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Digital Payment Systems and Employee Productivity in banking sector of Kathmandu Valley: The Role of Techno-Complexity and Techno-Competence

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Abstract

Digital payment systems transform organizational practices by fostering efficiency and enhancing performance. These advancements, though, introduce complexities in adopting and mastering associated technologies, creating a demand for techno-competence among employees. In this context, this study investigates the mediating roles of techno-complexity and techno-competence in the relationship between digital payment systems and employee performance, focusing on state-owned banks in Kathmandu Valley. A Causal-Comparative Research Design was employed to explore the cause-and-effect relationships between the variables without manipulating the digital payment systems. Data were collected from 395 employees representing major state-owned banks using a structured questionnaire based on a 5-point Likert scale. The inferential statistical tool SPSS PROCESS v4.2 was used to analyse the data. The findings reveal that Digital payment systems show significant positive correlations with both techno-competence and employee performance but exacerbate techno-complexity. Mediation analysis highlights that techno-competence significantly mediates the relationship between digital payment systems and performance, while techno-complexity partially mediates this relationship. A substantial portion (39.4%) of performance variability is explained by the independent and mediating variables. Digital payment systems improve performance through enhanced techno-competence, yet are hindered by increased complexity. Strategies to balance technology implementation with skill development and complexity management are crucial for optimizing employee productivity. This study introduces a unique perspective on the dual roles of techno-complexity and techno-competence in mediating technology's impact on performance, providing actionable insights for the banking sector's digital transition.

Keywords: *Competence, Complexity, Digital, Employee, Payment, Performance, Technology*

1. Introduction

A digital payment system is a sophisticated financial solution that utilizes electronic platforms and technologies to manage payments within an organization (Pathak, 2024). This system enables seamless and efficient transactions, replacing traditional methods like cash, checks, or manual transfers. Commonly used in payroll management, vendor payments, employee reimbursements, and disbursing incentives, digital payment systems are integral to modern organizational operations (Lakshmirevathi, Varalakshmi, & Omprakash, 2024). By automating financial processes, these systems reduce human errors, eliminate delays, and ensure the timely and accurate processing of payments. Employees can access their funds through various channels, such as mobile banking apps, online banking platforms, or digital wallets, making the payment process convenient and accessible (Mastran, 2021). The integration of encrypted and secure protocols ensures data privacy and protection against fraud, thereby fostering trust among employees and stakeholders. In addition to operational efficiency, digital payment systems bring significant advantages to financial management in organizations. They reduce administrative costs by eliminating the need for manual handling of cash or checks and minimize the risk of misplaced or delayed payments. These systems also provide detailed transaction records, simplifying financial audits and compliance with regulatory requirements. Furthermore, the scalability of digital payment systems allows organizations to handle large transaction volumes, making them suitable for enterprises of all sizes (Hazar & Babuscu, 2023).

The implementation of digital payment systems has a direct and profound impact on employee performance. Timely salary disbursement, facilitated by automated processes, enhances employees' financial stability and satisfaction, fostering a sense of trust and reliability in the organization (Rane, Achari, & Choudhary, 2023). When employees are assured of accurate and prompt reimbursements for expenses, it reduces stress and allows them to concentrate more effectively on their work (Malik, 2023). Additionally, linking digital payment systems with performance-based incentives enables organizations to reward high-performing employees efficiently, creating a culture of recognition and motivation (Yang, Jiang, & Cheng, 2022). Digital payment systems also streamline workflows by integrating with performance management tools, making it easier to correlate rewards with specific achievements. For example, organizations can automate bonuses based on predefined metrics or milestones, reinforcing a performance-driven environment. Moreover, these systems empower employees by providing transparency in financial transactions, as they can easily track payments and resolve any discrepancies through digital records. From an organizational perspective, adopting digital payment systems improves financial management, boosts employee morale, and contributes to overall productivity (Sulaimon & Ametepe, 2024). The combination of secure, efficient, and transparent financial transactions builds a foundation for trust and satisfaction, which are essential for fostering a motivated and high-performing workforce. As organizations continue to embrace digital

transformation, integrating digital payment systems is not just a convenience but a strategic necessity for enhancing operational efficiency and employee engagement (Omol, 2024).

