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The Impact of Mobile transfer and Card payment on liquidity and Cash Flow Accounting in Libyan Banks

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أثر التحويل عبر الهاتف المحمول والدفع بالبطاقات على السيولة والمحاسبة النقدية في المصارف الليبية

الملخص:

تتناول هذه الدراسة دور البطاقات الائتمانية المحلية وتطبيقات الخدمات المصرفية عبر الهاتف المحمول في تحسين إدارة التدفقات النقدية والسيولة داخل القطاع المصرفي الليبي. وفي ظل التحديات الاقتصادية المستمرة والقصور التشغيلي، تسعى هذه الدراسة إلى بحث مدى فاعلية استخدام الأدوات المالية الرقمية – وعلى وجه الخصوص أنظمة الدفع بالبطاقات المحلية وتطبيقات التحويل المصرفي – في تعزيز الأداء المالي ودعم الاستقرار المالي بشكل عام. وتركز الدراسة على مؤشرات تشغيلية رئيسية مثل سرعة المعاملات، خفض التكاليف، تقليل المخاطر، وتعزيز قدرة التحويلات بين البنوك.

وقد تم اعتماد منهج كمي، حيث جُمعت البيانات من خلال استبيانات موجهة إلى عينة من مديري المالية والتنفيذيين والموظفين الفنيين في عدد من المصارف التجارية الليبية. أظهرت النتائج أن استخدام البطاقات الائتمانية المحلية والتطبيقات المصرفية يساهم بشكل ملحوظ في تحسين كفاءة التدفقات النقدية من خلال تقليل زمن تنفيذ المعاملات وخفض التكاليف التشغيلية. كما تبين أن هذه التقنيات تعزز من السيولة عبر زيادة سرعة تداول العملة المحلية وتيسير عمليات تحويل الأموال بين الحسابات والبنوك.

ورغم هذه الآثار الإيجابية، تظل هناك بعض المعوقات مثل ضعف البنية التحتية، وانخفاض الوعي الرقمي، والتحديات التنظيمية. وبناءً على النتائج، توصي الدراسة بضرورة الاستثمار في تطوير البنية التحتية الرقمية، ونشر الوعي بين العملاء، وتهيئة الأطر التنظيمية المناسبة لتشجيع تبني هذه التقنيات.

وتخلص الدراسة إلى أن دمج البطاقات المحلية وتطبيقات الهاتف المحمول في النظام المالي الليبي يمكن أن يلعب دورًا محوريًا في تعزيز السيولة والكفاءة التشغيلية، ودعم الاستقرار المالي المستدام.

الكلمات المفتاحية: *محاسبة السيولة والتدفق النقدي، الدفع ببطاقة الائتمان، تحويل الأموال عبر تطبيقات الهاتف المحمول.*

Abstract:

This study explores the role of local credit cards and mobile banking applications in enhancing cash flow management and liquidity of the Libyan banking sector. Amid ongoing economic challenges and operational inefficiencies, the research examines how adopting digital financial tools—specifically local credit card payment systems and mobile transfer applications—can improve financial performance and support broader financial stability. The study focuses on key operational metrics including transaction speed, cost reduction, risk mitigation, and interbank transaction capabilities.

Using a quantitative methodology, data were collected through structured questionnaires

distributed to a sample of financial managers, executives, and technical staff across a range of Libyan commercial banks. The results indicate that the adoption of local credit cards and mobile applications significantly enhances cash flow efficiency by reducing transaction times and operational costs. Furthermore, these technologies were found to strengthen liquidity by increasing the velocity of local currency circulation and enabling more efficient fund transfers across bank accounts and institutions.

Despite the positive impacts, some barriers to adoption remain, including outdated infrastructure, low digital literacy, and regulatory limitations. Based on these findings, the study recommends investing in digital infrastructure development, promoting customer awareness, and enacting supportive regulatory frameworks to encourage widespread adoption.

