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Information Quality and Data Quality in Accounting Information System: Implications on the Organization Performance

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Abstract--- *In recent periods, majority of organizations have recognized the significance of Accounting Information System (AIS) in their operational or financial activities towards higher performance. As such, this study investigates the relationship between information quality and data quality in AIS and its effects on organizational performance among commercial and Islamic banks in Jordan. The study adopts the proportionate stratified random sampling among users of AIS within sixteen commercial and Islamic banks in Jordan. A total copies of 600 questionnaires were distributed and self-administered but only 250 copies among the returned questionnaires were valid, suggesting a valid response ratio of 41.1%. In order to estimates the model, this study applies the partial least square (Smart PLS 3) approach for further hypothesis testing and data analysis. Findings show that information quality is an important factor that enhances organizational performance, while data quality is negative and insignificant. To become and remain competitive, commercial and Islamic banks need to implement a high-quality AIS as it helps organizations to obtain better performance. Given the negative and significant coefficient of data quality, it implies that information quality is a strategic factor for organization's survival. As a way of recommendations, high priority and more emphasis should be placed on the continuous improvement of AIS among the banks, as that will enable them to keep pace with technological developments within the financial sector. The outcome of this approach will also reflects positively on the bank's administrative functions particularly in the areas of planning and decision making.*

Keywords--- *Data Quality, Information Quality, AIS, Organization Performance.*

I. INTRODUCTION

Across the globe, information systems are extensively used by numerous organizations to automate operation and to enhance performance towards greater efficiency (Ali, Bakar, & Omar, 2016; Ali, Omar, & Bakar, 2016; Hussein, 2011; Kariuki & Nzuki, 2019; Kharuddin, Ashhari, & Nassir, 2010). Among these kind of information systems include the Accounting Information System (AIS), which; when incorporated into the arena of information technology systems is intended to assist the management in controlling matters related to the organization's economic-financial records. However, the rapid advancement in technology has launched up the possibility of creating and using accounting information from a strategic viewpoint (Louadi, 1998; Soudani, 2012)

Appropriate decision-making is an integral component of an organization and such decision depends on the information available at hand. As such, a successful and prosperous organization not simply makes decisions, but

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also implement the most appropriate according to the organization's philosophy. A decision usually involves the selection of an alternative choice among numerous alternatives with feasibility outlook. In an attempt to decide on the most appropriate or suitable, decision-makers must be under the necessity of some guidance and one of such is the accounting information management. Undoubtedly, adopting a quality information technology has become a significant factor for the majority of organizations in achieving their prime objectives. Inefficient management system in addition to the rapid environmental changes may lead to awkwardness when gathering latest information (Hilman, 2011; Rahmi, Sari& Wulandari,2019). Furthermore, the modern information era has changed the direction in which the accounting systems works; from the traditional accounting information system, moved to manually develop accounting processes and to the computerized AIS. According to Mitchell, Reid, & Smith, (2000) , the traditional AIS were incapable to adapt to changes that will support critical business processes and to satisfy users' information needs which are continuously changing over time. On the other hand, modern AIS has the potentials with full capability to create several types of information, comprising non-accounting and accounting information to assist the management in handling short-term difficulties and long-term strategic plans.

In spite of the significance of AIS in enhancing organizational performance, there is still a growing need and potential gap in investigating the relationship between information quality in AIS and its effects on organizational performance (Ali et al., 2016; Noori, 2010; Sami, 2011). Furthermore, the massive investments in information systems particularly in the recent years demonstrated the effects these information systems has on organization's performance (Bazaee, 2010; Mahmood, Mann, & Zwass, 2000; Rai, Patnayakuni, & Patnayakuni, 1997). Nevertheless, empirical evidence proposes that data quality is problematic in AIS; hence argument from the literature review shows that there is a gap on the study between data quality in AIS and firm performance (Ali et al., 2016; Kalu & Campus, 2011; Saleh, 2013). In addition, similar research situation abound in the case of Jordan in studying the causal link between data quality in AIS and the organizational performance. In view of this argument, this research intends to fill-up the vacuum created by the literature and further provides better understanding of the subject matter. As a result, the main purpose of this research is to investigate the effects of information quality and data quality in AIS on organizational performance within the context of commercial and Islamic banks in Jordan.