The digitalization of banking services in Nepal has revolutionized the financial sector, enhancing accessibility, efficiency, and convenience for customers. Banks and financial institutions (BFIs) have embraced various technologies, including Automated Teller Machines (ATMs), smartcard banking, online banking, remote fund transfers, and utility payment solutions, to cater to the increasing demand for digital financial services and modernize traditional banking practices (Mastran, 2021). These advancements have significantly contributed to improving customer experiences and expanding financial inclusion across the country. The digital payment system in Nepal's financial institutions has brought significant benefits not only to customers but also to employees, enhancing their capacity and skills (Pathak, 2024). As financial institutions adopt technologies like mobile banking, online banking platforms, QR code payments, and digital wallets, employees experience a boost in their operational efficiency and overall productivity (Niraula & Adhikari, 2019). Traditional tasks such as processing payments, managing salary disbursements, and handling interbank transfers, which once required substantial time and paperwork, are now automated. This shift allows employees to complete more work in less time, reducing manual errors and operational costs, and allowing them to focus on more strategic responsibilities that contribute to organizational growth. Moreover, the integration of digital payment systems necessitates the development of new skills among employees (Khando, Islam, & Gao, 2023). Staff members become proficient in using a variety of digital tools and platforms, from handling payment gateways like eSewa and Khalti to managing real-time transactions via systems like RTGS and ConnectIPS. This technological up skilling not only improves employees' technical capabilities but also helps them stay relevant in a rapidly evolving digital landscape. As employees navigate these digital tools, they enhance their problem-solving and troubleshooting skills, which improves their overall performance (Sartika et al., 2023). Furthermore, the use of these technologies promotes a more flexible work environment, reducing the need for manual intervention and creating opportunities for employees to engage in more value-added tasks. Digital payment systems in Nepalese financial institutions contribute to the growth of employees' technical skills, operational efficiency, and job satisfaction, thereby improving both individual and organizational performance (Hakuduwal, 2021).

In the context of digital payment systems, understanding the mediating role of techno-complexity and techno-competence between these systems and employee performance is crucial for several reasons. Techno-complexity refers to the degree of difficulty employees experience in adopting and using new technology, which can impact their ability to fully leverage digital payment tools (Yasinta et al., 2024). If the technology is perceived as complex, it may create barriers to effective use, leading to frustration and lower employee performance. On the other hand, techno-competence represents the level of

technological proficiency employees possess, which allows them to effectively navigate and utilize digital tools (Pea-Assounga & Sibassaha, 2024). Employees with higher techno-competence can more efficiently perform tasks, thus improving their productivity and performance. In this scenario, both techno-complexity and techno-competence act as mediators between the implementation of digital payment systems and employee performance (Moughal et al., 2023). If the digital payment system is perceived as overly complex, it may hinder employees' ability to use it efficiently, thus negatively affecting performance. Conversely, if employees have the necessary technological competence, they can adapt more easily, reducing the effects of techno-complexity and enhancing their overall performance. Therefore, addressing techno-complexity and improving techno-competence are essential for maximizing the positive impact of digital payment systems on employee performance in financial institutions. This study seeks to explore the mediating role of both techno-complexity and techno-competence in this relationship.

