying on JMO Mobile for accessing employment-related services.	0,87				
	TA5	JMO Mobile has become an essential tool in managing my employment and social security needs.	0,89				

Based on the Fornell-Larcker Criterion, the square root of the AVE values for each construct should be greater than the correlation between constructs. In table 4, the square root of the AVE for each construct (Organizational Support = 0,79, PB = 0,80, PEOU = 0,78, TC = 0,80, and TA = 0,76) is greater than the correlations with other constructs, indicating good discriminant validity. This demonstrates that each construct is distinct and does not overlap excessively with others, meeting the validity requirement of the Fornell-Larcker Criterion (Fornell & Larcker, 19810).

Table 4. Fornell Larcker Criterion

Construct	Organizational Support	Perceived Benefits	Perceived Ease of Use	Technological Capability	Technology Adoption
Organizational Support	0,79				
Perceived Benefits	0,80	0,79			
Perceived Ease of Use	0,80	0,79	0,78		
Technological Capability	0,80	0,80	0,80	0,80	
Technology Adoption	0,77	0,77	0,78	0,77	0,76

The Heterotrait-Monotrait Ratio (HTMT) is used to assess discriminant validity by comparing the correlations between constructs with the correlations within a single construct. As a general rule, HTMT values should be below 0,90[78] to ensure discriminant validity. In this table, all the HTMT values are below 0,90, indicating that the constructs are sufficiently distinct from each other. For instance, the highest HTMT value is 0,87 (between Organizational Support and TC), which is still well within the acceptable range. Therefore, these results suggest that the constructs in the model do not share excessive similarity and that discriminant validity is maintained (table 5).

Table 5. HTMT

Construct	Organizational Support	Perceived Benefits	Perceived Ease of Use	Technological Capability	Technology Adoption
Organizational Support	-				
Perceived Benefits	0,87	-			
Perceived Ease of Use	0,77	0,68	-		
Technological Capability	0,67	0,87	0,87	-	
Technology Adoption	0,75	0,75	0,75	0,75	-

Goodness of Fit

In table 6, the Goodness of Fit indices for both the saturated and estimated models are provided, indicating the model's overall fit to the data. The Standardized Root Mean Square Residual (SRMR) value is 0,067 for both models, which is below the commonly accepted threshold of 0,08, suggesting a good fit between the observed and predicted covariance matrices (Hu & Bentler, 1999). The d_{ULS} and d_G values are identical for both models (1,221 and 112,15, respectively), and they represent the discrepancy between the empirical and model-implied distances in terms of the unweighted and weighted least squares, with smaller values indicating better fit. The Chi-Square value (2612,19) also reflects a high degree of fit, with the model explaining a significant proportion of the variance. However, the Normed Fit Index (NFI) value is 0,521, which is lower than the desired threshold of 0,90, indicating that while the model is acceptable, there is room for improvement in terms of explaining the variance in the data.

Table 6. Goodness of Fit

	Saturated Model	Estimated Model
SRMR	0,067	0,067
d_{ULS}	1,221	1,221
d_G	112,15	112,15
Chi-Square	2612,19	2612,19
NFI	0,521	0,521

Path Analysis

Table 7 and figure 3 presents the results of path coefficient analysis for the proposed hypotheses. Hypotheses 1a and 1b, which examine the influence of PEOU on TC and TA, show significant results, with p-values of 0,005 and 0,021, respectively, indicating that PEOU positively influences both TC and TA. Similarly, Hypotheses 2a and 2b, focusing on the link between PB and TC as well as TA, are also supported, with p-values of 0,000 and 0,029, respectively. Hypothesis 3a, which investigates the effect of Organizational Support on TA, is approved with a significant p-value of 0,000, suggesting that Organizational Support plays a key role in TA. However, Hypothesis 3b, which tests the direct relationship between Organizational Support and TA, is rejected due to a non-significant p-value of 0,000 despite the positive path coefficient (0,433), indicating that Organizational Support does not directly influence TA in the model. Finally, Hypothesis 4, examining the effect of TC on TA, shows the strongest influence with a high path coefficient of 0,500 and a p-value of 0,000, supporting the hypothesis that TC significantly drives TA. Thus, the results highlight the importance of PEOU, PB, and TC in driving TA, while Organizational Support has a mixed influence depending on the nature of the link tested.

