American Journal of Management Practice (2997-9366), Vol 03, No. 10, 2026

Article

The Impact of Financial Technology on Improving Operational Efficiency and Enhancing Earnings Quality: An Applied Study of the International Development Bank for Investment and Finance for the Period 2011–2025

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Abstract: The research aims to statement effect technology finance in to improve the efficiency operational and strengthening the quality profits in bank development international for investment and financing for the period (2011–2025), in shadow transformations accelerated that it witnesses sector banker a result expansion in use technologies and solutions the finance digital. Adopted search curriculum descriptive and analytical from during analysis data the finance banking for the bank during the period search on employment group from Indicators finance to measure efficiency operational quality profits and indicators reflect level adoption technology finance and it developed Its applications banking and it seeks search to a test nature relationship and the effect between technology finance from entity and all from efficiency operational quality profits from entity other using methods statistics and the standard suitability nature the data and it was found search to that expansion in employment technology finance contributes in to improve efficiency operations the banking from during cut costs operational and speed completion transactions and improving to exploit resources, as contributes in to support quality profits from during the strengthening revenue and improving its sustainability and limit from the fluctuations related the performance operational . It recommends the search necessity continued the investment in structure infrastructure digital modern technology and development services finance electronic and strengthening her security.

Keywords: Technology finance, efficiency operational, quality profits, sector the banker, services banking digital, bank development international for investment and funding.

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1. Introduction

To attest sector banker during contracts the last developments accelerated by progress technological and the transformation digital the matter that shares in appearance technology finance as described one most important trends modern the influential in nature the job banker and his efficiency it became institutions [1] finance it depends In picture Increasing on technologies digital and systems electronic to present services banking management operations and reduce costs and improving speed accuracy [2] completion transactions on strengthening her ability on response for needs customers and changes the environment competitiveness [3]. In this context represents efficiency operational one foundations basic for success banks

sustainability her performance when she has from effect in rationalization use resources control on the costs and improving revenues [4]. Also it is quality profits Indicator whatever for the ruling on safety performance financial and the extent sustainability profits and its ability on expression on activity operational the real for the bank [5]. From here the stand out importance study effect technology finance in efficiency operational quality profits especially in the environment banking Iraqi that witnesses expansion gradually in the adoption the services of the digital [6]. Therefore it deals search the bank development international for investment and financing for the period (2011–2025) with the aim of analysis role technology in to improve his efficiency operational and strengthening the quality his profits and the revelation on nature the relationship between this is amazing variables.

2. Research Methodology

1-1 Research Problem:

It is problem search in question around bezel capacity technology the finance on to improve efficiency operational and strengthening quality profits in bank development international for investment and financing in shadow developments accelerated in services banking digital height requirements the competition . It seeks search to set nature effect technology finance in indicators efficiency operational quality profits during duration (2011–2025) and extent reflection that on performance financial for the bank and its sustainability .

1-2 Importance of the research:

Sources importance search from importance technology finance in development the job banker and improving efficiency use resources and reduce costs operational on her role in to support quality the profits and it's the sustainability [7]. As well the stand out Its importance applied from during analysis an experience the bank development International during the period (2011–2025) including provides indicators help administration the banking in the evaluation effect transformation the digital and taking decisions the occasion to promote performance financial and operational and investigation feature competitive sustainable .

1-3 Research Objectives:

It aims search to statement effect technology finance in to improve the efficiency operational and strengthening quality profits in bank development international for investment and financing during duration (2011–2025), from during measurement level development applications technology finance analysis Indicators efficiency operational quality profits and determining nature relationship and the effect between variables search on evaluation bezel input transformation digital in cut costs and improving the performance the financial arrival to the presentation the group from recommendations that supports efficiency bank sustainability his profits .

1-4 Research Hypothesis:

The research is based on the following hypothesis: No there is effect with indication statistics for the technology the finance in to improve the efficiency operational and strengthening quality profits in bank development international for investment and financing during the period (2011–2025) .

1-5 Research population and sample:

It is community search in sector banker Iraqi in when it was represented the sample search in bank development international for investment and financing as a model In practice for research rely on search on data and the reports finance annual for the bank during the period (2011–2025) for analysis effect technology finance in efficiency operational quality profits .

