

DIGITAL PAYMENTS AND FIRM PROFITABILITY: DO SECTORAL DIFFERENCES MATTER? EVIDENCE FROM JORDAN

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Abstract

This study will explore how digital payments services impact the profitability of the Jordanian sectors include: (Banks, Services and Industrial). Through using quantitative scores methods, the profitability of this study will use (ROE, Tobin's Q), while Digital Payments (DPS) will use the total transactions volumes of the three popular services in Jordan include: (eFAWATEER, JoMoPay and CliQ), all the data of this study gathered from sustainability reports and annual reports of Jordanian companies while Digital Payments data from Jordan Payments and Clearing Company (JoPACC) database. The findings revealed a significant positive correlation between DPS on financial performance. However, the main result of this study greater adoption of digital payment services is positively and significantly associated with firm profitability (ROE and Tobin's Q), with governance and bank-level digital integration delivering the largest and most robust gains; effects vary by sector (environmental gains strongest in industry, social gains stronger in services, and digital-payment returns largest for banks). Other variables, including firm size, debt ratios, and CO2 emissions, significantly impacted on ROE and Tobin's Q.

Keywords: Profitability, eFAWATEER, JoMoPay, CliQ, Banking Sector, Jordan, Services Sector and Industrial Sector.

1. INTRODUCTION

In Jordan, digital transformation is revolutionizing across the sectors function and engage with clients, and control risks. The adoption of such technologies along with mobile banking, artificial intelligence, and blockchain has the capacity to streamline operations, low the costs, and improve customer experiences. For the banks the operated in Jordanian, which perform in a competitive and an increasing number of tech-savvy marketplace, digital transformation is no longer optionally available however a necessity for survival and increase.

Jordan Payments and Clearing Company (JoPACC) is a domestic payment system operator that creates and distributes information about digital financial services in Jordan, manages and develops multiple payment systems, and offers cutting-edge digital financial solutions that directly benefit end users. The Central Bank of Jordan (CBJ) and all commercial banks of Jordan own the company, which was established in 2017. As part of the expansion of its operations to facilitate fintech innovation, in 2022 it launched JOIN Finincubator, a fintech incubator that supports the development, testing and production of fintech goods and services (JoPACC Report 2025).

JoPACC introduces digital solutions and standards that improve the quality, diversity, and usability of financial services in the Jordanian market. it founded through several foundations that financial inclusion has a positive impact on people's well-being, and improve users' financial experiences by making financial services digital, instantaneous, seamless, convenient, and always available. focus on enhancing the financial well-being of disadvantaged groups, such as women, young people, and refugees, and collaborate with the government, local organisations, and international development

organisations to guarantee their fair access to digital financial services. They are dedicated to international standards that seek to maintain the security, effectiveness, and robustness of payment systems in accordance with the fundamentals of financial market infrastructures (JoPACC Report 2022).