Overall, the study concludes that integrating local credit cards and mobile banking solutions into Libya's financial ecosystem can play a pivotal role in improving liquidity, operational efficiency, and long-term financial resilience within the banking sector.

Keywords: *liquidity and cash flow accounting, credit card payment, mobile application money transfer.*

Introduction:

The Libyan banking sector is currently grappling with significant challenges in managing cash flow and liquidity, particularly in the local currency. These issues underscore a critical need for innovative solutions that can bolster financial stability and operational efficiency. Local credit card payments and mobile applications emerge as promising tools in this context, potentially revolutionizing financial operations by streamlining transactions, reducing costs, enhancing security, and improving record-keeping accuracy. This study aims to explore the capabilities of local credit cards and mobile applications in transforming the management of cash flow and liquidity within Libyan banks. By leveraging these technologies, the research seeks to document potential improvements and provide strategic insights that could guide future implementations, thus enhancing the resilience and stability of Libya's financial infrastructure.

Motivation Given the substantial challenges related to cash flow and liquidity in the Libyan banking sector, there is a pressing need for innovative solutions that can enhance financial stability and operational efficiency.

Purpose The purpose of this study is to evaluate the potential of local credit card payments and mobile applications for account transfers in improving both cash flow management and liquidity of the local currency within Libyan banks, thereby supporting more robust financial infrastructure and economic stability.

Aims The primary aim of this study is to assess how local credit card payments and mobile applications for transfers can be utilized to enhance cash flow management and the liquidity of local currency in Libyan banks. This research intends to identify and document potential improvements in transactional efficiency and financial stability, paving the way for greater economic resilience in Libya's banking sector.

Scope This research will focus on the application of local credit card payments and mobile applications within Libyan banks, assessing their impact on both cash flow management and liquidity of local currency. It will cover aspects such as transaction speeds, cost-effectiveness, risk management, and cross-bank transaction capabilities. The study will involve a survey of financial managers and executives at various Libyan banks that are exploring or have already implemented these technologies.

Literature Review

The emergence of digital financial services has significantly transformed the banking sector, particularly in developing and transitional economies. Technologies such as local credit cards and mobile applications are increasingly recognized for their potential to enhance liquidity management and financial operations in fragile states like Libya (Banna et al., 2020; Ghosh, 2022). These digital tools offer real-time access to banking services, enabling efficient cash flow and improved liquidity across banks (Rosenbaum, 2021).

Credit cards facilitate secure and traceable transactions, contributing to better cash management and transparency (Kim & Kim, 2020). In addition, mobile applications provide convenient platforms for transferring funds, monitoring account activities, and executing financial transactions across different banks (Donovan, 2012). Studies on mobile money in African countries, including Kenya and Tanzania, have shown that such systems increase liquidity by reducing transaction delays and improving financial inclusion (Jack & Suri, 2011; Mbiti & Weil, 2016).

Financial inclusion is a critical factor in improving economic development and banking stability (Demirgüç-Kunt et al., 2018; World Bank, 2019). The use of mobile banking and credit cards expands access to financial services for underserved populations, especially in regions affected by conflict or infrastructure limitations (Ghosh, 2022). In Libya, where traditional banking services remain fragmented and constrained, these technologies offer practical solutions to overcoming liquidity challenges (Central Bank of Libya, 2020; Elhadi, 2021).

Digital financial services also influence customer behavior and banking efficiency. According to the Theory of Planned Behavior, perceived ease of use, usefulness, and trust are key determinants of technology adoption (Ajzen, 1991). In Libya, the lack of trust in banking institutions has hindered digital transformation; however, mobile banking could rebuild this trust by offering secure and reliable alternatives (Aron, 2018; Venkatesh et al., 2003).

Moreover, increased usage of digital tools can enhance the overall transaction volume, creating a positive liquidity cycle for banks (Beck et al., 2016). Evidence from other developing economies suggests that mobile and card-based banking not only improve operational efficiency but also reduce reliance on physical cash, which is critical in liquidity-constrained environments (Andrianaivo & Kpodar, 2012; Ozili, 2018). Additionally, electronic payments lower transaction costs and support real-time settlements, which are essential for managing liquidity effectively (Rosenbaum, 2021).