The Theoretical Aspect of the Research

2-1 Framework conceptual Theoretically For technology Finance and its applications Banking :

It is technology finance from most prominent transformations that returned formation industry finance so pool between technologies digital Innovation financial with the aim presentation services more speed and flexibility and less cost nor limited Its importance on digitization products traditional but rather it the extends to re-design models business and channels the distribution and the mechanisms interaction with customers in what enhances capacity institutions finance on response for variables competitiveness and

needs users [1].

It is characterized technology finance the multiplicity Its applications among them payments electronic services banking via the phone mobile, and platforms finance digital analysis data, intelligence artificial and technologies records the distributor led this diversity to expansion range services finance and improving ease access to her with availability opportunities new for banks to develop products the innovative and strengthening an experience customer and raised efficiency operations Interior . [2].

Transformation digital become in banks related by returning become looking in model presentation service banking so it allowed channels digital to implement number big from transactions In picture immediate and reduce accreditation on procedures paper and branches traditional as well contributed technologies data and analyses advanced in to support decisions credit management risks and become understood behavior customers the matter that raise capacity the bank on allocation its resources and improving his performance [3].

Contributes technology finance like that in strengthening inclusion financial from during cut barriers that challenge from access individuals and facilities to the services banking especially via phones and platforms electronic and it helps solutions digital on reduction costs presentation service and access to slices the was less benefit from order financial traditional the matter that expands a base the customers the supports diversification sources revenue with necessity administration risks usage the digital [4].

It represents innovation financial digital worker the influential in the environment competitiveness for banks so pays Institutions to development services in picture ongoing and improving speed and ease and reliability as well allows use technologies modern automation the operations frequent and the reduce mistakes the humanity and improving to exploit data where maybe that reflected on yield and the efficiency operational and from then became ability on the adoption innovation the part from competition banker [5].

On despite from advantages related with technology the finance for its applications banking impose challenges it relates the security cyber protection data the privacy and compliance organizational and the risks accreditation on structures the technology. Therefore requires transformation digital building systems regulatory and technology integrated balance between speed innovation and level protection with development skills digital for the workers and strengthening capacity administration on dealing with risks emerging [6].

2-2 Efficiency operational Quality Profits in sector Banking : Concepts And the indicators :

It indicates efficiency operational in sector banker to capacity bank on employment Its resources available best image the possible to achieve greater amount from outputs banking at the lowest level from costs . It is also considered the efficiency indicator whatever for the ruling on the quality administration and effectiveness to the exploit resources especially that banks it works in environment it is the characterized high competition and increased pressures related costs and the risks [7].

It is measured efficiency operational group from the indicators finance that reflect relationship between resources used and outputs verified and from the most prominent of them rate costs operational to revenue operational and percentage cost to income where it helps this is amazing indicators in to set capacity bank on control on his expenses and investigation the revenues it the fits with size its resources as allows comparison performance via time and the revelation on bearings the improvement or decline [8].

It is related efficiency operational in picture directly with the ability the bank on investigation performance financial sustainable so that to rise costs not related with activity basic may the leads to decrease the footnotes profit and weakening ability competitiveness . In the opposite for to improve operations interior and automation procedures and development channels presentation services maybe that contributes in cut cost and improving yield in what reflected positively on performance banker the year [9].

Represents quality profits one dimensions the mission in evaluation performance financial for banks no it is related only size profits the investigator but extent Its sustainability and its ability on expression on results economic the real for activity the banker . The profits the quality high be more stability and susceptibility to continue while may it indicates profits volatile or affected factors not operational to limitations her ability on continuation in the future [10].

maybe evaluation quality profits from during group from indicators from the most important of them continuity profits and its stability and its ability on prediction performance future on bezel Its connection

with flows cash and activity operational the real thing and you acquire it . This is amazing Indicators importance especially in sector banker because of nature revenue and expenses banking and sensitivity profits towards risks credit and changes prices interest and the circumstances economic the general public [11].

Efficiency operational quality profits in picture interconnected so maybe to improve use resources control on expenses that they support the stability the profits and its sustainability, in when may leads weakness efficiency to rise costs and it declined footnotes and low quality results the finance . Therefore for evaluation performance banker no it should that depends on size profits only but rather the should that takes into account efficiency that it was verified in it that profits and its sources and its continuity [12].

2-3 Relationship Theory between Technology Finance and efficiency operational Quality Profits :

It works technology finance on re to organize operations interior for the institutions finance from during employment applications the digital and platforms smart in to implement activities daily which reduces the time and resources necessary to accomplish transactions it helps this transformation on to lift productivity staff and reduce costs treatment and improving speed response for needs customers the matter that enhances efficiency operational and prepares environment more suitability to achieve results finance stable and midwife to the continue [13].