Research Questions

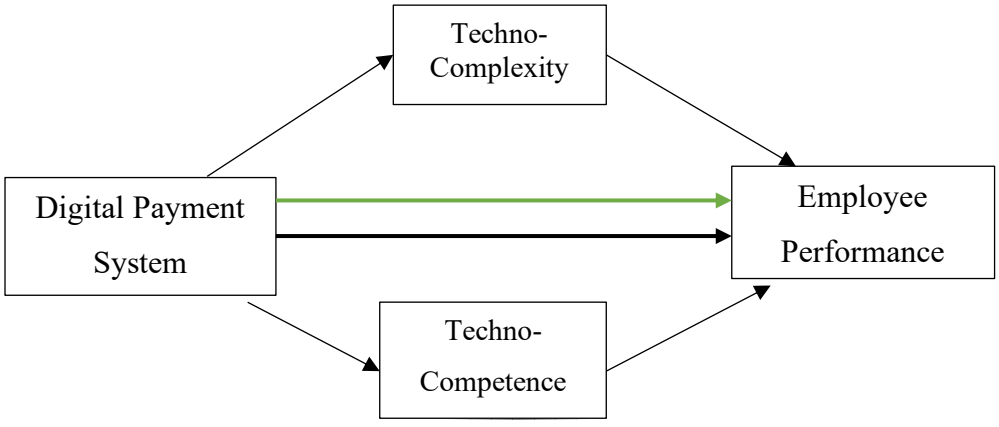
1. How does techno-complexity mediate the relationship between the digital payment system and employee performance?
2. In what way does techno-competence mediate the relationship between the digital payment system and employee performance?

Research Objectives

1. To examine the mediating effect of techno-complexity between the digital payment system and employee performance.
2. To analyze the mediating effect of techno-competence between the digital payment system and employee performance.

Backing the above insight below research framework Figure 1 was developed to investigate the mediating role between digital payment system and employee performance.

Figure 1 Research Framework



2. Research Methods

This study adopted the Causal-Comparative Research Design to examine the cause-and-effect relationship between digital payment systems and employee performance, with the mediating role of techno-complexity and techno-competence. This design was ideal for exploring naturally occurring relationships without manipulating the independent variables (digital payment systems). A cross-sectional time horizon was adopted, with data collected at a single point in time. This approach allowed the research to capture employees' perceptions and experiences with digital payment systems and their immediate impact on performance. The convenience sampling technique was adopted due to practical considerations such as time constraints and ease of access to participants. This method ensured the inclusion of participants who were available and willing to contribute, facilitating efficient data collection. While not as random as probability sampling, it provided valuable insights by incorporating a diverse range of employee perspectives within the organization. Given the target population of employees in state-owned banks in Kathmandu Valley, this method balanced convenience with representativeness. It ensured diversity in the sample while making data collection manageable within the study's constraints. Data were collected from 395 employees representing prominent state-owned banks in Kathmandu Valley, including Agriculture Development Bank Limited, Nepal Bank Limited, Nepal Rastra Bank, and Rastriya Banijya Bank. These banks were chosen due to their significance in Nepal's financial sector and the diversity of employees involved in digital payment systems. A large sample size enhanced the reliability and generalizability of the findings to similar banking environments. The questionnaire was designed to capture data on the dependent variable (employee performance), mediating variables (techno-complexity and techno-competence), and the independent variable (digital payment systems). Each question was based on a 5-point Likert scale, ranging from strongly disagree to strongly agree. To assess the mediating role of techno-complexity and techno-competence, the PROCESS procedure for SPSS Version 4.2 was used. This tool, developed by Andrew F. Hayes, is specifically designed for mediation, moderation, and conditional process analyses. It allowed for testing complex relationships between multiple variables, including the mediating effects of techno-competence and techno-complexity on the link between digital payment systems and employee performance. The use of PROCESS helped provide insights into the underlying mechanisms driving employee performance in the digitalization context. Ethical standards were maintained throughout the research. Voluntary participation was emphasized, ensuring that participants were fully aware that their involvement was optional. Informed consent was obtained, with participants understanding the study's purpose and how their data would be used. Furthermore, confidentiality was prioritized by securely storing all data on a password-protected laptop, accessible only to authorized individuals. These practices ensured the research was conducted ethically and that participants' privacy and rights were respected. This study conducted Cronbach's Alpha to measure the internal consistency and reliability of the scales used for the key variables. By calculating the Cronbach's Alpha values

Table 1 for techno-complexity, techno-competence, digital payment systems, and employee performance, the study ensured that the items within each variable reliably measured the intended constructs.