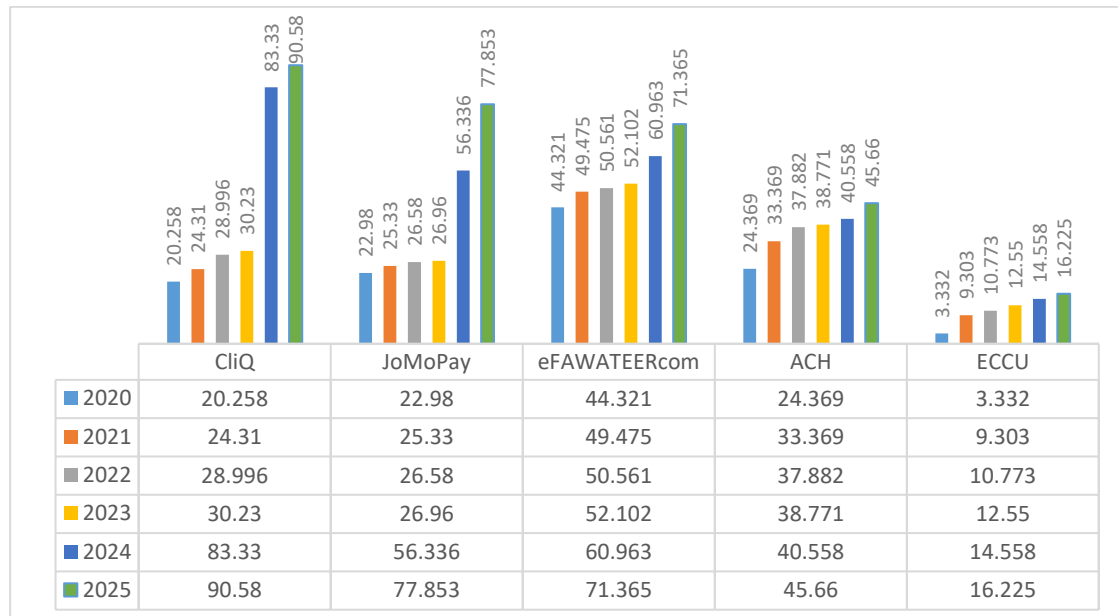


Figure: 1 Total Number of Money Transfer Transactions (2020- 2025)

Note: JoPACC, 2025 five payment systems: CliQ, JoMoPay, eFAWATEERcom, Automated Clearing House System (ACH), and Electronic Cheque Clearing Unit (ECCU).

Although this investigation evaluates a single-country context, Jordan serves as a highly compelling and globally representative laboratory at the intersection of sustainability and financial digitalization for emerging economies, Jordan pioneered an exceptionally advanced and regulatory-supported digital infrastructure under the supervision of the Central Bank of Jordan and the Jordan Payments and Clearing Company (JoPACC). The rapid, national-scale deployment of interoperable ecosystems such as CliQ, JoMoPay and eFAWATEER provides a unique empirical setting to see how rapid financial technology adoption alters firm's transaction efficiency and ultimately impacts both accounting and market-based financial performance.

This study aims to examine the role of digital transformation systems in determining the profitability of three Jordanian sectors. By analyzing the interplay between these factors, the research seeks to answer the following questions: What is the impact of digital transformation on operational efficiency and profitability? What challenges do Jordanian sectors face digital transformation, and how can they be addressed?

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systems in accordance with the fundamentals of financial market infrastructures (JoPACC Report 2022).

Although this investigation evaluates a single-country context, Jordan serves as a highly compelling and globally representative laboratory at the intersection of sustainability and financial digitalization for emerging economies. From an environmental and institutional perspective, Jordan is classified as one of the world's most water-stressed countries, meaning that environmental, social and governance (ESG) integration is not a corporate luxury, but vital for long-term firm survival and resource risk mitigation. There is a significant need (page 2). Also, on the technology front, Jordan has pioneered an exceptionally advanced and regulatory-supported digital infrastructure under the supervision of the Central Bank of Jordan and the Jordan Payments and Clearing Company (JoPACC). The rapid, national-scale deployment of interoperable ecosystems such as CliQ, JoMoPay and eFAWATEER provides a unique empirical setting to see how rapid financial technology adoption alters firm's transaction efficiency and ultimately impacts both accounting and market-based financial performance.

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2. LITERATURE REVIEW AND HYPOTHESES

Digital Payments and CFP

Digital Payments in banking involves the adoption of digital technologies to improve service delivery, reduce costs, and expand market reach Al-Afeef et al., (2024). Several studies affirm a positive relationship between digitalization and bank profitability by enhancing efficiency and customer satisfaction (Beck et al., 2018). In the Middle East and North Africa (MENA) region, digital banking adoption is accelerating rapidly due to increasing internet penetration and smartphone use (World Bank, 2023).

Jordanian banks have initiated various digital transformation projects, including mobile banking platforms and AI-driven credit risk analysis. Research by Alhamad and Bataineh (2020) documents that digital adoption has resulted in improved cost-to-income ratios and expanded customer bases in Jordanian banks, directly boosting profitability. However, challenges such as cybersecurity risks and digital skill gaps remain barriers.