Contributes technology the finance in to improve the quality profits from during strengthening capacity institutions finance on collection data and treating it and its analysis in picture more accuracy and in the time the appropriate one and it allows this is amazing potential by providing information better for management when taking decisions related pricing the investment and credit as help on reduction the mistakes resulting on treatment traditional and from then become profits verified more related performance actual for activity and less susceptible for fluctuations not Justified [3].

It is embodied relationship between technology finance and efficiency operational in her ability on reduction costs transactions and simplification procedures related by presenting services finance so approval the solutions digital reduces the need to operations paper and intervention human frequent and it allows to implement number greater from transactions using resources less where leads this improvement in use resources to cut expenses operational the matter that maybe that reflected positively on footnotes profitability quality Profits the verified [14].

Supports technology finance quality profits from during to improve administration risks and the ability on prediction results future so allow technologies analysis digital by processing data related behavior customers and credit and flows finance quickly large where it helps that institutions on discovery the sources risks in stages early and taking procedures corrective suitable which reduces odds losses the surprise and improve stability performance financial which enhances continuity profits and its quality via time [15].

As affect technology the finance in relationship between the censorship interior and efficiency operational so availability systems digital possibility tracking operations and its registration in picture ongoing, with availability tools help on the discovery mistakes and deviations quickly contributes that in limit from cases manipulation bad use resources and improving the commitment with procedures the interior . When accompanying this is amazing censorship with efficiency operational high it help on investigation earnings more transparency and less Influence through practices not sustainable [16].

It indicates relationship theory between technology finance and efficiency operational quality Profits to the presence impact integrated between the variables the three so technologies digital no limited its results on acceleration operations and reduce its costs but it extends to improve the information management risks and censorship on performance performs meeting this is amazing antiquities to support the capacity the foundation finance on investigation earnings sustainable so that reflect results finance efficiency activity the real in picture more clarity and reliability [4].

The applied aspect of the research

3-1 An overview of the research sample:

It is sample search in bank development international for investment and financing one banks Iraqi private that practice activities banking investment diverse where it contributes in presentation services finance the banking and development solutions the digital . It was done to choose bank as sample applied the study

effect technology finance in to improve efficiency operational and strengthening quality profits based on his data finance and reports annual published for the period 2011–2025 including allows analysis development his performance financial and operational .

3-2 Measuring research variables :

The research relied on a set of financial and operational indicators to measure its variables, which helped translate theoretical concepts into quantitative variables that could be analyzed and compared over the research period of 2011–2025. Financial technology was measured using indicators reflecting the expansion of digital banking services and channels while operational efficiency was measured using indicators of the relationship between expenses and revenues and the volume of activity. Earnings quality was measured using indicators of profitability, stability, and sustainability. This approach allows for tracking annual changes and testing the correlation between developments in financial technology and improved operational performance and earnings quality .

Measuring the financial technology variable :

Financial technology (FinTech) represents the independent variable in this research. It refers to the set of digital technologies and solutions employed by banks to provide banking services, manage operations, and improve the speed and efficiency of service delivery. For measurement purposes, several indicators reflecting the development of the digital banking environment were used. These include the proliferation of electronic channels, the growth of digital services, the expansion of ATMs and point-of-sale terminals, as well as indicators related to electronic payments and transfers. The diversity of these indicators helps to create a more comprehensive picture of the level of technological transformation in banking activity . This can be illustrated by the following table :

Table 1. Financial Technology Measurement Indicators at the International Development Bank for Investment and Finance for the period 2011–2025

Year	Number of ATMs	Number of points of sale	Number of electronic services	Digital transaction growth rate %	Financial Technology Index
2011	**4**	**12**	**3**	**2.10**	**18.40**
2012	**5**	**15**	**4**	**3.20**	**21.70**
2013	**6**	**19**	**5**	**4.50**	**25.30**
2014	**7**	**24**	**6**	**5.80**	**29.10**
2015	**9**	**31**	**8**	**7.40**	**34.60**
2016	**11**	**40**	**10**	**9.10**	**40.80**
2017	**13**	**51**	**12**	**11.30**	**47.50**
2018	**16**	**65**	**15**	**14.20**	**55.20**
2019	**19**	**81**	**18**	**17.60**	**63.40**
2020	**23**	**103**	**22**	**22.80**	**72.60**
2021	**27**	**128**	**27**	**28.40**	**81.30**
2022	**31**	**157**	**32**	**34.70**	**89.50**
2023	**36**	**191**	**38**	**41.60**	**96.20**
2024	**42**	**229**	**45**	**49.30**	**103.80**
2025	**48**	**271**	**53**	**57.80**	**112.40**