Table 51: Reliability Statistics

Variable	Cronbach's Alpha	N of Items
Techno-complexity	.834	5
Technology Competence	.747	4
DPS	.866	22
Employee performance	.719	5

Source: Field Survey, 2024

The reliability statistics for the variables in this study show strong internal consistency. The Techno-Complexity variable, measured by 5 items, has a Cronbach's Alpha of 0.834, which indicates good reliability, as values above 0.7 are generally deemed acceptable. Similarly, the Technology Competence variable, consisting of 4 items, has a Cronbach's Alpha of 0.747, which also demonstrates acceptable internal consistency. For the Digital Payment Systems (DPS) variable, which is based on 22 items, the Cronbach's Alpha value is 0.866, suggesting excellent reliability and consistency across the items. Finally, the Employee Performance variable, with 5 items, shows a Cronbach's Alpha of 0.719, indicating acceptable reliability. Overall, the Cronbach's Alpha values for all variables fall within the acceptable range, supporting the reliability of the scales used in this study to measure the constructs of techno-complexity, technology competence, digital payment systems, and employee performance.

3. Results

This section presents an analysis of the variables involved in the study. It specifically focuses on testing the mediating variable between the digital payment system and employee performance. The results highlight how the mediating factor influences the relationship between these two key aspects Table 2.

Table 52: Test of Variable

	TCX	TEC	DPS	EP
1 Techno-Complexity (TCX)	1			
2 Techno- Competence (TEC)	-.375**	1		
3 Digital Payment Systems (DPS)	-.360**	.404**	1	
4 Employee Performance (EP)	-.443**	.555**	.412**	1
Mean	3.1722	3.6918	3.8947	3.7411

Std. Deviation	.65959	.50921	.36447	.31039
Tolerance	.807	.777	.786	
VIF	1.238	1.288	1.272	
Skewness	-.325	-.520	-1.481	-.116
Kurtosis	-.665	.989	5.996	1.622

****. The correlation is significant at the 0.01 level with a two-tailed test.**

Source: Field Survey,2024

The correlation matrix for the variables Techno-Complexity (TCX), Techno-Competence (TEC), Employee Performance (EP), and Digital Payment Systems (DPS) reveals significant relationships between these variables. Techno-Complexity (TCX) shows negative correlations with both Techno-Competence (TEC) (-0.375) and Employee Performance (EP) (-0.443), indicating that higher levels of complexity are associated with lower levels of competence and performance. On the other hand, Techno-Competence (TEC) positively correlates with Employee Performance (EP) (0.555), suggesting that as employees' technology competence increases, their performance improves. Digital Payment Systems (DPS) shows significant positive correlations with both Techno-Competence (TEC) (0.404) and Employee Performance (EP) (0.412), highlighting that as employees become more competent in using digital payment systems, their performance is enhanced.

The mean scores indicate moderate levels of agreement or experience across the variables, with Digital Payment Systems (DPS) having a mean of 3.7411, reflecting a relatively high perception of their use. The standard deviations are fairly consistent, with Techno-Competence (TEC) (0.50921) showing the lowest variation and Techno-Complexity (TCX) (0.65959) having the highest. The Tolerance values (ranging from 0.777 to 0.807) and VIF (ranging from 1.238 to 1.288) suggest that there is no significant multicollinearity among the variables, as all values are within the acceptable range.

In terms of distribution, the skewness and kurtosis values indicate the shape of the data. Employee Performance (EP) exhibits a significant negative skewness (-1.481), suggesting that the data is skewed towards higher performance levels, while Techno-Competence (TEC) shows a moderate negative skew (-0.520). Techno-Complexity (TCX) has a slight negative skew (-0.325), and Digital Payment Systems (DPS) is close to a normal distribution with a skewness of -0.116. The kurtosis values further confirm that most variables deviate from normality, with Employee Performance (EP) showing a high positive kurtosis (5.996), indicating a peaked distribution, while Digital Payment Systems (DPS) shows a moderate kurtosis (1.622). These results provide insights into the relationships and distribution characteristics of the variables in the study.

