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CHALLENGES IN THE ADOPTION OF MICRO PAYMENT GATEWAY (MPG) SYSTEM: EVIDENCE FROM DISTRICT ACCOUNTS OFFICES IN KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

The growing trend of the digital governance has accelerated the adoption of electronic financial system in public sector organizations across developing countries. In Pakistan, the implementation of Micro Payments Gateway (MPG) system is considered a significant initiative toward improving transparency, efficiency and accountability in public financial management. However, the successful implementation of MPG system remains challenging due to institutional, technical and human resource barriers. This study examines the factors affecting MPG system adoption in District Accounts Offices of Khyber Pakhtunkhwa, Pakistan. Using a quantitative research approach, data were collected from employees working in District Accounts Offices through structured questionnaires. The findings reveal that institutional challenges such as lack of policy clarity, weak coordination and resistance to change significantly impede MPG adoption. Technical barriers including inadequate infrastructure, connectivity problems and cyber security concerns further constrain implementation. Human resource challenges, particularly limited digital literacy, insufficient training and lack of technical expertise, also negatively affect system utilization. The study further identifies top management support and digital readiness as significant moderating factors that reduce the negative impact of these challenges. The study contributes to the literature on digital governance and provides practical recommendations for policymakers and public sector administrators.

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Introduction

Digital transformation has become a central priority for governments worldwide. Public sector organizations are increasingly adopting digital financial systems to improve service delivery, accountability and operational efficiency. In Pakistan, the government has introduced several e-governance initiatives to modernize financial management processes. The Micro Payment Gateway (MPG) system is an electronic payment platform designed to facilitate secure and transparent financial transactions in public sector organizations. District Accounts Offices in Khyber Pakhtunkhwa are responsible for managing salary payments, pension disbursement, public financial transactions and payments to vendors. Despite the potential benefits of MPG systems, several challenges continue to hinder their successful adoption.

Institutional barriers, inadequate technical infrastructure and insufficient human resource capacity are among the major obstacles affecting implementation. Public organizations often face resistance to change, limited technological resources and lack of trained personnel, which reduce the effectiveness of digital governance initiatives. This study aims to examine the institutional, technical and human resource challenges associated with MPG adoption in District Accounts Offices of Khyber Pakhtunkhwa. The study also investigates the moderating role of top management support and digital readiness.

1. **Research Objectives:**

The study aims to:

1. Examine institutional challenges affecting MPG system adoption.
2. Identify technical barriers influencing implementation of MPG system.
3. Analyze human resource constraints associated with MPG utilization.
4. Investigate the moderating role of top management support.
5. Examine the moderating role of digital readiness.

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6. Provide policy recommendations for improving digital governance.

2. Literature Review

2.1 Institutional Challenges:

Institutional challenges refer to organizational and administrative barriers that hinder digital system adoption. These include:

- Lack of policy clarity
- Weak interdepartmental coordination
- Administrative rigidity
- Poor organizational communication

Public sector institutions often operate under strict hierarchical structures, making innovation adoption difficult.

2.2 Technical Challenges:

Technical barriers significantly affect the implementation of digital financial systems. Common technical challenges include:

- Inadequate IT infrastructure
- Poor internet connectivity
- Cyber security threats
- System interoperability issues
- Frequent technical failures

Reliable technological infrastructure is essential for ensuring effective MPG system utilization.

2.3 Human Resource Challenges:

Human resource capacity plays a crucial role in technology adoption. Key human resource barriers include:

- Limited digital skills
- Lack of technical expertise
- Insufficient training programs
- Employee resistance to learning

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- Fear of technological change

3. Theoretical Framework

The study is based on the Technology Acceptance Model (TAM).

3.1 Technology acceptance model (TAM)

The TAM suggests that employees adopt technology when they perceive it as:

- Useful
- Easy to use

4. Conceptual Framework

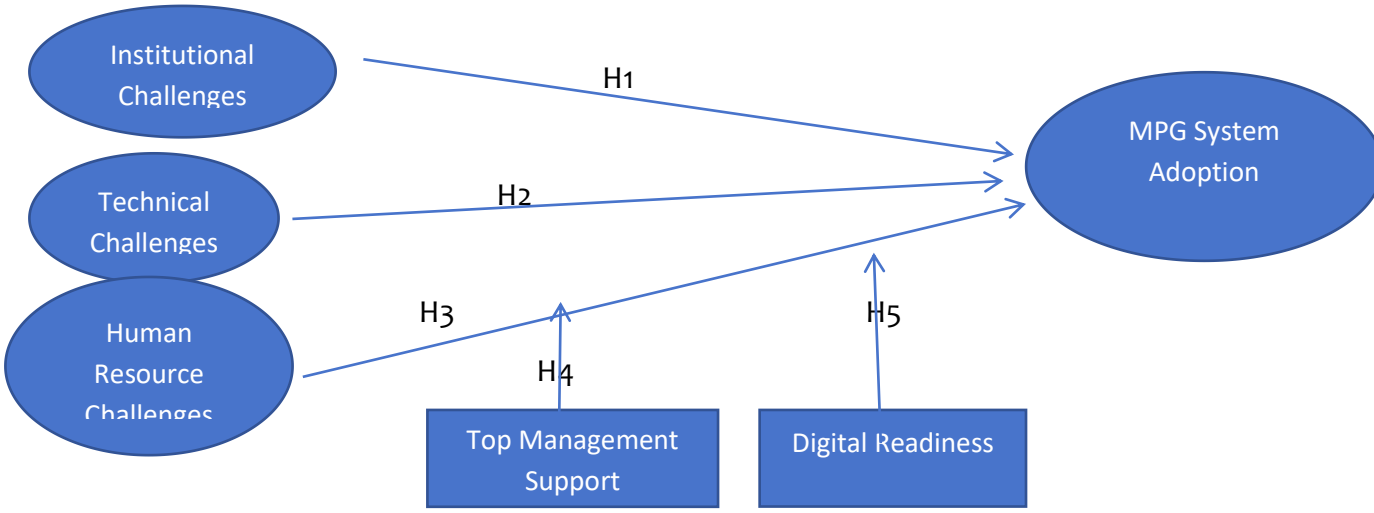


Diagram 1: Conceptual Framework

5. Hypothesis Development

H1: Institutional challenges negatively affect MPG adoption.

H2: Technical challenges negatively affect MPG adoption.

H3: Human resource challenges negatively affect MPG adoption.

H4: Top management support moderates the relationship between institutional challenges and MPG adoption.

H5: Digital readiness moderates the relationship between technical challenges and MPG adoption

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6. Research Methodology

6.1 Research Design

A quantitative cross-sectional research design was employed.

6.2 Population and sample

The population consisted of employees working in District Accounts Offices in Khyber Pakhtunkhwa.

Sample Distribution Table

District Accounts Offices Respondents

Peshawar	**51**
Abbottabad	**20**
Mardan	**26**
Swat	**20**
Mansehra	**25**
Torghar	**10**
Battagram	**10**
Total	**162**

6.3 Data Collection

Data were collected using structured questionnaires based on a five-point Likert scale.

6.4 Data analysis techniques

The following techniques were used:

- Descriptive Statistics
- Reliability Analysis
- Correlation Analysis
- Regression Analysis
- Moderation Analysis

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7. Data Analysis and Results

7.1 Demographic profile and respondents

Table 1: Gender Distribution

Gender	Frequency	Percentage
Male	140	86.41%
Female	22	13.58%
Total	162	100%

Table 2: Age distribution

Age group	Frequency	Percentage
20-30 Years	36	21.9%
31-40 Years	66	40.6%
41-50 Years	42	26.3%
Above 50 Years	18	11.2%

8. Reliability Analysis

Table 3: Reliability statistics

Variable	**Cronbach's Alpha**
Institutional Challenges	0.84
Technical Challenges	0.87
Human Resource Challenges	0.82
MPG Adoption	0.89

The reliability values exceed 0.70, indicating acceptable internal consistency.

9. Regression analysis

Table 4: Regression Results

Variable	**t-value**	**Significance**
Institutional Challenges	-5.62	0.000
Technical Challenges	-4.91	0.000

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Human Resource Challenges	-4.28	0.001

The results indicate that institutional, technical and human resource challenges significantly and negatively affect MPG adoption.

10. Moderation Analysis

Table 5: Moderation effects

Moderator	Relationship	Effect
Top Management Support	Institutional Challenges → MPG Adoption	Weakens negative effect
Digital Readiness	Technical Challenges → MPG Adoption	Weakens negative effect

The findings suggest that strong managerial support and organizational digital readiness improve system adoption.

Without Moderators:

Challenges ---------- Strong Negative Impact

With Moderators:

Challenges ⟶ Reduced Negative Impact ⟶ Better Adoption

11. Discussion

The findings demonstrate that institutional barriers significantly hinder MPG adoption in District Accounts Offices. Lack of policy clarity, weak administrative coordination and resistance to change create implementation difficulties.

Technical barriers such as inadequate infrastructure, cyber security concerns and interoperability problems further limit system efficiency. These findings are consistent with previous studies on public sector digital transformation in developing countries.

Human resource constraints also emerged as major barriers. Employees with limited digital skills and insufficient training experience difficulties adapting to new systems. Continuous training and technical support are therefore essential for improving adoption.

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The study further highlights the importance of top management support and digital readiness. Organizations with strong leadership commitment and better technological preparedness experience smoother implementation processes.

12. Practical Implications

The study offers several practical implications:

- Develop clear implementation policies.
- Improve interdepartmental coordination.
- Strengthen IT infrastructure.
- Enhance cyber security systems.
- Conduct regular employee training.
- Increase leadership involvement in digital transformation.

13. Social Implications

Effective MPG implementation can:

- Improve transparency
- Reduce corruption
- Enhance accountability
- Improve public service delivery
- Increase public trust in government institutions

14. Limitation and future research

The study is limited to District Accounts Offices in Khyber Pakhtunkhwa and may not represent all public sector institutions in Pakistan.

Future research may:

- Use mixed-method approaches
- Conduct comparative provincial studies
- Explore additional moderating variables

15. Conclusion

This study concludes that institutional, technical and human resource challenges significantly impede the adoption of MPG systems in District Accounts Offices of

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Khyber Pakhtunkhwa. Institutional inefficiencies, inadequate technological infrastructure and insufficient employee competencies remain major barriers to successful implementation. However, top management support and organizational digital readiness play a crucial role in reducing these barriers and facilitating successful digital transformation. Strengthening institutional frameworks, investing in infrastructure and enhancing employee capacity-building programs are essential for ensuring effective MPG system adoption in public sector organizations.

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