Table 7. Path Coefficient

Hypothesis	Construct*	β	STDEV	T Statistics	P Values	Result
H1a	PEOE -> TC	0,257	0,091	2,834	0,005	Approved
H1b	PEOE -> TA	0,236	0,570	2,613	0,021	Approved
H2a	PB -> TC	0,333	0,094	3,349	0,000	Approved
H2b	PB -> TA	0,213	0,079	2,434	0,029	Approved
H3a	OS -> TA	0,411	0,107	3,719	0,000	Approved
H3b	OS -> TA	0,433	0,526	0,651	0,000	Rejected
H4	TC -> TA	0,500	0,923	4,026	0,000	Approved

*PEOE=Perceived Ease of Use; PB=Perceived Benefits; OS=Organizational Support; TC=Technological Capability; TA=Technology Adoption

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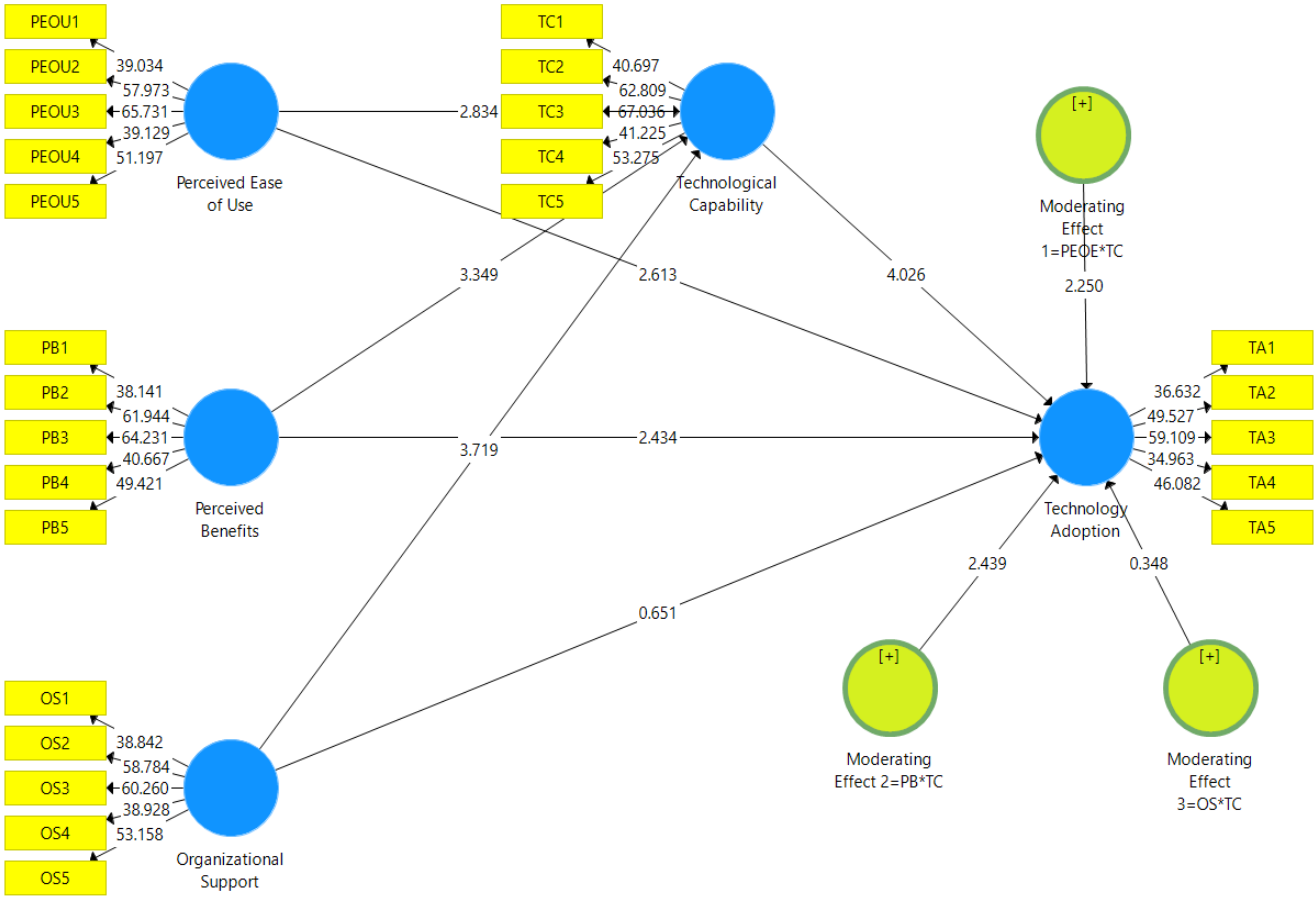