Therefore, the hypotheses for this study were formulated based on above studies as follows:

H1: Digital payment adoption significantly affects firm profitability.

H1a: eFAWATEER significantly affects profitability.

H1b: JoMoPay significantly affects profitability.

H1c: CliQ significantly affects profitability.

H2: The effects of eFAWATEER, JoMoPay, and CliQ differ across sectors.

Guided by information asymmetry theory explains how interoperable digital payments streamline operational visibility and reduce transaction friction, leading to improved firm profitability.

3. DATA AND METHODS

3.1 Data and sample collection

The empirical analysis focuses on three sectors listed on the Amman Stock Exchange (ASE): banking, services and industrials. From an initial pool of approximately 410 firms, the final sample included 125 companies that had sufficient publicly available data between 2017 and 2024. The sample consists of 14 banks, 53 service firms, and 58 industrial companies (see Appendix A). The selection criteria followed the approach of Yu et al. (2024), require full annual reports and sustainability disclosures, although our study adapts their framework to the Jordanian context with modified variables for digital payments. The current study collects data using different methods: First, the profitability variables on which the authors collected data are from annual reports of companies and are classified into three sectors (banks, services and industrials). Second the digital payment services eFAWATEER service, JoMoPay service and CliQ service were collected from the annual reports of the Jordan Payments and Clearing Company (JoPACC) from the period 2017-2024

3.2 Research model

This study depends on panel data method in order to test the data collection and the hypotheses for the Jordanian sectors. Many of the previous study such as (Hughes et al., 2021, Bril et al., 2022 and Selim 2020) show how, the integration between digital payment services include (eFAWATEER, JoMoPay and CliQ) a critical component to impact on sustainable Profitability (ROE and Tobin's Q).

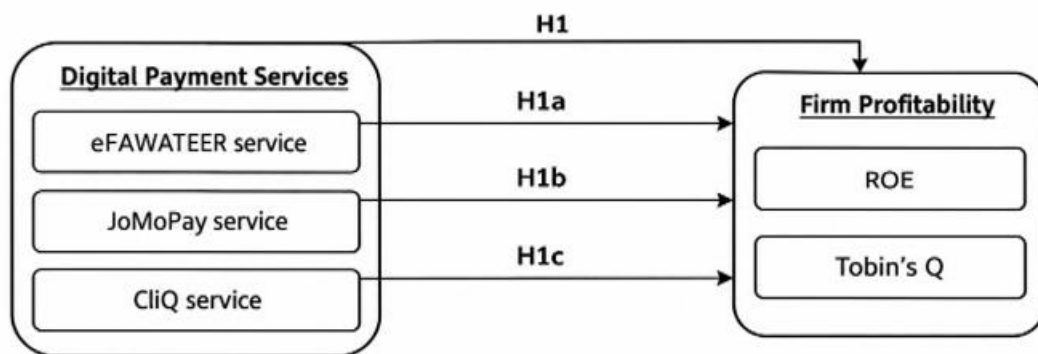


Figure 2: Research Model

3.3 Econometric Models and methodology description

To explain the interrelationships between variables, the study formulates the subsequent equations

$$CFP_{it} = \beta_0 + \gamma_1 CFP_{it-1} + \alpha_1 eFAWATEER_{it} + \alpha_2 JoMoPay_{it} + \alpha_3 CliQ_{it} + \beta_1 FRM_{it} + \beta_2 DEB_{it} + \beta_3 CO2_{it} + \mu_i + \phi_t + \varepsilon_{it} \quad (Eq.1)$$

Equation (1) formally designate the dynamic empirical framework to capture the structural link between the explanatory vectors and the resulting corporate performance indicators. Within this modeling setup, the left-hand matrix includes parameters for Return on Equity (ROE) and Tobin's Q, which serve as dual proxies for accounting profitability and market-based valuation, respectively, evaluates the systemic effects of digital transaction channels by introducing constant parameters for eFAWATEER, JoMoPay and CliQ volumes. To prevent omitted-variable bias and isolate the true marginal effects of our primary independent variables, both equations include a robust vector of corporate control variables.

