**The Role of Digitization for Sustained Financial Performance in the Banking Sector of Iraq**

**1.Assistant Professor, dr.Haidar HAMZA JODY AL-DULEIMY Department of business administration,COLLEGE OF ADMINISTRATIONAND ECONOMICS, Al-Mustansiriyah University, Iraq.**

Email:

[drhaidarjody@uomustansiriyah.edu.iq](mailto:drhaidarjody@uomustansiriyah.edu.iq)

2. **SHATHA ABDUL HUSSEIN JEBUR, Middle Technical University, Technical College of Management, Baghdad, Iraq**

**Abstract:**

The potential of digitization and information technology (IT) to turn every industry is frequently stated and quoted. The transition has led to many new business models. Digitalization also profoundly affects the current ways of doing business. In the recent report, due to its significant economic development position, the influence of digitization and IT is the subject of the debate on the financial sector of the economy. Over the last 3 decades since the emergence of the new mode of banking and economic liberation, the findings in the banking sector have been studied. The aim of this analysis was to examine and describe the potential effect of digitization and information technology on financial results in Iraq's banking sector. Based on highly digitized and poorly digitized banks, we divided the banking sector into two classes. The Wilcoxon signed rank test was applied, and the two groups are compared. The findings of this investigation clearly show that highly digitized banks are more financially strong and sustained financial performance as also defined in highly digitalized banks. Thereafter, a significant role of digitization in Iraqi banking industry is confirmed. This study's contribution is double through a critical review of the existing research literature on the role of digitization for sustainable financial performance. On the other hand, an empirical investigation has been provided by collecting quantitative data from the emerging market from the banking and financial services. This work also has important implications for policy-makers and future studies.

**Key Words**

Digitization, sustained performance, banking sector, Information Technology (IT), financial performance.

**Introduction**

Banks as a whole have been very slow to accept the changes brought on by technological development. A variety of factors in the banking sector reflected in mechanization and digitization. The launch of standard cheque encoders was the first step towards digital banking transformation. The next move was not creativity but a requirement (Kamalam, 2019). Banking is a repeated job, and hence a labor-intensive job in which the worker is vulnerable to making error. In order to eliminate errors and improve the process, banks started using computer technology with independent personal computers and then established their own local area networks (LANs). As the networks expanded and banks began to communicate with each other, Central Banking was developed. Such systems made the running of their accounts simpler for consumers and gradually contributed to the inception of the phrase: „ Anytime, Anywhere Banking. "Then Automated Teller Machines (ATMs) came on the scene, and electronic fund transfers became possible (Kamalam, 2019).

Banking is generally acknowledged, known and quoted for its role in the global economic development (Berger & Humphrey, 1997; Dobbs & Hamilton, 2006; Abu -Alkheil, Burghof, & Khan, 2012). Since economic liberalization and globalization banks find technological steps, instruments and techniques as crucial factors for achieving their objectives (Chandrasekhar & Sonar, 2008). Organizations are increasingly expected to incorporate critical success factors such as IT, infrastructure, human resources, and training for sustainable growth and better business efficiency. In view of these factors, companies need to consider what are the main factors contributing to a consistently high level of service (Sivabrovornvatana, Siengthai, Krairit, & Himangshu, 2005; Sangeetha & Mahalingam, 2011). In recent years, academics, experts and policymakers have drawn significant attention from the effect of information technology on the service delivery and organizational performance (Carr, 2003; Rettig, 2007). Information Technology is one of the main drivers for the company and will shape a competitive advantage in future as an important factor (Porter and Millar, 1985). In the present research, the conceptualization of digitalization and IT would be *“the combination of information, computing, communication and connectivity technologies”* (Bharadwaj & Sawy, 2013).

Business Value of IT is the concept used in literature to describe the effect and significance of the use of IT in improving efficiency, profitability, reduced stocks and competitive advantages (Kauffman and Kriebel, 1988; Hitt and Brynjolfsson, 1996; Devaraj and Kohli, 2003). Digitalization and information technology have improved the banking sector significantly and the effect has been substantial, with a banking sector investing $ 445 billion on the implementation of digitalization and IT initiatives to boost the efficiency of the industry (Gartner, 2012).

