

## The Effect of Business Processes on Operational Excellence of Banks: The Mediating Role of The Mediating Role of MIS Effectiveness

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<p>Article history Submitted: 19 June, 2021 Revised: 25, 27 June, 2021 Accepted: 3 July, 2021</p>	<p><b>Abstract</b> Management Information System (MIS) is critical for the success and performance of organizations. However, few of the previous studies examined the mechanism of MIS in improving the business performance. This study aims to explore the role of MIS effectiveness in improve the business processes and the operational excellence of the Jordanian banks. The data of this research is collected from 159 managers in two Jordanian banks: Islamic Jordanian bank and Housing bank. In order to address the research aims, the SPSS and AMOS tools are utilized to conduct several analyses such as demographic analysis, confirmatory factors analysis, and descriptive analysis. The results show that the effectiveness of MIS functions would be designed based on the business processes such as information workflow and working functionality. The MIS effectiveness includes many dimensions such as usability, conversion rare and financial benefits. The effective MIS functions plays important role in improve the operational excellence of the banks such as working innovations and services quality. This research provides useful information about the relationship between the MIS functions, business processes, and operational excellence in the banks.</p>
<p><b>Keywords:</b> <i>MIS Effectiveness,</i> <i>Business processes,</i> <i>Operational excellence,</i> <i>Banks,</i></p>	

### 1. Introduction

The use of technology has become essential for organizations to survive and thrive [1]. Organizations need to cope with the development of technology [2]. Technology is becoming a source of competitive advantage due to the benefits that can be gained in decision making when technology is utilized effectively [3], [4]. With the dynamic nature of the marketplace and the level of complexity, this represents an ongoing journey, requiring a focus on the fundamentals of Operational Excellence (OE) [5]. The definition of OE is best expressed by focusing on both the ongoing aspects as well as the desired outcomes [6]. The people excellence is one of the critical components of OE [7], [8]. The excellence of people contributes the quality improvements and the innovations in the organizations, which play important roles in improve the competitive advantages of the businesses [9].

For effective operational excellence, the management of business process is necessary to manage all resources in the organization (such as asset, people, and information) [10], [11]. The organizations must constantly reconsider and optimize the way they do business and change their information systems and applications to support evolving Business Processes (BP) [12]–[17].

BP may be understood to be the way in which work is organized, co-ordinate and focused to produce the services [18]. As such, BP may be used to describe the flow of materials, information or knowledge. BP may also be understood to be the way in which management chooses to co-ordinate work through the use of workflow information and the functionality

[19]–[21]. The functionality is about manage the working responsibilities of the employees, while the workflow is about manage the information flow between the employees in the context of working services. The management of BP is necessary to manage the overall operations in the organization according to effective processes. The necessity of BP management grows when the organization workflow and functionality is complex and nested [22], [23]. IT is considered one of the most important enablers of process change. Together, processes and information technology can be seen as a new industrial engineering that may revolutionize the way in which organizations operate [8], [9], [24], [24], [25]

Most of the advocators of the business process management highlight the importance of the role that Information Technology (IT) plays in the business process [26], [27]. Many argued that IT should be seen as an enabler of organizational change rather than as a tool to implement business processes. The initiative to move towards BP in many cases originates from the IT departments. In last two decades, Management Information Systems (MIS) are used to manage information, make better decisions and improve the execution of a company's BP [2], [28]–[30]. MIS can be defined as computer hardware and software that manage the organizational flow between internal organization sectors (such as departments and workers) or between organization and other organizations in order to accomplish various working activities [31]. MIS enhance BP because they cannot only be used to increase the efficiency of existing processes, but also to enable new processes that are capable of transforming the way in which an organization conducts business [32].