Figure 3. PLS-SEM Bootstrapping

Mediation and Moderation Analysis

Table 8 presents the results of the indirect effects analysis, evaluating the moderating and mediation effects of various constructs on TA. Hypothesis 4a examines the moderating effect of PEOU and TC on TA, showing a positive and significant path coefficient of 0,103 with a p-value of 0,012, indicating support for the moderating role of this interaction. In contrast, Hypothesis 4b, which assesses the moderating effect of PB and TC on TA, is rejected, with a negative path coefficient of -0,899 and a p-value of 0,151, suggesting no significant moderating effect. Hypothesis 4c, testing the moderating effect of Organizational Support and TC on TA, reveals a negative but significant coefficient of -0,216 with a p-value of 0,010, thus supporting this moderating effect. Hypothesis 4d, exploring the indirect effect of PEOU through TC on TA, is approved with a positive coefficient of 0,260 and a significant p-value of 0,005, demonstrating a positive indirect influence. Similarly, Hypothesis 4e, which looks at the indirect effect of PB through TC on TA, is supported, with a path coefficient of 0,337 and a significant p-value of 0,005. However, Hypothesis 4f, which tests the indirect effect of Organizational Support through TC on TA, is rejected with a non-significant p-value of 0,374, suggesting that Organizational Support does not significantly affect TA through TC. Overall, these results highlight the significant roles of PEOU, PB, and Organizational Support in influencing TA either directly or indirectly, with some effects moderated by TC.

Table 8. Indirect Effect

Hypothesis	Construct*	β	STDEV	T Statistics	P Values	Result
H4a	Moderating Effect 1=PEOE*TC -> TA	0,103	0,882	2,250	0,012	Approved
H4b	Moderating Effect 2=PB*TC -> TA	-0,899	0,625	1,439	0,151	Rejected
H4c	Moderating Effect 3=OS*TC -> TA	-0,216	0,622	2,439	0,010	Approved
H4d	PEOE -> TC -> TA	0,260	0,256	2,015	0,005	Approved
H4e	PB -> TC -> TA	0,337	0,308	2,092	0,005	Approved
H4f	OS -> TC -> TA	0,416	0,467	0,891	0,374	Rejected

*PEOE=Perceived Ease of Use; PB=Perceived Benefits; OS=Organizational Support; TC=Technological Capability; TA=Technology Adoption

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Moreover, we use Simple Slope Analysis, a statistical technique used to examine the nature of interactions between variables by analyzing the effect of one predictor variable at different levels of another moderator variable. This method helps to interpret and understand the conditional relationships between variables.[79] Figure 4 illustrates the moderating effect between PEOU and TC on TA. It shows that as PEOU increases, TA tends to rise, particularly when TC is above average. However, when TC is low, an increase in PEOU does not have a significant impact on TA. This suggests that TC acts as a factor that strengthens the link between PEOU and TA.