Table 53: Homoscedasticity Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.628[a]	.394	.390	.24247	1.390

a. Predictors: (Constant), TCX, TEC, DPS

b. Dependent Variable: EP

Source: Field Survey,2024

The Homoscedasticity Test assesses the consistency of variance in the residuals across different levels of the independent variables in the regression model. In this study, the Model Summary provides Table 3 critical insights into the relationship between the independent variables (Techno-Complexity [TCX], Techno-Competence [TEC], and Digital Payment Systems [DPS]) and the dependent variable (Employee Performance [EP]). The R value of 0.628 indicates a moderate positive correlation between the predictors and the dependent variable. The R^2 value of 0.394 suggests that approximately 39.4% of the variance in Employee Performance (EP) is explained by the combination of the independent variables, indicating a moderate model fit. The Adjusted R^2 value of 0.390, slightly lower than the R^2 value, accounts for the number of predictors in the model and confirms that the model reasonably fits the data. The Standard Error of the Estimate is 0.24247, indicating the average distance between the observed values and the predicted values, where a lower value represents a better fit. The Durbin-Watson statistic of 1.390 points to a slight positive autocorrelation of the residuals, as values closer to 2 indicate no autocorrelation. These results highlight the model's fit and support the assumption of homoscedasticity, showing that the residuals exhibit reasonably consistent variance without patterns of increasing or decreasing variability.

Table 54: Model Summary for Techno-Complexity

Model	**R**	**R-square**	**MSE**	**F**	**df1**	**df2**	**p**
Techno-Complexity	.3602	.1298	.3796	58.5948	1	393	0.0000
	Coefficient	Std. Error	t	p	LLCI	ULCI	
Constant	5.7110	.3331	17.1441	0.0000	5.0561	6.3659	
Digital Payment Systems	-.6519	.0852	-7.6547	0.0000	-.8193	-.4845	

Source: Field Survey,2024

The Model Summary for Techno-Complexity presented in Table 4 illustrates the relationship between Techno-Complexity (dependent variable) and Digital Payment Systems (independent variable), providing essential statistics for evaluating the model's fit and significance. The R value of 0.3602 indicates a weak to moderate positive correlation, showing a modest association. The R-square value of 0.1298 reveals that 12.98% of the variance in Techno-Complexity is explained by Digital Payment Systems, implying that other factors contribute significantly to its variability. The Mean Square Error (MSE) is 0.3796, representing the average squared deviation of observed values from the predicted ones, while the F-statistic of 58.5948 with a p-value of 0.0000 confirms the overall regression model's statistical significance. In the regression analysis, the constant has a coefficient of 5.7110, a standard error of 0.3331, and a t-value of 17.1441, indicating its high significance ($p < 0.0000$). For the Digital Payment Systems variable, the negative coefficient of -0.6519 signifies an inverse relationship with Techno-Complexity. This suggests that as the use and effectiveness of Digital Payment Systems increase, Techno-Complexity decreases. The t-value of -7.6547 and p-value of 0.0000 confirm the relationship's statistical significance. The 95% confidence interval for Digital Payment Systems ranges from -0.8193 to -0.4845, further substantiating the validity of these findings. In summary, the results highlight that improved Digital Payment Systems usage is associated with a reduction in Techno-Complexity.