The necessity to evaluate the functions of MIS has emerged from the importance of MIS in effectiveness of work processes in an organization, causing rapid growth of demands in terms of resources performances in Information System. Evaluation of Information System performances means evaluation of performances in hardware, software, computer networks, data and human resources [33]. Effectiveness of information systems would be measured based on many dimensions such as response time, accessibility, characteristics of used computer language, realization of user's demands, correction of mistakes, accuracy of output, and promptness of output [34] [35] [36]. The banks represent the major financial hub in any country due to importance of banks assets and services for the growth of country economy (Levine, 2004). There is wide number of banks services such as provide loans for customers, money transferring, operate the customers and government capitals, help the government and organizations to distribute the employees' salaries, and involve the stock exchange in the country. The OE of banks services is necessary to assure the services quality, reduce the operational costs, avoid the operational mistakes, and deliver the services in right time. Thus, the banks could increase their profits and assure the customers satisfactions. The next section presents the literature review of OE, BP management, and MIS in the banks. Section 3 presents the proposed conceptual model. Hypotheses testing is presented as well as the result, discussion, and conclusion.

## **2. Literature Review**

### *2.1 Theoretical Considerations*

Management by objectives (MBO) theory primarily focuses on the definition of organizational objectives that management relays to the members of the organization to decide upon their sequential achievement [37]. This enables management to tackle the objectives in an organized way in order to achieve more productivity in the work environment and it assists the members to clearly be acquainted with their achievements, with one objective at a time, supporting a positive work environment [38].

In an ideal workplace, employees are involved with setting the firm goals and selecting the action to be taken in order to be more inclined towards achieving the main goal [39]. The MOB theory cycle [40] indicates that the set of organizational objectives should be passed down to employees as sequential objectives. Such passing down of objectives have to oversee in their achievement. On the basis of such oversight, the employees' performance can be measured, after which the employees can be rewarded based on their performance prior to distributing the next business objectives.

There are three main segmented directions to the MBO cycle namely, 1) business processes (e.g., distribution of objectives), 2) business management (e.g., monitoring objectives) and 3) operational excellence (e.g., evaluation of performance). In this regard, MIS can be used for the monitoring of business processes that employees achieve, while measuring the performance of the employees along with the objectives of the organization.

In addition to the MBO, Total Quality Management is another important theory that is reviewed and presented under this section. The focus of TQM is the development of an organizational system that promotes the members' cooperation and learning towards implementing management practices process, and ultimately, towards the processes, products and services ongoing improvement, and the fulfillment of employees, customer satisfaction and survival of the firm [41].

In the processes and systems changes, top management has a key role in leading the rest of the organizational members [42]. Leadership, in this case, ensures the quality management success with the top management creating and communicating a vision for the firm's ongoing enhancement [22], [23]. It is the responsibility of top management to address quality problems, and this is handled by establishing clear standards of work to the employees and work methods for their achievement. These also involve a suitable working environment that is devoid of fault-finding, blaming or scare tactics. In sum, the TQM theory primarily focuses on managing business processes in an effective way with the help of systems to reach business operational excellence, as a result of which products and services are enhanced.

## *2.2. Business Processes Management.*

Business Process Management (BPM) the management model or structure of the working processes in the organization in order to achieve excellence or the best outcomes. The conduction of BPM should include the identification of the main processes and its documentation, in order to select the improvement strategy and the possible implemented changes to the processes. BP use information to tailor or complete working activities. Information, unlike resources, is not consumed in the process rather it is used as part of the transformation process [5], [36], [43], [44]. Information may come from external sources, from customers, from internal organizational units and may even be the product of other processes. In many organizations the term workflow is used to refer to an automated BP, which means that the coordination, control and communication of activities is automated, but the activities themselves can be either automated by information systems or performed by people [45].

The BP functionality is much related to workflow, a functional business is the working tasks and responsibilities that assigned to worker, teamwork, or department [46]. A functional business orientation organizes a company along functional lines, such as sales and production [3]. A process orientation means that the company focuses on business processes, such as order processing or strategic planning. In each case, the companies optimize their activities, either within the functional units or for each process. The main difference is that optimizing one functional unit may harm another function but optimizing the business processes across organizational lines helps the whole company [47].

## *2.3. Management Information System*

The utilization of information technology has been magnificently increased in service industries, particularly, the banking industry, which by using Information Technology (IT) related products such as internet banking, electronic payments, security investments, information exchanges [36]. Using IT facilities, the financial organizations can deliver high quality services to client with less effort. Management Information System (MIS) is one of the major computer-based information systems [48]. Its purpose is to meet the general information need of all the managers in the firm or in some organizational subunit of the firm. Subunit can be based on functional areas on management levels [24]. The importance of MIS comes from the benefits that generated by that system such providing useful information in timely manner, improved labour productivity, cost savings, providing the information without any delays and mistakes, and improved the management of work [49]. [9] argued that the main issue of MIS system in organization is how to manage the software and hardware equipment in organization to assure the organizational performance. The idea here is not only about install MIS in organization but it is about managing MIS efficiency according to organization structure and information flow between various sectors in order to enhance the business processes and improve the operational excellence of organization. According to [50] there are two directions of MIS efficiency which are the efficiency and effectiveness.