This amount was more than three times the total expenditure for implementation of information technology measures by all other industries in 2012. According to (Gareth et al., 2016) banking sector in Europe, North America, Asia-Pacific and Latin America will be spending $241 billion on Information Technology deployment measures in 2016, with an aggregate increase of approximately 4% compared with the previous year. The above facts demonstrate that the banking industry is aware of that IT and digitalisation are essential requirements for sustained growth in the competitive business environment of today. In addition, the banking sector is also investing substantial amounts of money to acquire the information technology and digitalization infrastructure necessary, and the human resources required to exploit the information technology needed for superior business performance. he preference of consumer between a bank or a financial service provider is largely determined by factors such as security, quality of service, availability and provision of electrical banking (Masoudand and AbuTaqa, 2017). Due to the convenient and safe mode, the usage and frequency of banking channels and financial services for financial transactions has been growing (Emanuela, 2015). The increasing interest of the researchers in investigating and defining the ties and the role of digital financial services in the banking industry can be seen in banking literature. Table No. 1 displays some of the studies that are undertaken to investigate these IT and digitalization trends in the banking industry. This also suggested that this development of information technology and its impact on banking and financial services has paid considerable attention to the researcher.

**Table No.1 Summary of Studies Conducted on Digital Banking Services**

|  |  |  |
| --- | --- | --- |
| **No.** | **Type of Digital Service** | **Name of the Studies** |
| 1 | E-Banking | Mohammad and Saad, 2011; D. Karimzadeh et al., 2014; Abaenewe et al., 2013 ; Ugwueze and Nwezeaku, 2016; Akhisar et al., 2015; Siddik et al., 2016 |
| 2 | Internet Banking | Kennedy and Jacky 2013 ; Van et al., 2015 ; Malhotra and Singh, 2010; Majid and Mohammad, 2013 ; Lin et al., 2011;Tunay et al., 2015; Stoica et al., 2015; Callaway, 2011 |
| 3 | Mobil Banking | Kennedy and Jacky, 2013 |
| 4 | Online Banking | Wu and Dash Wu, 2010; Acharya et al., 2008; Ho and Wu, 2009 |
| 5 | Cash Less Baking | M. Kamboh and E.J. Leghari, 2016 |
| 6 | Automation, Internet and Self-Service Technology | Mehmood et al., 2015 ; Muhammad et al., 2013 ; Georgia and Christos, 2013; Hernando and a J. Nieto, 2007; Meepadung et al., 2009 ; DeYoung et al., 2007 ; Hung et al., 2012 ; Lavinia, 2014 ; Del Giudice et al., 2016 |
| 7 | ATM | Georgia and Christos, 2015; Kondo, 2010 |

**Source: Compiled by the Author**

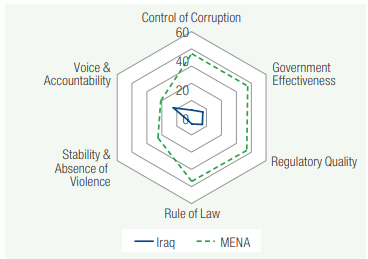
In the past, extensive work appears to have been conducted on the effects of information technology and its effect on banking and financial services, with specific conceptual settings and variables. The purpose of this study is to try to explore the possible relationship between information technology and banking performance in Iraq.Survey of the previous research literature shows there is no quantitative research aimed at analyzing the relationship in the context of Iraq. In addition, the findings of this study can be tested and checked for further exploration by validating the same research model and process in any other developing country such as Iraq, if results are consistent or any differences are identified.

The next chapters are organized as, the next section of the paper will share some information about the banking and financial sector of Iraq in order to create a context for the present study. Followed by the section on conceptual model of the present study the subsequent section will provide methodology of the present study along with the data collection methods and sampling technique applied for data collection. The succeeding section will be about the results and discussion of the present study. Finally, the paper will be concluding with sharing some of the recommendations and implications of the present study.