II. REVIEW OF THE LITERATURE

There are enormous benefits for utilizing the AIS optimally in an organization. Some of these benefits include the technique-superiority in adapting to a changing environment, best management of arm's length transactions and a superior level of competitiveness. In addition, there is a boost to the dynamic nature of organizations with a bigger flow of information between different staff levels and the probability of new business and increased external relationships within the firm (Urquía Grande, Pérez Estébanez, & Muñoz Colomina, 2011;Trabulsi, 2018). Proper review between the design of AIS and performance of commercial entities by studying strategies explain that high performance of commercial entities depends on a broad domain of accounting information systems (Boulianne, 2007). Therefore, many literature suggested further studies on whether organizations systematically varies in terms of AIS design to support their selected strategy, identifying that AIS has the potential to facilitate and provides quality information with the view to enhancing organization's performance (Gerdin & Greve, 2004; Soudani, 2012 ; Trabulsi, 2018; Ali,2019).

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2.1. Information Quality

Information quality is very important and significant aspect in information management as it will point or determine the quality of information which is produced and developed in an organization. The high quality of information produced can improved the process making process as well as it can become a competitive advantage for the organization (Azemi, Zaidi, & Hussin, 2017). According to the study by (Huh, Keller, Redman, & Watkins, 1990), the authors describe four dimensions of information quality as the accuracy, consistency, completeness, and also currency. The accuracy can be defined as an agreement with an attribute about a real world entity and a value saved in another database. While consistency relates to an absence of conflict between two data sets, the completeness can be describe as a tool related to some exact application and it belongs to whether all the data suitable to that application are present. Lastly, the currency relates to up-to-date information (Noori, 2010). Consequently, DeLone and McLean (1992) shows six elements as the success factors of information systems, and these includes system quality, information quality, individual impact system use, user satisfaction, individual impact and the end organizational impact (DeLone & McLean, 1992). While further research as conducted by (Seddon, 1997) extended the model of DeLone and McLean (1992) by adding a number of success factors. Because of these divergent views and lack of unanimous agreement on the exact success factors of information system, researchers and other investigators of knowledge are at challenge to find a conceptual and theoretical framework for understanding the effects of information systems on organizational performance.

2.2. Information Quality in Accounting Information System

AIS with their components (people, instructions & procedures, software, technology infrastructure and internal control) are an important factors in decision making in an economic units, where the use of AIS and their rapid development day per day have led to a continuous and fast change in the outputs of these systems, thus contributing to the efficiency and effectiveness of documents , financial reports and financial information contained therein, in term of timely, speed, objectivity, complete and suitability (Elsharif, 2019). As in many organizations, quality of information plays a very crucial role in decision making process. This is because, vague of information may perhaps lead the decision-makers to have ambiguities throughout the decision-making process. To resolve this ambiguities, extra effort and resources are required thereby making the task to be more difficult and complicated. This difficulty can cause information providers to make many errors and may lead to time wastage and further reduces the level of confident that individuals have on the organization, hence the need to possess quality and reliable information (Borthick, Bowen, Liew, & Rohde, 2001). Furthermore, information quality are derives from the information systems viewpoint that produces quality of outputs. The information system generates a record which are presented in the form of reports or online screens (DeLone & McLean, 1992).

AIS is one of the important key parts of information systems and it is necessary to all organizations (Ali et al., 2016; Elsharif, 2019). Majority of organizations either profit or non-profit oriented are required by the knowledge age to maintain and develops the accounting information systems in their operational activities. To get better understand of AIS, the words AIS is derived from three words namely; accounting, information, and system, hence are explained separately as follows; the term accounting could be the language of business and the source of

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financial information in organizations. While information can be perceived as a data processing that provides a basis for making decisions, the word system is seen as an integrated entity between the AIS and knowledge management (Sori, 2009). The concept of Accounting Information System has been explained by Elsharif (2019) as a set of interconnected activities with technologies and documents primarily designed to gather data, process data and generate reports to internal and external decision makers in organizations. A well-designed AIS should be characterized with collecting data about the essentials of financial statements and further transforming those data into information (Sami, 2011).