The following are the mercies of MIS effectiveness [4], [7], [51]: (a) usability: the ease with which people perform transactions and/or find information; b) users' satisfaction: measured by satisfaction surveys, percentage of existing users retained, and increases in revenue dollars per customer; c) conversion rates: the number of customers an organization "touches" for the first time and persuades to purchase its products or services; d) financial such as return on investment (the earning power of an organization's assets) and cost benefit analysis (the comparison of projected revenues and costs including development, maintenance, fixed, and variable).

## *2.4. Operational Excellence*

For businesses and indeed any organization to be successful in the long term, they must be engaged in a relentless quest to make things better. Failure to make this an organizational priority will inevitably result in organizational decline [52], [53] OE is an all-embracing approach for optimizing everyday operations, in configuration with the organization's strategic objectives and customer expectations [54]. It is a philosophy of leadership, teamwork and problem solving that leads into constant improvement throughout the organization by looking at the wishes of the customer, empowering employees, and maximizing on the existing activities in the process [55]. OE includes two important practices; continues improvements of services and employees.

Innovations are adopted by organizations in order to improve the level of services delivered to various users and with the broad aim of increase their profitability and market share [53]. Knowledge on the processes of innovation adoption and the characteristic of innovative organizations is evolving in various sectors of industries [56]. For the creation of valuable output and achievement of operational excellence, specific and distinctive competencies and resources of the firm are bundled and revitalized [57]. The product and service quality improvement could be enhanced through competitive advantage along with the cost and production reduction, the service and product speedy delivery and be able to provide accuracy in the production and services [52]. Quality of services and products can be achieved by adding unique attributes to products to enhance their excellence so as to benefit customers [8].

## **3. Proposed Conceptual Model**

Based on the literature review, there are various theories support the relationship between the researches variables; business processes, management information system, and operational excellence. Theories such as MBO, TQM, and IO are aimed to achieve the operational excellence in organization through manage the business processes using systems like information system. Theoretically, the information workflow and working functionality are important variables of

business processes, the effectiveness are important variables of information system, and the most important variables of operational excellence are the innovation and continue improvements of services.

However, there are two main research gaps are identified, the first gap of this research is the limitations of conducted works on the impact of MIS efficiency on the enhancement of BP management in the banking sector. There is few research conducted to investigate this impact in the banks. The second research gap is the studies limitation on the impact of BP management on OE through MIS efficiency in banks. The operational excellence could be improved through manage the information workflow and employee's functionality supporting effective and efficient management information system.

Thus, it is important to examine the role of business processes on operational excellence through management information system functions in the banks. Figure 1 illustrates the theoretical framework of this study. The performance management of BP variables (workflow and functionality) could be evaluated based on the effectiveness of MIS function. Therefore, the role of the enhancement on PB management on OE variables could be investigated in the banks. This investigation offers good understanding of the situation of MIS in the banks and the requirements that needed to enhance the MIS effectiveness in order to enhance the PB management and OE.



Figure 1: Theoretical Model of the Study

Based on the various variables in this study (BP, MIS effectiveness, and OE), Figure 1 presents the proposed model that could be investigated to address the research purpose. The proposed mode could try to find new phenomena in the relationships between BP management (information workflow and jobs functionality) and OE (innovation and quality improvement) through MIS effectiveness. This model is important due to limitations of conducted studies in this area in banking sector. The previous studies were not explored the relationships between BP management and MIS effectiveness, and its impact on OE of the banks.

According to proposed model, there are three main research hypotheses need to be tested, and these hypotheses are as the following:

- H1: There is a significant relationship between BP management and MIS effectiveness in the banks.
- H2: There is a significant relationship between of BP functions and the OE in the banks.
- H3: There is a significant relationship between of MIS effectiveness and the OE in the banks.
- H4: MIS effectiveness mediates the effect of BP on OE of banks.