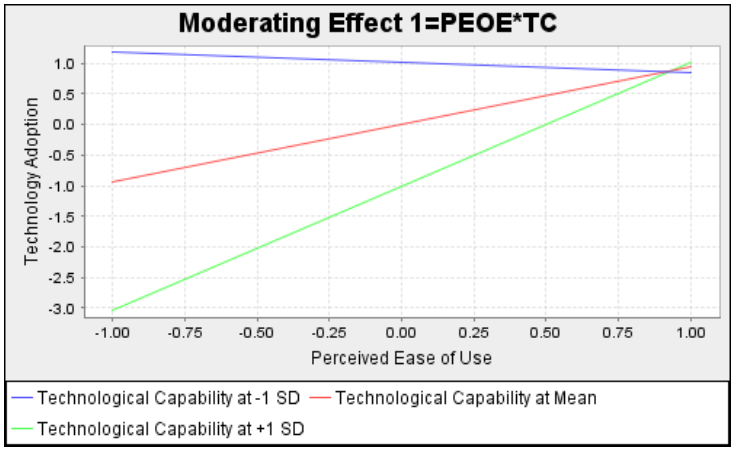

Figure 4. Simple Slope Analysis of Technological Moderating Effect on PEOU on TA

Figure 5 shows the moderating effect between PB and TC on TA. The graph indicates that as PB increase, TA tends to rise, particularly when TC is above average. However, when TC is low, an increase in PB does not significantly impact TA. This suggests that TC plays a role in weakening the links between PB and TA, although the effect is not significant.

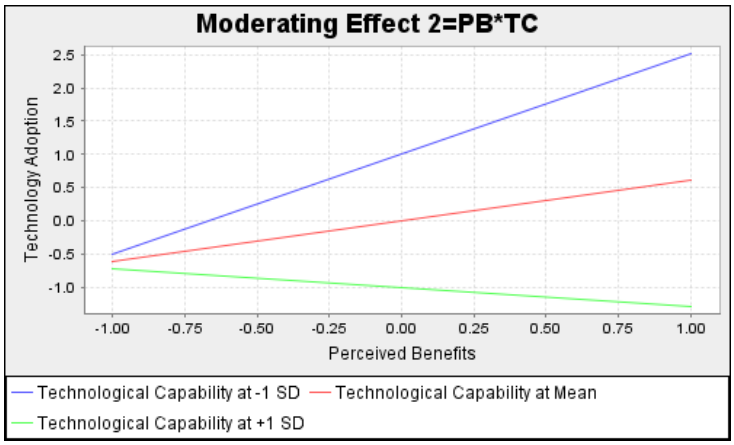

Figure 5. Simple Slope Analysis of Technological Moderating Effect on PB on TA

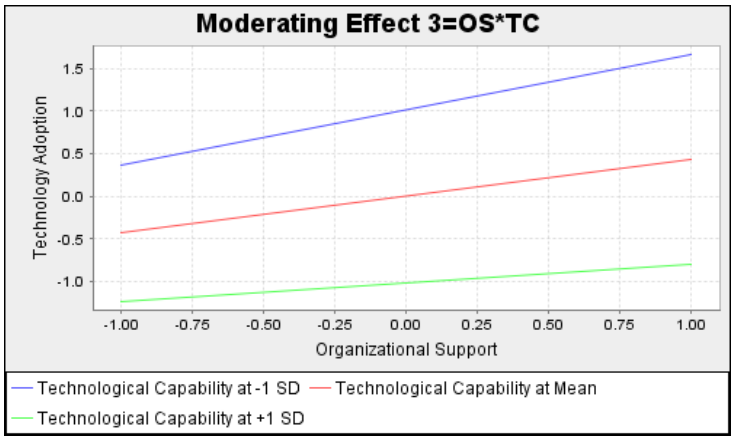

Figure 6. Simple Slope Analysis of Technological Moderating Effect on Organizational Support on TA

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Figure 6 illustrates how Organizational Support and TC impact TA. The graph shows that as Organizational Support increases, the level of TA also tends to rise, particularly when TC is above average. However, when TC is low, an increase in Organizational Support does not have a significant effect on TA. This indicates that TC acts as a moderating factor that weakens the link between Organizational Support and TA. In other words, a combination of strong Organizational Support and high TC can effectively drive TA within an organization.