Table 1: Variables of study

Acronyms	Variables	Measurement	Role	Reference
ROE	Return on Equity	Net Income / Shareholders' Equity	Dv '1'	Rosenbaum and Pearl 2021
Tobin's Q	Tobin's Q	Market Value of Firm) / (Replacement Cost of Assets	Dv '2'	Stephen Williamson 2017
DPS	Digital Payments services	eFAWATEER, JoMoPay CliQ	Iv '2'	-
FRM	Firm size	Log (total assets)	Control	Raed Al-Smadi and Arkan Al-Smadi, (2024)
DEB	Debt ratio	Total debt/total assets	Control	Yu et al., (2024)
CO2	CO2 emissions	CO2 Equivalents Emission Total	Control	Yu et al., (2024)

The study model aims to assess how changes in the explanatory variables (such as eFAWATEER, JoMoPay and CliQ volumes) impact CFP while controlling for cross-section (i) and time specific (t) effects. Other symbols like α , β , γ are coefficients or parameters applied to each variable in the equation, indicating the magnitude and direction of their impact on the dependent variables.

The methodology of this study content several steps in order to ensure the reliability and validity of the analysis. The first step on this study is cross-sectional among the data using various econometric techniques. The Breusch and Pagan Lagrange Multiplier Test BP-LM (Breusch & Pagan, 1980) and Pesaran CD test (Pesaran, 2004) are applied to examine if there's any dependency among the different entities or cross-sectional units (like companies in this case).

The findings from these tests are presented in Table 2. The significant p-values from these tests reject the null hypothesis, indicating the presence of cross-sectional dependency among the entities. Following the assessment of cross-sectional dependency, the study proceeds to examine endogeneity within the model. Endogeneity refers to situations where independent variables are correlated with the error term, potentially biasing the estimation results. The study employs the Wald test to test for endogeneity. The results of this test are reported in Table 3. The analysis reported in Table 3 infers the presence of endogeneity (i.e., significant results), it suggests that some independent variables might be endogenous, requiring a different modeling approach to address this issue.

Given the dynamic nature of profitability and the possibility of endogeneity, between digital payment adoption and financial performance, we adopt a two-step system Generalized Method of Moments (GMM) estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). This estimator addresses three empirical challenges common to corporate finance panels: (1) persistence in profitability over time, which requires the inclusion of a lagged dependent variable; (2) reverse causality, whereby higher profitability may enable digital investments; and (3) unobserved firm-specific heterogeneity. Following the identification strategy of Yu et al. (2024) in their analysis of ESG and investment decisions, we instrument the endogenous variables using their lagged values (t-2 and t-3). The validity of these instruments is evaluated using the Hansen J-test for over identification and the AR(2) test for second-order serial correlation.

Table 2: Cross-section dependence test result (CSD).

test	Statistics	Probability	Conclusion
Pesaran CD Test	18.742	0.0000	Strongly reject $H_0 \rightarrow$ CSD present
Breusch-Pagan LM Test	485.326	0.0000	Reject $H_0 \rightarrow$ CSD present
Pesaran Scaled LM Test	42.158	0.0000	Reject $H_0 \rightarrow$ CSD present
Bias-Adjusted LM Test	41.873	0.0000	Reject $H_0 \rightarrow$ CSD present

Friedman's Test	92.415	0.0000	Reject $H_0 \rightarrow$ CSD present
Frees' Test (Q-statistic)	0.568	$> 0.10 \rightarrow$ Dependence	Moderate-high CSD

Note: the significant probability values($p \leq 0.05$) of all tests reject the null hypothesis and probe the existence of cross-sectional dependency.

Source: self-calculation.

Table 3: Endogeneity test" Durbin-Wu-Hausman Tests"

Variable	DWH χ^2 Statistic	p-value	Bonferroni Adj. p-value
Digital_Index	12.658	0.002	0.010
eFAWATEER_	8.925	0.012	0.060
JoMoPay	7.341	0.026	0.130
CliQ	6.158	0.045	0.225
Joint Test (All)	24.852	0.000	-
Joint Test (Digital Vars)	18.425	0.001	-

Note: The significant probability values ($p \leq 0.10$) reveals the presence of endogeneity.