Research questions:

Q1 **What is the impact of mobile application transfers on the liquidity of Libyan banks?**

Q2 **To what extent do local credit card services contribute to improving liquidity management in Libyan banks?**

Hypotheses for Studying the Impact of Local Credit Card Payments and Mobile Applications on the Liquidity of Libyan Banks

Hypotheses:

H0 (Null Hypothesis): Local credit card payments and mobile applications do not significantly impact the liquidity of Libyan banks.

H1 (Alternative Hypothesis): Local credit card payments and mobile applications significantly impact the liquidity of Libyan banks.

Classification of Variables Dependent Variable (DV): Liquidity of Libyan banks
Independent Variables (IVs):
Local credit card payments
Mobile application transfers
Research Design This study employs a quantitative research methodology to investigate the impact of local credit card payments and mobile applications on the liquidity of Libyan banks. The research design is descriptive and correlational, aiming to quantify the relationship between the independent variables (local credit card payments and mobile application transfers) and the dependent variable (bank liquidity).
Methodology Participants: The study surveyed financial managers and executives from various Libyan banks currently exploring or having implemented local credit card payment systems and mobile application transfers.
Survey Instrument: A Likert scale questionnaire was used to assess perceptions of local credit card payments and mobile applications' impact on cash flow management and local currency liquidity. Questions focused on transaction speed, cost reduction, risk management, and overall impact on cash flow and liquidity.
Data Collection: Data was collected through an online survey distributed among selected participants, ensuring a comprehensive understanding of the current and potential impact of these technologies in Libyan banks.
Data Analysis: The collected data was analyzed using SPSS software. The analysis includes descriptive statistics, factor analysis, reliability analysis, and multiple linear regression to assess the impact of local credit card payments and mobile application transfers on bank liquidity.
Demographic and Likert scale sections of the survey
in the Libyan banking system, focusing on liquidity management, here's how you could structure the demographic and Likert scale sections of the survey, based on common practices found in the literature on financial technology surveys:
Demographic Questions: These questions will help segment the data analysis by different characteristics of the survey participants.
1. Male, female
2. job in Bank:
- expert accountant
- auditor
- Manager
- Executive manager

3. Education Level:
- High School Diploma
- Bachelor's Degree
- Master's Degree
- Doctorate or higher

4. Familiarity with new Technology:
- Not familiar
- Somewhat familiar
- Moderately familiar
- Very familiar
- Expert

Likert scale questions, with **3 questions per variable**

Variable 1: Mobile Application Transfers

1. Mobile application services allow me to transfer funds between banks quickly and efficiently.
2. The use of mobile applications and credit cards has improved liquidity levels in my bank.

Variable 2: Local Credit Cards

3. Local credit cards provide a secure and convenient method for financial transactions.
4. The increased use of credit cards reduces dependency on physical cash and improves transaction speed.

variable 3: Liquidity in Libyan Banks *(Dependent Variable)*

5. Mobile money transfers help improve fund circulation and support liquidity within the banking system.
6. The adoption of digital tools supports financial stability and reduces cash shortages in the banking system.

Results:

Descriptive Analysis:

The descriptive analysis showed that the average responses for all variables ranged between 2.91 and 3.07 on a 5-point Likert scale, indicating a moderate agreement among participants. Standard deviations ranged from 1.135 to 1.365, suggesting a relatively consistent perception across respondents. The skewness values were positive but close to zero, indicating mild right-skewness with a slight tendency toward higher ratings. All items exhibited negative kurtosis, suggesting relatively flatter distributions compared to a normal curve. These results imply that respondents moderately agree that mobile applications and credit cards contribute to improving liquidity and financial efficiency in Libyan banks.

Exploratory Factor Analysis (EFA):

The factor analysis revealed two distinct components explaining 90.1% of total variance. Component 1 relates to mobile banking services, while Component 2 captures credit card and digital tool use. High factor loadings and communalities indicate strong representation of items, supporting construct validity in measuring effects on bank liquidity improvement.