Source: Prepared by the researcher based on the bank's annual reports

Table (1) clearly shows an upward trend in financial technology indicators during the research period. The number of ATMs increased from 4 in 2011 to 48 in 2025, an increase of 44 machines, while the number of point-of-sale (POS) terminals rose from 12 to 271 during the same period. Similarly, the number of electronic services increased from 3 in 2011 to 53 in 2025, reflecting the expanding use of digital technologies in banking activities . The growth rate of digital transactions is also noteworthy, rising from 2.10% in 2011 to 57.80% in 2025, indicating a gradual shift from greater reliance on traditional banking methods to digital channels. The fintech index also increased from 18.40 points to 112.40 points, a rise of 94 points, reflecting the cumulative development in the bank's technological infrastructure and digital services .

Measuring operational efficiency :

Operational efficiency is a key dependent variable in this research, reflecting a bank's ability to utilize its available resources to generate revenue at the lowest possible cost. It is measured through a set of indicators that combine the input side (operating expenses) with the output side (revenues, assets, and banking activity). A lower operating expense-to-revenue ratio indicates improved efficiency, while higher revenue per unit of assets reflects better resource utilization . This can be illustrated by the following table:

Table 2. Operational Efficiency Measurement Indicators at the International Development Bank for Investment and Finance for the period 2011–2025

Year	Operating expenses million	Operating revenues in millions	Expenses to revenue ratio %	Total assets million	Revenue to Assets %	Operational efficiency index
2011	1860	3250	57.23	125000	2.60	42.77
2012	1940	3470	55.91	138000	2.51	44.09
2013	2080	3710	56.06	151000	2.46	43.94
2014	2210	3980	55.53	166000	2.40	44.47
2015	2350	4290	54.78	181000	2.37	45.22
2016	2470	4610	53.58	197000	2.34	46.42
2017	2630	4970	52.92	216000	2.30	47.08
2018	2810	5360	52.43	238000	2.25	47.57
2019	2990	5820	51.37	261000	2.23	48.63
2020	3180	6310	50.40	286000	2.21	49.60
2021	3370	6890	48.91	315000	2.19	51.09
2022	3610	7540	47.88	347000	2.17	52.12
2023	3860	8280	46.62	381000	2.17	53.38
2024	4120	9120	45.18	418000	2.18	54.82
2025	4390	10020	43.81	457000	2.19	56.19

Source: Prepared by the researcher based on the bank's annual financial statements

The results in table (2) indicate a gradual improvement in the bank's operational efficiency over the research period. The ratio of operating expenses to revenues decreased from 57.23% in 2011 to 43.81% in 2025, a reduction of 13.42 percentage points . This means that the bank was able to generate more revenue for each unit of operating expenses . Similarly, the operational efficiency index rose from 42.77 points in 2011 to 56.19 points in 2025, an increase of 13.42 points . Operating revenues also increased from 3,250 million to 10,020 million, while total assets rose from 125 billion to 457 billion . These indicators demonstrate that the growth in banking activity was accompanied by a relative improvement in the ability to control operating expenses and generate revenue .

Measuring the quality of earnings :

Earnings quality is a crucial indicator in evaluating banking performance. The assessment of earnings is not solely based on their size, but also on their sustainability and ability to generate real returns from operating activities. Therefore, earnings quality is measured using a range of indicators, most notably return on assets, return on equity, net profit margin, and the net profit-to-operating-income ratio. Combining these indicators allows for a more comprehensive picture of the level and stability of profitability over the study period . This can be illustrated by the following table :

Table 3. Indicators for measuring the quality of earnings at the International Development Bank for Investment and Finance for the period 2011–2025

Year	Net profit million	Copyright one million	Return on Assets (ROA) %	Return on Equity (ROE) %	Net Profit Margin %	Earnings Quality Index
2011	940	18500	0.75	5.08	28.92	48.60
2012	1020	19800	0.74	5.15	29.39	49.30
2013	1080	21200	0.72	5.09	29.11	49.10
2014	1160	22600	0.70	5.13	29.15	49.70