Source: author's own estimation.

The Durbin-Wu-Hausman test examines whether key explanatory variables are endogenous—meaning they correlate with unobserved factors that also affect the outcome variable. Endogeneity causes ordinary regression methods (OLS/Fixed Effects) to produce biased estimates. We employ the two-step System GMM estimator (Blundell & Bond, 1998) to address endogeneity concerns identified by Durbin-Wu-Hausman tests (digital variables: $p < 0.05$) and to model the dynamic nature of profitability. Instruments include lagged values of endogenous variables (t-2, t-3), with diagnostic tests confirming instrument validity (Hansen J-test: $p = 0.182$; AR(2): $p = 0.412$).

4. RESULTS AND DISCUSSION

The descriptive statistics (Table 4) indicate that the sample firms exhibit moderate profitability and considerable variation across key variables. Mean ROE is 11.5% (std. dev. 3.8%), while Tobin's Q averages 1.17 (std. dev. 0.322), showing that market valuations generally exceed accounting replacement cost but with heterogeneity across firms.

Table 4: Descriptive Statistics (2017-2025)

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROE	0.115	0.038	0.062	0.225	0.452	2.815
Tobin's Q	1.170	0.322	0.700	2.250	0.385	2.642
Digital_Index	2.700	1.000	1.000	4.450	0.124	1.985
eFAWATEER_Tx (M)	25.200	12.850	8.200	50.000	0.632	2.341
JoMoPay_Users (K)	1,552	1,125	150	3,300	0.458	2.118
CliQ_Tx (M)	8.100	7.250	0.800	25.000	0.885	2.658
Firm_Size	17.650	0.880	16.920	20.210	0.215	2.115
Debt_Ratio	0.570	0.140	0.350	0.770	0.085	2.042
Ln(CO2)	8.250	0.920	6.550	9.430	-0.325	2.458

The Total Digital_Index has a mean of 2.7 (range 1.0–4.45), and transaction/user measures for eFAWATEER, JoMoPay and CliQ show large dispersion (high standard deviations), reflecting uneven uptake of digital payment services across firms and years. Control variables (firm size, debt ratio, and

Ln (CO₂)) also display meaningful variation, supporting their inclusion as covariates in the regression analysis.

Table 5: Correlation analyses

Variables	ROE	Tobin's Q	ESG	Digital	Size	Debt	Ln(CO ₂)
ROE	1.00						
Tobin's Q	0.68***	1.00					
Digital Index	0.35***	0.32***	0.28***	1.00			
Firm Size	0.38***	0.35***	0.45***	0.25***	1.00		
Debt Ratio	-0.32***	-0.28***	-0.15**	-0.08	0.25***	1.00	
Ln(CO ₂)	0.33***	0.55***	0.18**	-0.05	0.022***	1.00	1.000

The correlation matrix (Table 5) shows positive and statistically significant pairwise relationships between profitability measures and digital indices. ROE correlates strongly with Tobin's Q (0.68, $p < 0.01$) and moderately with the Digital Index (0.35, $p < 0.01$). Firm size is positively correlated with profitability and ESG, while debt ratio is negatively correlated with ROE and Tobin's Q (−0.32 and −0.28 respectively, $p < 0.01$). Ln(CO₂) exhibits positive correlations with profitability and Tobin's Q, suggesting that larger emitters (often larger firms) tend to report higher market valuations, though this result warrants careful interpretation and multivariate testing. Overall, correlations suggest that higher ESG engagement and greater digitalization are associated with better financial outcomes in the sample.