**Banking Sector in Iraq**

The role of the banking and financial sector in the overall economic growth is mentioned widely and same was also mentioned in the above section of the paper as well. Both internal and external factors may be causing this. Without rule of law and stable democratic policy, business in any country can not flourish. According to Figure 1 showing the question of governance as compared to the countries in the Middle East and North Africa ( MENA).

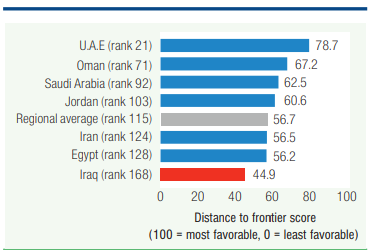
**Figure No. 1 Governance in Iraq in comparison with MENA countries.**



Source: World Bank Worldwide Governance Indicators (2018)

Along with governance, the banking and financial sector can only gain greater benefits if the overall economic policies are conducive to local and foreign investment, but sadly, the overall market climate is still not quite feasible for the banking sector to grow. According to Figure 2 showing the value of doing business in Iraq as compared to other neighboring countries including the UAE, Oman, Saudi Arabia, Jordan, Iran and Egypt.

**Figure No. 2 Regional Compression of Doing Business**

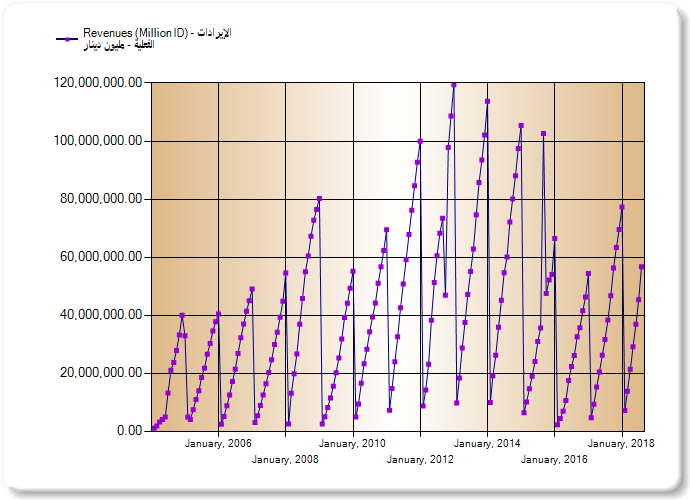


Source: World Bank, Doing Business 2018

It is also important to mentioned that Iraq score is far below the World Bank (2018) global average Doing Business ranking. Moreover, according to the World Bank (2018), Iraq has been ranked 168 out of the 190 countries ranked by World Bank on the ease of doing business. This requires government to take policy measures to favorable the overall market environment for the banking and financial sector. The World Bank (2018 ) proposed that more regulations on banking sector operations in Iraq should be made, the same was communicated and recommended to the Central Bank of Iraq (CBI). It was also stated that the Iraqi banking sector is still under development and that significant efforts are needed to make it more competitive, so that it can contribute to the country's overall economic growth.

There are 30 private banks and 7 government-owned banks operating in Iraq, currently the banking sector 's revenue has also been on the decreasing side. It also means that in the past couple of years the performance is banking sector has been on the decline. Please refer to figure No. 3, published by Iraq's Central Bank (2018) on Iraq's overall banking and financial sector revenues. This deteriorating trend calls for Iraqi government to take some urgent remedial action. The performance of Iraq's banking and financial sector has been weak, and the position that the banking and financial sector is expected to play in the case of Iraq has been missing, according to World Bank (2018). Such an effort was initiated in 2008 by the Iraqi government with a two-phase All-inclusive Banking Sector Reform Strategy (2008-2012). All political forces supported this initiative in order to reap the best benefits for the economic growth and to boost the efficiency of the financial sector over the particular time period.