2015	**1240**	**24100**	**0.69**	**5.15**	**28.90**	**50.20**
2016	**1330**	**25800**	**0.68**	**5.16**	**28.85**	**50.80**
2017	**1450**	**27600**	**0.67**	**5.25**	**29.18**	**52.10**
2018	**1590**	**29600**	**0.67**	**5.37**	**29.66**	**53.40**
2019	**1760**	**31800**	**0.67**	**5.53**	**30.24**	**55.10**
2020	**1930**	**34200**	**0.67**	**5.64**	**30.59**	**56.20**
2021	**2150**	**36900**	**0.68**	**5.83**	**31.20**	**58.40**
2022	**2420**	**39900**	**0.70**	**6.07**	**32.10**	**61.30**
2023	**2760**	**43200**	**0.72**	**6.39**	**33.33**	**64.70**
2024	**3140**	**46800**	**0.75**	**6.71**	**34.43**	**68.20**
2025	**3580**	**50700**	**0.78**	**7.06**	**35.73**	**72.50**

Source: Prepared by the researcher based on the bank's financial reports and statements.

Table (3) shows that the quality of earnings gradually improved during the study period. Net profit increased from 940 million in 2011 to 3,580 million in 2025, an increase of 2,640 million . Return on equity also increased from 5.08% to 7.06% , indicating an improved ability of the bank to generate returns on shareholders' investments . The net profit margin also increased from 28.92% in 2011 to 35.73% in 2025, a rise of 6.81 percentage points . The earnings quality index rose from 48.60 points to 72.50 points, an increase of 23.90 points . This demonstrates that the improvement was not limited to absolute earnings growth, but was accompanied by improvements in several profitability indicators, reinforcing the possibility that earnings were of higher quality and more stable in the later years of the study period .

Overall measurement of the relationship between financial technology, operational efficiency, and earnings quality :

After measuring the variables individually, the results can be compiled into a single analytical indicator that illustrates the overall trend of change in financial technology, operational efficiency, and earnings quality. This measurement aims to demonstrate the extent to which the development of financial technology adoption is aligned with improvements in operational efficiency and earnings quality indicators. The three indicators are presented annually, allowing for a comparison of their trends over the research period, as well as highlighting the changes between the beginning and end of the period . This can be illustrated by the following table :

Table 4. General trend of research variables at the International Development Bank for Investment and Finance for the period 2011–2025

Year	Financial Technology Index	Operational efficiency index	Earnings Quality Index	Change in technology %	Change in efficiency %	Change in earnings quality %
2011	**18.40**	**42.77**	**48.60**	**0.00**	**0.00**	**0.00**
2012	**21.70**	**44.09**	**49.30**	**17.93**	**3.09**	**1.44**
2013	**25.30**	**43.94**	**49.10**	**16.59**	**-0.34**	**-0.41**
2014	**29.10**	**44.47**	**49.70**	**15.02**	**1.21**	**1.22**
2015	**34.60**	**45.22**	**50.20**	**18.90**	**1.69**	**1.01**
2016	**40.80**	**46.42**	**50.80**	**17.92**	**2.65**	**1.20**
2017	**47.50**	**47.08**	**52.10**	**16.42**	**1.42**	**2.56**
2018	**55.20**	**47.57**	**53.40**	**16.21**	**1.04**	**2.50**
2019	**63.40**	**48.63**	**55.10**	**14.86**	**2.23**	**3.18**
2020	**72.60**	**49.60**	**56.20**	**14.51**	**1.99**	**2.00**
2021	**81.30**	**51.09**	**58.40**	**11.98**	**3.00**	**3.91**
2022	**89.50**	**52.12**	**61.30**	**10.09**	**2.02**	**4.97**
2023	**96.20**	**53.38**	**64.70**	**7.49**	**2.42**	**5.55**
2024	**103.80**	**54.82**	**68.20**	**7.90**	**2.70**	**5.41**
2025	**112.40**	**56.19**	**72.50**	**8.29**	**2.50**	**6.31**

Source: Prepared by the researcher based on the results of financial and operational indicators.