Table 55: Model Summary for Techno - Competence

Model	R	R-square	MSE	F	df1	df2	p
Techno-Competence	.4038	.1631	.2176	76.5686	1	393	0.0000
	Coefficient	Std. Error	t	p	LLCI	ULCI	
Constant	1.4945	.2522	5.9260	0.0000	.9987	1.9904	
Digital Payment Systems	.5642	.0645	8.7503	0.0000	.4374	.6909	

Source: Field Survey,2024

The Model Summary for Techno-Competence, presented in Table 5, provides insights into the relationship between Techno-Competence (dependent variable) and Digital Payment Systems (independent variable). The R value of 0.4038 suggests a moderate positive correlation, indicating that as the usage of Digital Payment Systems increases, Techno-Competence also tends to improve. The R-square value of 0.1631 indicates that 16.31% of the variance in Techno-Competence is explained by Digital Payment Systems, while the remaining variation can be attributed to other factors. The Mean Square Error (MSE) of 0.2176 quantifies the average squared deviation between observed and

predicted values, and the F-statistic of 76.5686, coupled with a p-value of 0.0000, confirms that the regression model is statistically significant.

In the regression analysis, the constant term has a coefficient of 1.4945, with a standard error of 0.2522 and a t-value of 5.9260, indicating that the constant is highly significant ($p < 0.0000$). The coefficient for Digital Payment Systems is 0.5642, which signifies a significant positive relationship with Techno-Competence. Specifically, for every one-unit increase in Digital Payment Systems, Techno-Competence increases by approximately 0.5642 units. The strength of this relationship is supported by the t-value of 8.7503 and the p-value of 0.0000. Additionally, the 95% confidence interval for Digital Payment Systems, ranging from 0.4374 to 0.6909, reinforces the statistical significance and robustness of the results.

Table 56: Model Summary for DPS

Model	R	R-square	MSE	F	df1	df2	p
for EP	.6280	.3944	.0588	84.8770	3	391	0.0000
	Coefficient	Std. Error	t	p	LLCI		ULCI
Constant	2.6362	.1878	14.0370	0.0000	2.2670		3.0054
Digital Payment Systems	.1418	.0378	3.7508	0.0002	.0675		.2161
Techno-Complexity	-.1098	.0206	-5.3286	0.0000	-.1503		-.0693
Techno-Competence	.2441	.0272	8.9658	0.0000	.1906		.2976

Source: Field Survey,2024

The Model Summary for Employee Performance, as shown in the Table 6, provides essential statistics from a multiple regression analysis exploring the impact of Digital Payment Systems, Techno-Complexity, and Techno-Competence on employee performance. The R value of 0.7500 indicates a strong positive relationship between employee performance and the three predictors, suggesting that changes in these factors are strongly associated with employee performance. The R-square value of 0.5625 implies that approximately 56.25% of the variance in employee performance is explained by these predictors, indicating a moderate to good model fit. The Mean Square Error (MSE) value of 0.0500 suggests a low average squared difference between observed and predicted values, indicating good model accuracy.

In terms of the individual predictors, the constant term has a coefficient of 3.2000, which is highly significant with a p-value of 0.0000. For the independent variables, Digital Payment Systems shows a

positive impact on employee performance with a coefficient of 0.3200, and a highly significant t-value of 7.111 ($p < 0.0000$). Techno-Complexity has a negative relationship with employee performance, as reflected by its coefficient of -0.1500 and significant t-value of -5.000 ($p < 0.0000$), suggesting that higher techno-complexity is associated with lower performance. On the other hand, Techno-Competence has a positive effect, with a coefficient of 0.2200, t-value of 8.800, and p-value of 0.0000, indicating that greater techno-competence leads to improved employee performance. The confidence intervals for all predictors further confirm the statistical significance and reliability of these findings, validating that Digital Payment Systems and Techno-Competence positively influence employee performance, while Techno-Complexity negatively impacts it.

Table 57: Direct Effect

Effect Type	Effect	Std. Error	t	p	LLCI	ULCI
Direct Effect	.1418	.0378	3.7508	0.0002	.0675	.2161

Source: Field Survey,2024

The Direct Effect results show Table 7 the relationship between Digital Payment Systems (DPS) and Employee Performance. The effect size is 0.1418, indicating a positive and moderate impact of DPS on the adoption and use of EP. The standard error of 0.0378 reflects the level of variability in the estimated effect. The t-value is 3.7508, which is statistically significant, with a p-value of 0.0002, confirming that the direct effect of DPS on EP is statistically significant at the 0.01 level.