**Figure No. 3 Revenue of Banking and Financial Sector on Iraq**



Source: Central Bank of Iraq (2018)

**Conceptual Model**

The goal of this study is to explore the link between digitization and information technology regarding the performance of the banking sector in Iraq. The previous research studies on investigating the same possible link by Oliner and Sichel (2000), Jorgenson and Vu (2005) and Reuter (2010) stated that a significant and positive relationship exists between financial performance and digitization in developing countries. In addition, cross sectional research studies conducted by Papaioannou (2004), Inklaar and Timmer (2008), Van Ark, O'Mahony, and Timmer (2008), and Strauss and Samkharadze (2011), also explained that digitization and IT have played an imperative role in improving the financial efficiency of organizations and nations. Based on the above-mentioned facts below mentioned model (fig. 4) is proposed for the present research.

Figure No.4 - Conceptual Model for the present study

Performance of Banking Sector

DIGITALIZATION AND INFORMATION TECHNOLOGY

**Methodology**

To empirically investigate the proposed phenomenon, we adopted matching sample comparison group. Based on the sensitivity of information technology and digitization, two samples were developed. A sampled treatment is created by selecting IT and digitization-intensive banks with superior digital capabilities compared to controlled groups consisting of banks with less or no IT and digital capabilities. The performance variables were compared with both groups.

We evaluated the following characteristics to define digitization capabilities of top banks, i.e. internet banking, mobile banking, online banking, cash less banking, automation, self-service technology. The matching group is composed of companies providing at least four services as shown in table 1. We supported Santhanam and Hartono’s (2003) approach by grouping highly digitalized banks to compare it with less on not digitalized banks. The reason why the highly digitized banks are grouped is to reduce the impact of firm size on the operating performance. Therefore, the impact of firm size is alleviated by creating two groups with similar characteristics and operating environment.

The overall performance of the company is calculated by using profitability and cost ratios. Bharadwaj described by variables as predominant business performance consists of lower estimated costs and higher profitability estimates. Profitability is calculated by return on assets, operating income on sales and operating income on assets. On the other hand, cost is measured by operating expense to sales and selling and administrative expenses to sale. The data was obtained in the form of banks' annual reports, and consecutive previous five-year data was used to calculate sustainable performance using a standard rule. The data set is used to compare the category of the highly digitalized bank with the controlling group to assess whether digitization creates any difference in Iraq's banking sector.

**Data Analysis and Results**

To investigate the results the researcher applied Wilcoxon signed-rank test on the selected data set. The main reason to utilize this test is the normality of data. To apply t-test for the comparison of two samples the data normality assumption is not satisfied. Therefore, Wilcoxon signed-rank test is adopted to overcome this issue. The results of Wilcoxon signed-rank test are presented in table 2. This study hypothesized that highly digitalized banks are associated with higher profitability and lower coast ratios. The results of Wilcoxon signed-rank test are measured for the period ranging from 2013 to 2017 to measure the sustained financial performance. The results (table 2) have shown that highly digitalized firm is more efficient in making profits. The mean values of both experimental group and control group are compared to measure difference and P-value is utilized to measure the statistical significance of the difference. Similarly, highly digitalized firms are found to be associated with lower cost ratios as compare to less digitalized firms. Hence, the results of this investigation confirm the proposed framework that higher financial performance is sustained in highly digitalized firm over the period of time.