DISCUSSION

PEOU has been shown to have a significant impact on TC (H1a) and TA (H1b). This finding is consistent with previous research conducted in Malaysia, which demonstrated that ease of use is a key factor in TA. In the context of Indonesian migrant workers, the JMO Mobile app, designed with an easy-to-use interface, can reduce technical barriers and boost users' confidence in utilizing technology. This is important as many migrant workers may not have a strong technological background. PB also significantly affects TC (H2a) and TA (H2b). This finding aligns with a study conducted in the Pakistan by Jianhua Zh ang et al. (2023), which found that perceptions of the benefits of technology can drive adoption among migrant workers. For JMO Mobile users, benefits such as easy access to information and communication with family in Indonesia serve as major drivers for TA. This suggests that applications designed to meet users' specific needs can enhance adoption rates.[82,83]

Organizational Support significantly impacts TC (H3a) and TA (H3b). This finding is supported by research in Thailand by [84], which indicated that support from organizations or institutions can facilitate TA. For Indonesian migrant workers, support from the government or placement agencies in the form of training and access to technology can enhance their ability and willingness to use applications like JMO Mobile. Although TC does not directly affect TA (H4 rejected), it plays a significant role as both a moderator and mediator. This finding mirrors research in India, which found that TC can strengthen the link between user perceptions and TA.[83,86] For Indonesian migrant workers, improving TC through training can help them maximize the benefits of the JMO Mobile app, even though the capability itself does not directly determine adoption.[82,87]

TC has been shown to moderate the link between PEOU and TA (H4a) and between PB and TA (H4b). This finding is consistent with research in Bangladesh, which showed that users' capabilities can enhance the impact of perceptions on TA. However, the rejection of H4c suggests that Organizational Support is not always reinforced by TC.[86,89] This may be due to external factors such as policies or work environments that do not support it. TC also acts as a mediator between PEOU and TA (H4d) as well as between Organizational Support and TA (H4f). This finding is supported by research in Vietnam by Lam et al. (2021), which found that TC can bridge the gap between external factors and TA.[89,91] For Indonesian migrant workers, enhancing TC through training can help them better understand and utilize the JMO Mobile app, thereby increasing adoption levels.[87,92]

This study supports the expansion of the TAM by integrating TC as a moderating and mediating variable. The finding that TC moderates the link between PEOU and TA (H4a), as well as between PB and TA (H4b), suggests that users' ability to utilize technology can strengthen the impact of their perceptions on adoption. However, the rejection of H4c indicates that organizational support is not always enhanced by TC in this context. Empirical evidence from the use of JMO Mobile by Indonesian migrant workers reveals that although TC does not directly affect TA (H4 rejected), it plays a significant role as a mediator between PEOU and TA (H4d), as well as between Organizational Support and TA (H4f). This indicates that improving TC can act as a catalyst in maximizing the benefits of the JMO Mobile application for migrant workers, especially in facilitating communication and access to information.[91,93]

These findings have significant practical implications for Indonesian Migrant Workers. By enhancing PEOU, PB, and Organizational Support, applications such as JMO Mobile can be more effective in meeting the needs of migrant workers.[92,94] Additionally, training to improve TC can help migrant workers overcome technical barriers and maximize the benefits of the application. This can improve their quality of life and facilitate communication with family members in Indonesia.

CONCLUSIONS

This study demonstrates that the PEOU, PB, and organizational support significantly impact both TC and TA. The findings suggest that when applications like JMO Mobile are designed with a user-friendly interface and clear benefits, they can effectively increase adoption among Indonesian migrant workers, many of whom may not have strong technological backgrounds. By addressing PEOU and PB, these applications can foster higher user engagement and confidence in utilizing the technology.

Additionally, while TC does not directly influence TA, it plays a significant role as both a moderator and a mediator. Specifically, TC moderates the link between PEOU and TA, as well as PB and TA, enhancing the effect of users' perceptions on adoption. Moreover, TC acts as a mediator between PEOU and TA, and between organizational support and TA, which highlights its importance in bridging the gap between user perceptions and actual adoption behavior. These results underscore the need to support migrant workers' technological skills through training to maximize the benefits of applications like JMO Mobile.

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Therefore, this research contributes to the advance of the TAM by integrating TC as a key factor in moderating and mediating TA processes. By enhancing users' technological capabilities, developers can create more effective applications that better meet the needs of migrant workers. The findings also emphasize that improving TC can act as a catalyst for increasing adoption rates and ensuring that migrant workers can fully utilize the benefits of technology in improving their quality of life and communication with their families.

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None.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

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