Table (4) shows a general upward trend for the three variables during the research period. The financial

technology index rose from 18.40 points in 2011 to 112.40 points in 2025, while the operational efficiency index rose from 42.77 points to 56.19 points, and the earnings quality index rose from 48.60 points to 72.50 points . The comparison indicates that the FinTech index increased by 94 points between 2011 and 2025, while the operational efficiency index rose by 13.42 points and the earnings quality index by 23.90 points . It is also noteworthy that the years with the greatest expansion in digital indicators, particularly the period 2020–2025 , coincided with continued improvement in both the operational efficiency and earnings quality indices . The data further shows that the earnings quality index rose from 56.20 points in 2020 to 72.50 points in 2025, while the operational efficiency index in the research sample increased from 49.60 points to 56.19 points during the same period. This trend provides a preliminary indication of a positive relationship between the expansion of FinTech implementation and improved operational performance and earnings quality. The strength and statistical significance of this relationship will be verified through appropriate standard tests in the applied aspect of the research .

3-3 Testing the research hypothesis:

This research is based on the following null hypothesis : " There is no statistically significant effect of financial technology on improving operational efficiency and enhancing earnings quality at the International Development Bank for Investment and Finance during the period 2011–2025 ." To test this hypothesis, Pearson's correlation coefficient was used to measure the direction and strength of the relationship between financial technology and both operational efficiency and earnings quality. Simple linear regression analysis was used to measure the magnitude of the effect, the coefficient of determination (R^2) to indicate the proportion of change in the dependent variable that can be explained by financial technology, the F- test to assess the significance of the regression model, and the t- test to assess the significance of the regression coefficient. A significance level of 5% was adopted, whereby the null hypothesis is rejected when the Sig. value is less than 0.05 . The test relied on annual indicator data for the period 2011–2025, with 15 observations . The results show that the relationship between financial technology and operational efficiency, as well as between it and earnings quality, can be statistically tested through two separate models, thus providing a quantitative basis for evaluating the main research hypothesis . This can be illustrated by the following table :

Table 5. Results of the test on the impact of financial technology on operational efficiency and earnings quality for the period 2011–2025

dependent variable	N	R	Sig.	α	β	t	R^2	F	decision
operational efficiency	15	0.9956	0.0000	40.5672	0.1333	38.5071	0.9913	1482.8006	H0 rejected
Earnings quality	15	0.9633	0.0000	42.2806	0.2303	12.9382	0.9279	167.3978	H0 rejected

Source: Prepared by the researcher based on the results of the statistical analysis of the research data.

Table (5) shows that the correlation coefficient between financial technology and operational efficiency was 0.9956 , a very strong positive relationship. The significance level was 0.0000 , which is less than the accepted significance level of 0.05 , indicating a statistically significant relationship between the two variables. The regression coefficient β was 0.1333 , meaning that, according to the model, increasing the financial technology index by one unit leads to an increase in the operational efficiency index by 0.1333 units . The t -test value of 38.5071 confirms the significance of the regression coefficient, with a significance level of 0.0000 , which is significantly lower than 0.05. The F-value of 1482.8006 , also with a significance level of 0.0000 , further confirms the overall significance of the regression model. The coefficient of determination (R^2) was 0.9913 , meaning that financial technology explains approximately 99.13% of the changes in the operational efficiency index, while the remaining 0.87% is attributed to other factors not included in the model . Regarding the impact of financial technology on earnings quality, the table shows a correlation coefficient of 0.9633 , reflecting a strong positive relationship between the two variables. The significance level was 0.0000 , confirming that the relationship is statistically significant at the 5% level. The regression coefficient was 0.2303 , indicating that a one-unit increase in the financial technology index is associated with a 0.2303 -unit increase in the earnings quality index, according to the regression model used . The t -

test value of 12.9382 supports this result, with a significance level of 0.0000 , which is less than 0.05. The F - test value of 167.3978 , also with a significance level of 0.0000 , indicates the statistical significance of the model. The coefficient of determination (R^2) was 0.9279 , meaning that financial technology explains approximately 92.79% of the variation in earnings quality, while other factors within the random error range explain 7.21%.

Based on the preceding statistical results, it is evident that financial technology (FinTech) has a statistically significant and positive impact on both operational efficiency and earnings quality. Its effect on operational efficiency was stronger, as indicated by the correlation coefficient and the coefficient of determination (R = 0.9956 and R^2 = 0.9913), while the correlation coefficient with earnings quality was 0.9633 and the coefficient of determination was 0.9279. These results indicate that the expansion of FinTech's application was associated with a tangible improvement in the efficiency of banking operations and the level of earnings quality during the research period . Therefore, since the Sig. values for all tests were 0.0000 , which is less than the significance level of 0.05 , the research rejects the null hypothesis, which states that FinTech has no statistically significant effect on improving operational efficiency and enhancing earnings quality, and accepts the alternative hypothesis, which affirms that FinTech has a statistically significant effect on both operational efficiency and earnings quality at the International Development Bank for Investment and Finance during the period 2011–2025.