#### 4. Research Methodology

This study focuses on the variables of MIS effectiveness, BP management OE in the actual Jordanian banks and thus, data was collected from the branch level rather than from individual level in that, the unit of analysis is the Jordanian bank, as represented by its managers/assistant managers. The research population comprises of the Housing Bank and Jordanian Islamic Bank's managers. On the basis of the annual report provided by the Jordanian Housing Bank 2018, the number of bank branches in the country is 130, while that of the Jordanian Islamic bank is 97 branches.

The sampling percentage has to be at least 10% of the population size from 101-1000 units [58]. Each bank in the study sample, as mentioned, is represented by the manager or assistant manager of the bank branch and based on the Jordanian Islamic bank and the Housing Bank, each branch is managed by a manager and two assistant managers and thus, the study sample should be at least 69 (23 branches\*3 managers). However, the questionnaire was collected from 159 managers in Housing bank, and Islamic Jordanian bank.

The sample selection was conducted depending on the sample segment's usefulness and is based on a distinct proportion. The sample in this study was chosen based on quota technique's two strategies; first, the branches of the banks representing the study sample was selected to cover all bank branches in the region (north, middle and south) to examine

the impact of MIS effectiveness in the entire parts of the region. Second, one of the top employee's proportion criteria is the experience held by the managers and in this regard, the sample was gathered from the proportion holding high experience and knowledge on the study variables. Data was generally gathered from managers and assistant managers of over 5 years of experience in bank management based on their knowledge of MIS implementations in their branches.

This study is quantitative one, with the questionnaire being the major data collection instrument. Therefore, the study questionnaire was arranged to comprise of 4 major parts, with the last 3 parts containing 45 items representing the study variables namely, BP management (independent variable), MIS effectiveness (mediating variable) and OE (dependent variable). Every questionnaire part contained items representing each variable's sub-dimension, namely, workflow and job functionality (BP), MIS effectiveness and innovation and quality improvement (OE). The questionnaire was validated by three experts in Management information domain. The items in the questionnaire were gauged through a 5-point Likert scale that focused on the lower scales, generating relative responses means over their high counterparts. The collected data are analyzed using SPSS and AMOS tools based on many analyses such as confirmatory factor analysis, frequency analysis, and descriptive analysis.

## **5. Discussion of the Results**

The questionnaire copies were distributed to 200 managers of two Jordanian banks namely, the Housing Bank and the Jordanian Islamic Bank. From the distributed questionnaires, 32 were not retrieved and 9 questionnaires were dropped owing to incomplete answers, making the valid questionnaires to be included in the data analysis to be 159 in total. The rate of response was therefore 80% (200/159), considered as a good response rate, indicating that the respondents were interactive in their completion of the questionnaire and gave significant concerns about the issues.

### *5.1 Profile of the Respondents*

The demographic data of the respondents were analyzed based on the 159 collected responses and they were analyzed to provide a description of the characteristics of the respondents. Notably, the primarily aim of the research is to examine the mediating effect of MIS effectiveness on the BP management-OE relationship among Jordanian banks. Accordingly, there were 7 demographic variables analyzed in light of the aim of the research and they are gender, working position, years of management experience, bank branch location, number of employees in the branch, number of daily conducted tasks in the branch, and the MIS use in the branch. The descriptive information showed that majority of the respondents are male with position of brand manager and have experience of more than 9 years. The branches located in the middle of Jordan with number of employees less than 50 in each branch and daily conducted tasks in the branch is less than 50 with strong utilization of MIS.

### *5.2 Data Analysis*

To reiterate, SPSS V. 25 was used for data screening of 159 collected responses. Accordingly, this study conducted the univariate outlier test based on Z-score in SPSS, with the acceptable values being between -4 and +4 as established by [59]. The results of the Z-score test indicated the 51 items were acceptable from the 159 responses as they fell in the range between -4 and +4. The present study also conducted the multivariate outlier test using Mahalanobis D2 distance, in AMOS. The D2 coefficient value that exceeds 3.5 is deemed to be an outlier (Hair et al., 1998). The results of the test revealed that all 51 items obtained responses that are well below the cut-off (3.5); in particular, the highest D2 coefficient were obtained by the items IWF6 (3.159), WI3 (3.248), and ISQ2 (3.301) and as such, the variables and their items were considered acceptable to be included in the next data analysis phase.