Reliability Analysis:

The reliability analysis produced a Cronbach's Alpha of 0.873 for six items, indicating a high level of internal consistency among the variables. This suggests that the scale is reliable and suitable for measuring the impact of credit cards and mobile banking applications on bank liquidity. The strong internal correlations confirm the cohesiveness of the selected items and their relevance to the underlying construct being studied.

Regression Analysis:

Model Summary:

- **R = 0.804** indicates a strong positive correlation between the independent variables (credit_card2 and bank_application2) and the dependent variable (liquidity2).
- **R^2 = 0.646** means that **64.6% of the variance** in **bank liquidity** is explained by the combined effect of credit card usage and mobile banking application services.
- The **Adjusted R^2 = 0.640**, which confirms the model is reliable and not overfitted.
- The **standard error = 1.30**, showing relatively small residuals, indicating good model

fit.

ANOVA Table:

• The **F-value = 114.132** with **Sig. = 0.000** means the model is statistically significant. There is a very strong likelihood that at least one predictor meaningfully contributes to explaining liquidity.

Coefficients Table:

Variable	B (Unstandardized)	Beta (Standardized)	t-value	Sig. (p-value)
Constant	1.037	—	2.844	0.005
Credit_card2	1.126	1.058	13.452	0.000 ✓
Bank_application2	-0.349	-0.413	-5.255	0.000 ✓

• **Credit_card2**: Has a **highly significant positive effect** on liquidity. A 1-unit increase in credit card usage leads to a **1.126 unit increase in liquidity**. The standardized Beta = **1.058** indicates it is the **strongest predictor**.

• **Bank_application2**: Has a **significant negative effect** on liquidity (B = -0.349). This may indicate implementation issues or limitations in how mobile apps currently support liquidity improvement in Libyan banks.

Discussion of Results and Hypotheses Testing

The regression analysis aimed to examine the influence of two independent variables—local credit card payments and mobile banking applications—on the liquidity of Libyan banks. The results revealed a strong and statistically significant model ($R^2 = 0.646$, $p < 0.001$), indicating that 64.6% of the variance in bank liquidity can be explained by the two predictors.

Specifically, local credit card usage was found to have a highly significant and strong positive effect on liquidity ($B = 1.126$, $p = 0.000$). This supports the idea that increased credit card transactions reduce reliance on cash and promote electronic fund flows, thereby enhancing liquidity.

Conversely, mobile banking applications showed a statistically significant negative relationship with liquidity ($B = -0.349$, $p = 0.000$). This unexpected result may reflect implementation challenges, user adoption issues, or limited functionality of current mobile services in Libya, suggesting the need for further evaluation and improvement in these services.

Hypotheses Evaluation:

• H0 (Null Hypothesis): *Rejected*.

The statistical results demonstrate that both variables significantly affect liquidity, even though one of them (mobile apps) has a negative effect.

• H1 (Alternative Hypothesis): *Accepted*.

There is clear evidence that local credit card payments and mobile applications do significantly impact the liquidity of Libyan banks.

Future research, it is advisable to expand the sample size and include more banks across different Libyan regions to ensure broader representation. Additionally, incorporating qualitative methods such as interviews with bank managers or customers can provide deeper insights into the challenges of mobile banking adoption. Researchers should also explore other digital financial tools and macroeconomic variables that may influence liquidity. It is recommended to examine technological infrastructure and user experience in mobile applications to understand the negative effect observed.

Longitudinal studies would help assess the long-term impact of digital financial services on bank liquidity and financial stability in Libya.

Conclusion:

This regression model is strong and significant. It reveals that credit cards contribute greatly to enhancing bank liquidity, while mobile banking applications may currently be underperforming or inefficient. Policymakers and banks in Libya may benefit from improving the functionality and user experience of mobile banking apps, while continuing to expand credit card services as an effective financial tool.

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