In this contemporary period, AIS is viewed as a strategic tool that supplies quality information with the aim of improving organizational performance (Azemi et al., 2017). Other researchers describe the AIS as essential and critical tool for effective decision making (Elsharif, 2019). Nevertheless, having an effective AIS depends upon its ability to provide information that serves the various system users. Generally, the AIS has five major components namely as Inputs, Processes, Outputs, Storage, and Internal Controls (Hurt & Zhen, 2008). By means of systematic AIS, organizations should have best quality of business intelligence (data quality, information quality and knowledge) and this is expected to propel and secure them towards greater output performance (Chong & Eggleton, 2007). As similarly observed my many professionals, rapid development in information technology can change the adoption strategy of accounting practices which may possibly lead to better performance (Ali et al., 2016; Daoud., 2013).

2.3 Data Quality

From the general perspectives, data quality is often been defined from the viewpoint of accuracy. At the present time, further researches and practices indicated that data quality must be described beyond the accuracy perspective and is showed as encompassing multiple dimensions (Huang, Lee, & Wang, 1998). In addition, the term data quality is explained by other literature as the 'data that is fit for use by data consumers' (Huang et al, 1999). Various dimensions of data quality are proposed and explained, and they includes the Accuracy, which occurs when the recorded value is in conformity with the actual value; Completeness, which occurs when all values for a certain variable are recorded, Timeliness occurs when the recorded value is not out-of-date; and finally the Consistency occurs when the representation of the data values is the same in all cases.

2.4 Data Quality in Accounting Information System

Data quality has emerged as one of the fundamental components of AIS success factors particularly in the present information age. The necessity arises for quality management of data, as data processing has moved from the traditional role of operations to a major operation in itself (Romney & Steinbart, 2009). According to Kalu and Campus (2011), effective AIS is a competent information systems that requires high-quality data. Nonetheless, empirical evidence from the literature supported that data quality is another hindrance to possessing an effective AIS. Therefore, it was found that there was a gap in the previous research about the data quality as a critical success factor of AIS (Kalu & Campus, 2011). Meanwhile, AIS need quality data in order to function effectively. Moreover, the AIS requires technology adoption to improve and support the tool-sets which assist to supply an integrated set of mechanisms to manage all the stages of AIS. In general, when adopting an effective information

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system, it is significant to think about the quality of system and the quality of data used throughout the adoption process (Delone & McLean, 2003). The issues of data quality plays a key essential role during the process of AIS adoption. Data quality is emerging as a well-known phenomenon that hinder business growth in most contemporary organizations. In particular, the need for data quality is necessary for all accounting processes and this is due to its significant effects on business decision-making. It should be observed that contemporary organizations depend extremely on the proper utilization of AIS for their accounting processes (Wongsim & Gao, 2010).

2.5 Information Quality and Organisational Performance

At the organization's level, the relationship between information quality and its impact on performance has a mixed finding, especially when relying on how to measure its benefits. In order to provide a solid stand on this phenomenon, further research is required. Nevertheless, high information quality within the context of information space can lead to greater organizational impact especially in the case of market information support and internal organization's efficiency (Bharati & Chaudhury, 2015). Moreover, information quality in AIS is usually conceived in terms of accounting report and analysis (Al-Hiyari, AL-Mashre, & Mat, 2013; AlZwyalif, 2012) in order to be significantly related to context of management commitment. It is equally reported that it affects user performance and organizational performance simultaneously (Bukenya, 2014; Radlovački, Beker, Kamberović, Pečujlija, & Delić, 2011), while other studies consider it as the perceived usefulness and perceived ease of use indirectly (Ali & Younes, 2013). Similarly, Noori (2010) investigated the information quality on the performance of Iraqi organizations using data collected through questionnaires. Result shows the existence of significant positive relationship between information quality and organizational performance. From another end, (Kharuddin et al., 2010) examined the influence of AIS on SME performance among selected enterprises and further compared its effects on the adopters of AIS and non-adopters. When compared with non-adopters, the result shows a significant improvement in firm performance among adopters of AIS.

2.6 Data Quality and Organisational Performance

According to the study by (Alrayes, 2015), the effectiveness of electronic data means that its quality is significant for both individual business and government organizations. As further supported by (Batini, Cappiello, Francalanci, & Maurino, 2009), data quality is recognized as a relevant performance issue for operating processes and decision- making activities. In addition, data quality plays a significant role in organizational success, and the quality of any existing information system has a major effect on the effectiveness of performance. Given the significance of data quality to an organization, it is imperative to highlight their importance on organization performance in both developed and developing countries including the kingdom of Bahrain (Alrayes, 2015). However, data management has turn out to be more significant at the present time since majority of the organizations tend to handle expanding amounts of data, which may resulted in the risk of an increased flow of poor data quality (Moges, Dejaeger, Lemahieu, & Baesens, 2013).