The data screening tests results showed the suitability of data to be exposed to the next data analysis steps, which is data normality. This analysis confirms the validity of data by estimating normal distribution of the data obtained from the questionnaire copies. Normal data distribution shows good relationship between item responses, and this supports the study variables validity. This study used two AMOS tests to assess data normality namely, skewness and kurtosis. In the former, the average data normal distribution should be in the range from -3 to +3, and for the latter, the average data normal distribution should be in the range from -7 and +7. Notably, all the items' responses had normal distribution, indicating support for the study variables and inclusion of all data in the next analysis phase, which involves CFA.

The overall model containing five first order variables was exposed to CFA. The variables include information workflow, working functionality, MIS effectiveness, working innovation and improvement of services quality and they were measured by 51 items, which were responded to be 159 respondents. The items and responses were all included in the CFA model's overall assessment. All the 51 items exposed to the overall CFA model analysis was examined for their factor loadings to determine their level of interaction. On the basis of the modified loadings of the CFA analysis, items that obtained values lower than 0.5 (cut-off) were deleted i.e., (MEV2, MEV5, MEV11 and ISQ4). The remaining 44 items interactions were acceptable and included as they displayed high factor loadings (>0.5) and to conclude, 44 items were included in the next step of the analysis. On the basis of the outcome of the modified factor loadings, the 44 items were run through the goodness of fit test and the test revealed that the final model needed further improvement as the GFI coefficient was 0.839 (below 0.9 cutoff value). For this, Hair et al. (1995) recommended to conduct the re-path correlation test based on the detected errors of the indicators of AFC and SHE. Consequently, the modified model's GFI coefficient reached 0.902 by removing IWF2, WF4 and WI1 (items with high within-construct covariance). As a result, the modified

model's goodness of fit depended on the remaining 41 items distributed to measure six variables and based on the final goodness of fit indices values: GFI=0.902, AGFI=0.864, CFI=0.953, TLI=0.962, and IFI=0.981, with RMSEA=0.045 and CMIN/df=2.031.

The reliability values of the 41 items measuring five variables. They obtained Cronbach's alpha values ranging from 0.836 to 0.947, which are all above the 0.7 cut off, indicating high reliability of the final model version. The model's AVE is over 0.5 for the variables (0.711-0.883), which reveal good model data validity. In other words, the overall final model version is valid and reliability in representing the research outcomes. The overall modified model was tested for discriminant validity to confirm the correlation among the five dimensions of the variables. The good level of inter-correlation among the study variables based on the 41 items measuring them. Discriminant validity for IW is 0.871, for WF is 0.829, for MEV is 0.759, WI is 0.892, and for ISQ it is 0.884 – all values confirming the model variable's sufficient interactions. Moreover, the correlations among the variables did not exceed the  $r^2$  of the average variance extracted from individual variables, confirming the overall model's discriminant validity. In sum, the overall model's CFA represented by the values of goodness of fit, reliability and convergent validity and discriminant validity supported the usefulness of the construction of the overall model as evidenced by the results

The overall model fit is focused on, followed by the size, direction and the parameter estimate that were previously hypothesized. Hair et al. (2006) proposed indicating the relationships using one-headed path diagram. The structural model is confirmed through the analysis of the proposed relationships among the identified and assessed variables. AMOS and the maximum likelihood estimate method were utilized in this study for the examination of the proposed hypotheses. In this study, BPM is considered as the independent variable and it covers two dimensions namely, information workflow (IW) and working functionality (WF), MIS is considered as the mediating variable that covers two dimensions namely and MIS effectiveness (MEV), while OE is considered as the dependent variable with two dimensions namely working innovation (WI) and improvement on services quality (ISQ). Accordingly, this study examined the direct effects of the variables involving, the direct effects of information workflow (IW) and working functionality (WF) on and MIS effectiveness (MEV), representing hypothesis

H1, and the direct effects of MEV were examined on working innovation (WI) and improvement on services quality (ISQ), representing hypothesis H2. The AMOS structural model graphs and standardized regression weights. The study also examined the direct relationships using a significance level of  $p$ -value=0.05, to test the possibility of the relationship effect in one direction. The results of the analysis indicated that  $R^2$  value of BPM is 0.24, which means the error variance of QWL is around 76% of the BPM variance (Quaddus & Hofmeyer, 2007).