**Table No.2 Wilcoxon Rank Test Results**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 2013 |  | 2014 |  | 2015 |  | 2016 |  |
| **Measurement** | **Category** | **Mean** | **P-Value** | **Mean** | **P-Value** | **Mean** | **P-Value** | **Mean** | **P-Value** |
| ROA | 1 | 0.05 | 0.035 | 0.056 | 0.013 | 0.070 | 0.016 | 0.069 | 0.012 |
|  | 0 | 0.02 |  | 0.012 |  | -0.03 |  | 0.031 |  |
| Op.I/A | 1 | 0.052 | 0.017 | 0.071 | 0.032 | 0.072 | 0.047 | 0.079 | 0.048 |
|  | 0 | 0.044 |  | 0.041 |  | 0.035 |  | 0.041 |  |
| Op.I/S | 1 | 0.079 | 0.046 | 0.104 | 0.036 | 0.135 | 0.029 | 0.137 | 0.008 |
|  | 0 | 0.053 |  | 0.091 |  | 0.119 |  | 0.129 |  |
| Op.E/S | 1 | 0.566 | 0.031 | 0.66 | 0.028 | 0.614 | 0.006 | 0.548 | 0.015 |
|  | 0 | 0.725 |  | 0.683 |  | 0.628 |  | 0.672 |  |
| Op&AE/S | 1 | 0.821 | 0.038 | 0.816 | 0.005 | 0.792 | 0.009 | 0.791 | 0.043 |
|  | 0 | 0.836 |  | 0.83 |  | 0.82 |  | 0.817 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 2017 |  |
| **Measurement** | **Category** | **Mean** | **P-Value** |
| ROA | 1 | 0.071 | 0.035 |
|  | 0 | 0.033 |  |
| OI/A | 1 | 0.084 | 0.017 |
|  | 0 | 0.039 |  |
| OI/S | 1 | 0.139 | 0.048 |
|  | 0 | 0.129 |  |
| Op.E/S | 1 | 0.543 | 0.018 |
|  | 0 | 0.652 |  |
| Op&AE/S | 1 | 0.731 | 0.073 |
|  | 0 | 0.811 |  |

Where;

ROA = Return on assets

OI/A= Operating income to assets

OI/S= Operating income to sales

Op.E/S= Operating expense to sales

Op&AE/S= Operating and administrative expenses to sales

This research is an attempt to shine new light on the business world 's value of digitalization. Through exploring the connection between digitization and performance in underdeveloped countries, the significance of this study is important. There are some studies that find the correlation between digitization and performance, but previous studies still lack an undeveloped economic point of view. In addition, this work has utilized a special methodological approach. By comparing highly digitalized banks with least or not digitalized banks in Iraq in this decade to emphasize the importance of digitization. In addition, the significant contribution of this study is also an examination of the sustained performance of highly digitalized banks over the century. The findings support the hypothesized notion that highly digitalized banks are more profitable and that success is maintained over time in terms of high profitability and lower cost.

**Conclusion and Recommendations:**

This research investigates the effect of information technology and digitisation on performance measures in any business in general, and in particular in the banking sector. The literature review indicates that the connection between digitisation and information technology capabilities and the performance of the banking sector in Iraq needs to be further explored. As addressed in the paper's results and discussion section, digitisation has a clear and constructive effect to achieve sustainable performance. Such findings are also in line with several of the previous research conducted out to investigate this relationship (Bharadwaj and Santhanam, 2003). This study also concluded the value of IT, and digitization is crucial for sustained growth in financial performance, irrespective of the economic context. The findings of this study suggest that Iraq's banking sector is promising, and can make substantial contributions to the country's overall economic growth. The findings also showed the need for more focus in terms of the overall business performance of any bank activity in Iraq to improve IT and digital capabilities for better productivity. It is also important to realize that the availability of reliable data on performance for the banking sector still continues a major challenge, this challenge requires further joint research efforts from professionals, experts and policy makers.

There are some suggestions arising from the current research. Due to developments in this area, the technology diffusion is very quick, so the banking sector needs to use up-to - date information technology initiatives to provide better quality of service and maintain competitive advantage. The banks need to adopt latest technologies after getting proper feedback from the consumers about the newly launched IT based solutions. The constant development of these technologies should be continued in order to maintain the competitive advantage over longer periods of time.

The present study has a number of limitations due to time and resource constraints, which can contribute to the enhancement of the existing body of information about the banking sector in Iraq for future research studies. Firstly, the current study only collected data for five years. Future studies could extend the study's scope. Therefore, this area can be investigated by comparing the performance of banks operated by private and state institutions. Similar comparative research in any other developing country may be performed to check the results.

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