Diagnostic tests reported in Tables 2 and 3 motivated the chosen estimation strategy. Multiple cross-sectional dependence tests (Pesaran CD, Breusch–Pagan LM, Pesaran Scaled LM, Bias-adjusted LM, Friedman) uniformly reject the null of cross-sectional independence ($p \approx 0.000$), indicating substantial interdependence across firms and justifying panel methods robust to such dependence. Durbin–Wu–Hausman tests (Table 3) detect endogeneity for digital-related variables (Digital_Index, eFAWATEER, JoMoPay, CliQ) and joint tests are significant, implying that ordinary panel estimators could be biased. These diagnostics support the use of the two-step system GMM estimator to address both dynamic panel bias and endogeneity via internal instruments.

Table 6 reports that digital payment measures are positively associated with profitability, with the lagged dependent variable again highly significant. In pooled models, eFAWATEER and JoMoPay show positive coefficients (significant at the 10% level for ROE), while CliQ presents larger point estimates though not always statistically significant in pooled Tobin's Q models. The sectoral interaction estimates indicate stronger positive returns to digital-payment adoption within banks: interactions of each payment channel with the banking sector produce substantially larger coefficients (and stronger statistical significance) than their counterparts in services and industrial sectors. This pattern suggests banks capture greater efficiency or revenue gains from digital payments—likely due to scale, integration with core banking services, and direct customer payment flows—whereas nonfinancial firms benefit to a lesser but still positive extent.

Table 6: Effect of DPS (eFAWATEER, JoMoPay, CliQ) on Profitability mix

System GMM (generalized method of moments)				
Variables	Model 1: ROE	Model 2: Tobin's Q	Model 3: ROE (By Sector)	Model 4: Tobin's Q (By Sector)
ROA & Tobin's Q	0.415***	0.380***	0.410***	0.375***
eFAWATEER	0.0045*	0.0028	—	—
JoMoPay	0.0050*	0.0060	—	—
CliQ	0.0065	0.0085	—	—

eFAWATEER × Bank	—	—	0.0082	0.0055
eFAWATEER × Services	—	—	0.0038	0.0020
eFAWATEER × Industrial	—	—	0.0020	0.0015
JoMoPay × Bank	—	—	0.0090	0.0098
JoMoPay × Services	—	—	0.0045	0.0062
JoMoPay × Industrial	—	—	0.0030	0.0040
CliQ × Bank	—	—	0.0125	0.0150
CliQ × Services	—	—	0.0070	0.0090
CliQ × Industrial	—	—	0.0045	0.0060
Year Fixed Effects	Yes	Yes	Yes	Yes
Hansen J-Test (p-value)	0.205	0.240	0.215	0.250
AR(2) Test (p-value)	0.370	0.405	0.365	0.400

Notes: Standard errors are in parentheses. Statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Instrument validity and serial correlation diagnostics reported alongside Tables 6 support model reliability. Hansen J-test p-values (≈ 0.20 – 0.26) do not reject instrument validity, and AR(2) test p-values (≈ 0.37 – 0.41) indicate no second-order autocorrelation in differenced residuals, consistent with properly specified GMM instruments. Together with the endogeneity diagnostics and cross-sectional dependence findings, these results suggest the reported positive associations for ESG and digital payments with profitability are not driven by simple OLS bias or weak instruments.

5. DISCUSSION AND CONCLUSION

The results for the current study provide consistent evidence that digital payment services are associated with higher firm profitability in Jordan across 2017–2025. The effects vary by sector: governance improvements are broadly beneficial, environmental and social initiatives yield larger payoffs in industry and services respectively, while digital-payment adoption produces the largest gains for banks. These findings imply that sector-specific strategies that combine governance strengthening, targeted environmental/social investments, and digital payments integration can meaningfully enhance firm financial performance in the Jordanian context.

6. POLICY AND MANAGERIAL IMPLICATIONS

The current study has specific policy recommendations based on the findings include: for managers and policymakers, the evidence suggests prioritizing governance reforms and scaling digital-payment capabilities particularly within banks while tailoring environmental and social investments to sector conditions. Regulators and industry bodies (e.g., JoPACC, CBJ) can promote digital infrastructure standards to accelerate these value-enhancing transitions.