2.7 Organizational Performance

The concept of performance is one of the most widely used terminology in the areas of business administration, and has attracted the attention of other disciplines in social sciences particularly in some areas of economics. In

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general, the concept of performance relates to the act that guides the completion of expected work. This is characterized as comprehensiveness and continuity. For that reason, it is considered as the determinant of a business organization's success (Hamdan, 2013). However, organizational performance is meaningful and very crucial to the organizations towards realizing the firm's objectives. This is in consideration of being the benchmark to the organization especially on whether or not the organization accomplishes its vision and mission. In order to ensure whether or not organization remains strong and competitive, the level of organizational performance can be utilized as a determining factor with the view to keep track of future success (Ahmad, 2015).

Moreover, organizational performance comprises of the actual output or results of an organization as assessed against its own intended objectives. As argued by Mitchell (2002), the four main criteria to measure organizational performance includes the followings: (1) Relevance: this can be defined as the degree to which an organization's parties feel that the organization is relevant to their individual needs and requirements.

(2) Efficiency: can also be defined as the degree to which an organization exploits its resources excellently and comes out with a larger value of its inputs. (3) Effectiveness: can be explained as the degree to which a company or organization is successful in achieving its goal. (4) Financial Viability: can be explained as how viable an organization was; in both the short and long term period.

III. RESEARCH QUESTIONS

From the foregoing discussions, various issues regarding the challenges and significance of information quality and data quality are raised. These issues are translated into research questions as follows:

1. What is the relationship between information quality in AIS and the organizational performance among commercial and Islamic banks in Jordan?
2. What is the relationship between data quality in AIS and the organizational performance among commercial and Islamic banks in Jordan?
3. How important is the adoption of AIS among commercial and Islamic banks in Jordan with the view to meeting its strategic goals and enhance performance?

IV. RESEARCH OBJECTIVES

The main objective of this study is to examine the strategic role of information quality and data quality in enhancing organizational performance. Other specific objectives include the followings:

1. To identify the relationship between information quality in AIS and organizational performance among commercial and Islamic banks in Jordan.
2. To identify the relationship between data quality in AIS and organizational performance among commercial and Islamic banks in Jordan.
3. To measure the significance of adopting AIS as a strategic tool for improving the organizational performance among commercial and Islamic banks in Jordan.

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V. SOURCE AND TECHNIQUE OF DATA COLLECTION

The population of this research are the assistant branch managers of commercial and Islamic banks in Jordan. The rationale for selecting the assistant branch managers is that the study is focused on getting first-hand opinions from the concern authorities irrespective of their managerial role. In addition, it is reported that the assistant managers are responsible for handling the effective operations of AIS in their various financial institutions. To further ease the estimation procedures, proportionate stratified random sampling method is employed as a sampling technique with the view to capturing the effects of all the selected 16 commercial and Islamic banks in Jordan. Data required for the study were obtained using a structured question-form survey. An overall total of 600 questionnaires were distributed among the selected 16 commercial and Islamic bank, but only 250 were found in usable condition. The collected data is effectively analyzed using the Partial Least Square Structural Equation Modeling (PLS- SEM 3). In measuring the estimated model, quality criteria of the model is assessed and then the structural model is examined while the formulated hypotheses are tested accordingly. The results and other generated outputs from the PLS-SEM are further utilized to draw verification and conclusions on the causal relationship between the study variables.

H1: There is a significant, positive relationship between information quality and Organizational performance.

H2: There is a significant, positive relationship between data quality and organizational Performance.

VI. EMPIRICAL RESULTS

This study adopts the PLS SEM as a technique for analyzing the collected data. To begin the estimation process, PLS measurement is analyzed to examine the reliability and validity of the data. Other criteria consist of Cronbach alpha values, item loading, Average Variance Extracted (AVE) values, composite reliability and also discriminant validity. Available information presented in Table 1.1 shows the estimated values of all the criteria. As hitherto, this study utilizes the Information Quality (IQ) and Data Quality (DQ) as the independent variables while Organizational Performance (OP) as the dependent variable.