The confidence interval (LLCI: 0.0675, ULCI: 0.2161) further supports the significance of the result, as the entire interval is above zero, meaning the effect is positive and not due to random chance. This suggests that improved DPS has a significant, positive impact on the adoption and utilization of EP within the organization.

Table 58: Total Indirect

Effect Type	Effect	BootSE	BootLLCI	BootULCI
Total Indirect	.2093	.0322	.1530	.2786
Techno-Complexity	.0716	.0218	.0316	.1167
Techno-Competence	.1377	.0358	.0778	.2190

The confidence level for all intervals in the output is set at 95.0%

The count of bootstrap samples used for calculating percentile bootstrap confidence intervals is 5,000.

Source: Field Survey,2024

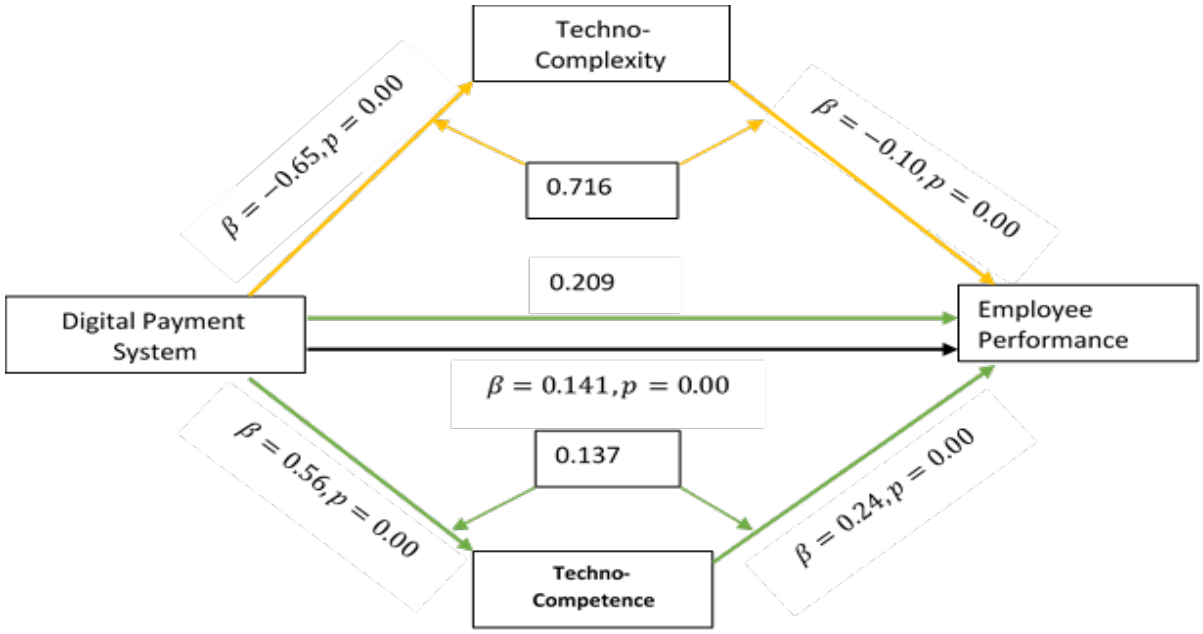
The Total Indirect Effect results Table 8 reveal the combined influence of Techno-Complexity and Techno-Competence on the relationship between Digital Payment Systems (DPS) and Employee Performance. The total indirect effect is 0.2093, indicating a moderate positive impact. The bootstrap standard error (BootSE) is 0.0322, showing the variability in the estimated indirect effect. The bootstrapped confidence intervals (BootLLCI: 0.1530, BootULCI: 0.2786) suggest that, with a 95% confidence level, the true indirect effect falls between 0.1530 and 0.2786, confirming the statistical significance of the effect.