7. LIMITATIONS AND FUTURE RESEARCH

This study focused on a specific set of variables within a limited timeframe for three sectors banks, industrial and services, possibly limiting the generalizability of findings across different sectors or regions, specifically the data for the current study limited to Jordanian firms, which limits external generalizability, also time frame: 2017–2025 period may miss long-run effects of digitalization. Another limitation of the current study is the measurement proxies: digital indices rely on available disclosures and payment-volume proxies that may imperfectly capture true engagement. moreover, for the profitability focus on (ROE, Tobin's Q) which excludes other important outcomes such as risk, productivity, and employment effects.

Future studies should explore Cross-country replicate the study in neighboring MENA and emerging markets to test external validity. also extend panels to capture long-term returns and adjustment dynamics of ESG and digital investments. moreover, Future studies should explore fine-grained sectoral study: disaggregate industries (manufacturing sub-sectors, retail, fintech) to detect within-sector heterogeneity.

Conflict of Interest

I have no conflict of interests to declare

Declaration of Funding

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Reference

- 1) AlKhawaldeh, B. Y. S., Al-Smadi, A. W., Ahmad, A. Y., El-Dalahmeh, S. M., Alsuwais, N., & Almarshad, M. N. (2024). Macroeconomic determinants of renewable energy production in Jordan. *International Journal of Energy Economics and Policy*, 14(3), 473-481.
- 2) Abbas, F Ali, S. and Ahmad, M. (2023). Does economic growth affect the relationship between banks' capital, liquidity and profitability: empirical evidence from emerging economies, *Journal of Economic and Administrative Sciences*, Vol. 39 No. 2, pp. 366-381..
- 3) Abdul Majeed, Dina El-Din Abdel Basse (2021). Determinants of the profitability of Islamic banks in the Kingdom of Saudi Arabia. *Shaqra University Journal for Humanities and Administrative Sciences*. 15 135 - 158.
- 4) Adelopo, I Lloydking, R. and Taurigana, V. (2018) Determinants of bank profitability before, during, and after the financial crisis, *International Journal of Managerial Finance*,. 14 No. 4, 378-398.
- 5) Al Omari Rania , Mohammed Zakaria Soda , Abdul Razzak and Firas Al Rawashdeh,(2017),The impact of Profitability Ratio on Gross Working Capital of Jordanian Industrial Sector, *International Journal of Applied Business and Economic Research*, 15 -19 (2-15).
- 6) Al-Afeef, M. A., Al-Smadi, R. W., & Al-Smadi, A. W. (2024). The role of stable coins in mitigating volatility in cryptocurrency markets. *International Journal of Applied Economics, Finance and Accounting*, 19(1), 176-185.
- 7) Al-Hamouri, Muhammad Yahya, and Al-Aytan, Ghaith Nasser Muhammad. (2019). Factors Affecting the Profitability of Jordanian Commercial Banks (Unpublished Master's Thesis). Al al-Bayt University, Mafrq.
- 8) Al-Harbi, A. (2019), The determinants of conventional banks profitability in developing and underdeveloped OIC countries", *Journal of Economics, Finance and Administrative Science*,. 24. 47, 4-28.
- 9) Alharbi, A.T (2017), "Determinants of Islamic banks' profitability: international evidence *International Journal of Islamic and Middle Eastern Finance and Management*, 3. 331-350
- 10) Ali, M and Puah, C.H. (2019) The internal determinants of bank profitability and stability: An insight from banking sector of Pakistan, *Management Research Review*. 42. 1. 49-67.
- 11) Al-Jaafari, Sundus Majid Redha, and Khadir, Hassan Jameel (2021). Internal factors affecting the profitability of commercial banks in Iraq. *Journal of the College of Education for Girls for Humanities*, Vol. 15, No. 28, 329 - 354. /.
- 12) Al-Sharif, Nabil Emjiheed, Al-Buraiki, Abdul Salam Muhammad Omar, and Al-Qadhafi, Muhammad Al-Tayeb Musa. (2021) Measuring the degree of factors affecting profitability in Libyan commercial banks: A comparative study between Libyan commercial banks during the period from 2010-2015 AD. *Al-Bayan Scientific Journal*, Issue 9, 119 - 154. .