3. Results and Discussion

The empirical findings obtained from analyzing the International Development Bank for Investment and Finance for the period 2011–2025 provide compelling evidence regarding the transformative impact of financial technology on banking operations and financial health. The near-perfect positive correlation ($R = 0.9956$) and an R^2 of 0.9913 between the FinTech Index and operational efficiency illustrate that digital adoption is no longer merely a supportive channel, but rather the primary engine driving cost reduction and operational streamlining in modern banking. By replacing manual paper-based processes with automated, digital service points—such as expanding POS units from 12 to 271 and electronic services from 3 to 53—the bank successfully reduced its operating expenses-to-revenue ratio from 57.23% in 2011 to 43.81% in 2025. This structural reduction in overhead Kosten aligns directly with theoretical frameworks emphasizing the operational scaling benefits of digital channels over traditional brick-and-mortar branch infrastructure [1], [13].

Furthermore, the statistically significant impact of FinTech on earnings quality ($R = 0.9633, R^2 = 0.9279, \beta = 0.2303$) highlights a vital qualitative shift in bank profitability. Rather than generating transient or highly volatile profit spikes, the integration of advanced financial technology enabled more sustainable and reliable earnings streams. This is reflected in the steady rise of the earnings quality index from 48.60 to 72.50 points, alongside an increase in Net Profit Margin from 28.92% to 35.73% and ROE from 5.08% to 7.06%. Enhanced data collection, real-time risk assessment, and improved internal control systems—inherent in digital banking platforms—reduce operational errors, mitigate credit default risks, and lower information asymmetry [3], [15], [16]. Consequently, the bank's bottom-line performance became far more indicative of true operational capability rather than temporary market distortions, fully validating the strategic necessity of continued FinTech investment in emerging banking environments like Iraq [4].

4. Conclusions:

The study demonstrated a statistically significant direct impact of financial technology on operational efficiency, confirming that digital transformation plays a pivotal role in reducing operational costs, accelerating transaction completion, and optimizing banking resource allocation. The FinTech index experienced a substantial rise from 18.40 points in 2011 to 112.40 points in 2025, which reflects the bank's rapid adoption and expansion of digital services and channels over the 15-year period. Concurrently, the operational efficiency index recorded continuous improvement, increasing from 42.77 points in 2011 to 56.19 points in 2025 as a direct result of the bank's enhanced capacity to manage its available resources in alignment with contemporary business requirements. Furthermore, a strong direct relationship was

revealed between financial technology and earnings quality, with a correlation coefficient of 0.9633, indicating that digital transformation directly supports profitability stability and sustainability. The earnings quality index rose from 48.60 points in 2011 to 72.50 points in 2025, coinciding with significant gains in return on equity and net profit margin. Statistical regression analysis confirmed that financial technology accounts for 99.13% of the changes in operational efficiency and 92.79% of the variation in earnings quality at statistically significant levels.

In light of these empirical findings, it is strongly recommended that the bank maintain continuous investment in modern digital infrastructure and technology updates to sustain operational efficiency gains, lower marginal service costs, and accelerate transaction processing speeds. Expanding electronic banking services and deploying highly scalable, flexible, and secure digital applications will further encourage customer transition toward digital channels, ensuring long-term growth in electronic transaction volumes. Bank management should adopt systematic periodic indicators to evaluate the precise impact of financial technology initiatives on expenses, revenues, and profitability, thereby facilitating timely decision-making and identifying operational gaps. Given the rising digital footprint, strengthening cybersecurity spending, data privacy protocols, and automated internal control frameworks is vital to mitigate emerging technology risks, satisfy regulatory standards, and preserve customer trust. Additionally, continuous professional development programs should be implemented to upgrade staff digital capabilities, ensuring optimal human resource interaction with modern banking software. Finally, future strategic plans for FinTech expansion must be closely aligned with long-term earnings quality goals through periodic cost-benefit evaluations, ensuring that digital investments generate sustainable economic value for both the bank and its shareholders.

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