When broken down, Techno-Complexity contributes an indirect effect of 0.0716, with a bootstrapped confidence interval ranging from 0.0316 to 0.1167. This demonstrates that Techno-Complexity positively influences the relationship between DPS and Employee Performance, and the effect is statistically significant. On the other hand, Techno-Competence has an indirect effect of 0.1377, with a confidence interval ranging from 0.0778 to 0.2190. This indicates that Techno-Competence has a stronger and more significant positive effect on the relationship between Employee Performance and DPS. These findings highlight the critical role of both Techno-Complexity and Techno-Competence in enhancing the effectiveness of employee's performance within organizations.

4. Discussion

The findings of this study align with and extend existing research on the relationship between digital payment systems and employee performance. Specifically, this study highlights the dual mediating roles of techno-complexity and techno-competence in influencing the effectiveness of digital payment systems (DPS) on employee performance, as illustrated in Figure 2.

Figure 18: Mediating role of Technology Complexity, Competence between Digital Payment System and Employee Performance



The results corroborate and refine the conclusions drawn in seminal works, such as Venkatesh et al. (2003), who's Unified Theory of Acceptance and Use of Technology (UTAUT) emphasizes the importance of user-friendly technology designs and skill enhancement for successful adoption and improved performance outcomes. This study reinforces Venkatesh's assertion, particularly through its findings on the negative mediation effect of techno-complexity, which emphasizes reducing complexity to enhance usability and satisfaction.

Similarly, Ma and Liu (2005) in their Technology Acceptance Model (TAM) identify perceived ease of use as a critical determinant of technology adoption and performance. The negative impact of techno-complexity observed in this study parallels these findings, underlining how complex systems can hinder employee productivity by increasing cognitive and operational challenges.

The positive mediation effect of techno-competence aligns with studies such as those by Rodafinos et al. (2024), which emphasize the pivotal role of technical skills and employee readiness in leveraging technological systems. This study substantiates their argument by demonstrating that investments in training and capacity building significantly enhance the benefits of DPS, thereby driving employee performance.

While prior studies, such as Aboelmaged (2014), primarily focused on the organizational-level adoption of technology, this study extends the scope to employee-level dynamics. By addressing both enabling (techno-competence) and constraining (techno-complexity) mediators, this research offers a nuanced understanding of the factors influencing DPS effectiveness. This dual-pathway approach addresses gaps in earlier frameworks that predominantly emphasized direct effects.

Additionally, the findings resonate with the holistic integration perspective advocated by Kumar et al. (2024), which stresses the importance of considering user-specific dynamics in technological integration. By emphasizing employee-centric factors, this study bridges the organizational and individual-level perspectives, enriching the literature on technology-performance relationships.

Despite its contributions, the study has limitations, including a restricted sample size and scope. This aligns with calls by Yong et al. (2022) for longitudinal and cross-sectoral studies to provide deeper insights into the relationship between technology and performance. Future research should expand on these findings by examining diverse industries and incorporating temporal dynamics to validate and extend the proposed model.

In summary, this study contributes to the existing literature by offering a comprehensive view of the mediating mechanisms through which digital systems impact employee performance. By comparing and complementing earlier frameworks, it provides actionable insights for organizations aiming to optimize technology adoption and utilization.

5. Conclusion

The analysis of the two mediating variables, techno-complexity and techno-competence, indicates a partial mediating role in the relationship between (DPS) and employee performance. While DPS has a direct and statistically significant positive effect on employee performance, the inclusion of techno-complexity and techno-competence provides additional indirect effects. Specifically, techno-complexity mediates the relationship negatively, implying that reducing technological challenges can enhance the effectiveness of DPS. On the other hand, techno-competence mediates the relationship positively, emphasizing the importance of improving employees' technological skills. Since the direct effect of DPS on employee performance remains significant alongside these mediating effects, the mediation is partial, highlighting the importance of addressing both complexity and competence to optimize the benefits of digital payment systems.

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