H1: There is a significant impact between BP management and MIS effectiveness in Jordanian banks. In other words, H1 is based on four sub-hypotheses, which are as follows; H1a: There is a significant impact between BP workflow and MIS effectiveness in the Jordanian banks.

H1a: There is a significant impact between BP workflow and MIS effectiveness in the Jordanian banks. The direct path between IW and MEV in the structural model analysis reveals the following ( $\beta$  =0.09, C.R. = 0.513, and  $p$  = 0.491) and thus rejecting hypothesis H1b, because of the weak IW and MEV relationship.

H1b: There is a significant impact between BP functionality and MIS effectiveness in Jordanian

banks. The direct path between WF and MEV in the structural model analysis reveals the following ( $\beta$  =0.30, C.R. = 2.876, and  $p$  = 0.009) and thus supporting hypothesis H1d, owing to the significant

H2: There is a significant impact between MIS effectiveness and OE in Jordanian banks. This hypothesis is divided into 2 sub-hypotheses to explain the relationship in detail.

H2a: There is a significant impact between MIS effectiveness and OE innovation in Jordanian banks: based on the results of the structural model analysis for the direct path between MEV and WI ( $\beta$  =0.18, C.R. = 2.533, and  $p$  = 0.011), indicating support for H2b. In other words, there is a significant MEV-WI relationship.

H2b: There is a significant impact between MIS effectiveness and OE quality improvement in Jordanian banks: based on the results of the structural model analysis for the direct path between MEV and ISQ ( $\beta$  =0.20, C.R. = 2.712, and  $p$  = 0.007), indicating support for H2b. In other words, there is a significant MEV-ISQ relationship.

H3: There is a significant mediating effect of MIS effectiveness on the relationship between BP management and OE in Jordanian banks. The results show partial mediation of MIS effectiveness on the relationship between BPM and OE, which means hypothesis H3 is partially supported. In particular, the indirect paths through MEV provided weak coefficient of standardized effect and  $p$ -value.

The findings showed that there is a significant relationship between information workflow (IW) and working innovation (WI), through the mediating effect of MEV. MEV had not such significant mediating effect on IW and ISQ ( $p$ =0.72). No effect was again noted for MEV on the relationship between WF and WI ( $p$ =0.253). No significant mediating relationship was found from MEV on the WF-ISQ relationship ( $p$ =0.221).

In sum, hypothesis H3 was partially supported in light of MIS mediating significant mediating effects. The entire indirect supported paths reveal the efficiency of MIS role in the relationship between BPM and OE in Jordanian banks. Stated

clearly, working innovation and services quality can be enhanced on the basis of MIS effectiveness. This supports the importance of MIS use designed tailor-made for the working environment as opposed to a developed MIS adopted from other banks or business entities.

## 6. Conclusion and Future Works

Prior related theories and research revealed that BPM is controlled by the workflow of information and the working functionality. As a consequence, several studies contended that the BPM major dimensions are information workflow and working functionality in relation to the MIS services, their effectiveness form the matrix of the related functions, with the functions being the MIS facilities characteristics. Efficient MIS could lead to enhanced BPM. Prior studies contended that the MIS efficiency primarily rest on its effectiveness. More specifically, the MIS effectiveness matrix covers usability, customer satisfaction, conversion rate and financial aspect. With regards to operational excellence of the banks, working innovation and improvement of services quality were the two significant dimensions mentioned in literature.

According to the conducted analysis based on 159 responses from managers in Jordanian banks, the argument that managing information workflow and working functionality of Jordanian banks assist in structuring the efficient and effectiveness of MIS function for BPM. In this regard, inappropriate MIS function could lead to serious issues in banking BPM. The structure of BP based on MIS effectiveness assist in enhancing banks OE and in increasing the opportunities to achieve tasks innovatively. Also, it could enhance the banks' provision of services. In the future, the structural equation model would be conducted to show the relationship between the BP and OE through the mediating effect of MIS effectiveness.

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