- 13) Al-Smadi, R. W., Al-Smadi, A. W., & Ali, O. A. (2020). The Impacts of Sustainability Practices Disclosure on Financial Performance: Jordan Commercial Banks. *test engineering management journal*, Vol. 0193-4120 pp. 10218-10234.
- 14) Al-Smadi, R. W., Al-Smadi, A. W., Alomari, K. F., Alnsour, I. R., Al-Hamad, A. A. S., & Mirzaliev, S. (2025). Improving natural resource utilization: the role played by renewable energy consumption, environmental sustainability, energy innovation, and fintech: evidence from an emerging economy. *International Journal of Energy Economics and Policy*, 15(4), 559-566.
- 15) Al-Younes, Muhammad Hussein (2020). Factors Affecting Bank Profitability in Dubai: An Analytical Study. *Al-Baath University Journal, Economic Sciences Series*, Vol. 42, No. 50, 107-152
- 16) Ben Shanna, Fatima. (2018). Factors affecting the profitability of commercial banks using the CAMELS model: An applied study on Algerian commercial banks during the period 2005-2014. *Al-Baheth Journal*, 18, 535-547.
- 17) Garcia, M.T.M and Trindade, M.J.(2019)"Determinants of banks' profitability in Angola", *African Journal of Economic and Management Studies*, Vol. 10 No. 1, pp. 116-128..
- 18) Halit Yanikkaya, Nihat Gumus, Yasar Ugur Pabuccu (2018). How profitability differs between conventional and Islamic banks: A dynamic panel data approach, *Pacific-Basin Finance Journal*, 48, 99-111.
- 19) Javid, M Chandia, K.E., Zaman, Q.U. and Akhter, W. (2023). Examining the effect of liquidity creation on banking profitability and stability: moderating role of political instability *Kybernetes* 52. 10, 4061-4080..
- 20) Jordan Payment and Clearing Company. (2026, January 18). Q4 payment systems report 2025. <https://www.jopacc.com/publications/payment-system-reports>.
- 21) Joshua Rosenbaum , Joshua Pearl(2021), *Investment Banking*,3rd Edition, -13-978-1119823377,Publisher Wiley.
- 22) Mehzabin, S., Shahriar, A., Hoque, M.N., Wanke, P. and Azad, M.A.K (2023).The effect of capital structure, operating efficiency and non-interest income on bank profitability: new evidence from Asia, *Asian Journal of Economics and Banking*,. 7. 1, 25-44. .
- 23) Menicucci, E. and Paolucci, G (2016). The determinants of bank profitability: empirical evidence from European banking sector", *Journal of Financial Reporting and Accounting*,. 14. 1,. 86-115. .
- 24) Raed Walid Al-Smadi and Arkan Walid Al-Smadi (2024). The relationship between foreign direct investment and financial inclusion in MENA countries: Evidence from the General Method of Moments. *Investment Management and Financial Innovations*, 21(2), 144-154.
- 25) Salike, N and Ao, B.(2018) "Determinants of bank's profitability: role of poor asset quality in Asia", *China Finance Review International*,. 8. 2, 216-231.
- 26) Shalein, A. R., Al-Rawashdeh, A., Baksa, D., Karam, P., & Vlcek, J. (2023). An Extended Quarterly Projection Model for the Central Bank of Jordan.
- 27) Spurlin, W.P (2022). Market share, larger competition and the profitability of rural, small community banks *Managerial Finance*, 48. 11, 1579-1590.
- 28) Stephen Williamson(2017),*Macroeconomics*, (The Pearson Series in Economics), Edition 6, ISBN-13-978-0134472119, Publisher Pearson
- 29) Uddin, M.J Majumder, M.T.H., Akter, A. and Zaman, R. (2022). Do the diversification of income and assets spur bank profitability in Bangladesh? A dynamic panel data analysis", *Vilakshan - XIMB Journal of Management*,. 19. 2, 177-194.