Table 1.1: PLS Measurement Model Output

Construct	*Cronbach alpha*	*Composite Reliability*	*Average Variance Extracted (AVE)*
Information Quality	0.947	0.954	0.632
Data Quality	0.938	0.951	0.763
Organization Performance	0.938	0.946	0.555

In this particular research, reliability test is conducted and assessed using the Cronbach alpha values. As observed from Table 1.1, the Cronbach alpha values for the constructs are; 0.947 for information quality, 0.938 for data quality and 0.938 for organizational performance. Since all the Cronbach alpha values are above 0.7, it implies the existence of strong reliability among the coefficients (Nunnally & Bernstein, 1994). Furthermore, Composite Reliability (CR) is equally examined, and given the acceptable level of CR as 0.7; the results of these constructs are all above 0.9; hence the data proved good internal consistence (Hair et al, 2010). In addition, Convergent validity is also measured to find whether or not the items indicate the constructs. For this research, convergent validity was examined by assessing the rates of items loadings and also average variance extracted (AVE) values.

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Conventionally, the decision criterion for the item loading is 0.60 (Hair et al., 2006). As shown in Figure 1.1 (see the appendix), all the estimated items loading are above 0.60. This indicator level of convergent validity is recommended and proposed in the literature by (Bagozzi & Yi, 1988). Given the decision criterion of AVE, all the estimated AVE rates for the constructs are above the minimum threshold level of 0.5. With these empirical findings, the study concludes that the AVE and the items loading are sufficient to validate the data.

VII. DISCRIMINANT VALIDITY

The discriminant validity for the constructs is also examined in this study using the smart PLS 3.0 software. As presented in Table 1.2, the estimation of discriminant validity brings the end of the estimation process. As supported by Compeau, Higgins and Huff (1999), the combined average variance between each construct and its actual indicators is required to be higher than the shared variance between the construct and other constructs. While the AVE is more than the estimated correlations among each pair of constructs, the discriminant validity is therefore established. Moreover, the measurement model for the constructs demonstrates a strong discriminant validity since the square root of the AVE for each and every construct is greater than its correlation to other factors.

Table 1.2: Discriminant Validity

Construct	***Data Quality***	***Information Quality***	***Organization Performance***
Data Quality	0.874		
Information Quality	0.712	0.795	
Organization Performance	0.504	0.664	0.745

VIII. PREDICTIVE RELEVANCE (Q^2)

As the estimation procedure continues, the predictive sample relevance technique (Q^2) is also evaluated suing the smart PLS 3. As reported by Chin (1998), the Q^2 values of 0.02, 0.15 and 0.35 indicate small, medium as well as large predictive relevance. For this study, the estimated Q^2 value is found to be 0.240. This implies the presence of a good predictive relevance, hence desirable.

In the structural model of PLS analysis, formulated hypotheses were tested and the results are analyzed. In this, the path coefficient, t-statistics, average estimate as well as the errors are taken into account. Table 1.3 indicates the structural model for hypothesis testing as follows:

Table 1.3: Structural Model Output

Relationship	*Hypotheses*	*Path Coefficient*	*T-value*	*P-value*	*Level of Significance*
DQ -> OP	H1	0.063	1.002	0.317	**
IQ -> OP	H2	0.620	8.992	0.000	***

Results presented in Table 5.4 shows the estimated output of hypotheses testing according the study research questions. Each formulated hypothesis is evaluated and justified with consistency from the literature. For the formulated Hypothesis one H1: There is a significant, positive relationship between data quality and organizational performance. The outcome of this hypothesis is not supported because the resultant path coefficient has a negative value of 0.063 with a corresponding p-value of 0.317; hence not significant at any level. This study found out that data quality did not influence organizational performance, these finding were supported by (Ali, Bakar, & amp;

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Omar, 2016) for the formulated Hypothesis H2: There is a significant, positive relationship between information quality and organizational performance. This hypothesis obtained a powerful support since the results from Table 1.3 show the path coefficient value of 0.620 with a positive sign and the corresponding t- statistic value of 8.992 (P<0.00) significant at 5% level. It is therefore established and affirm that information quality positively affects the organizational performance.

Therefore, the study concludes that data quality is negatively related with organizational performance and it is found to be insignificant in the model estimation. This study found out that information quality influence organizational performance, these finding were supported by (Argyropoulou, Reid, Wilkins & amp; Loannou, 2015: Ali, Bakar, & Omar, 2016: Al-Mamary, Shamsuddin, Hamid & amp; Aziati, 2014). Information quality is considered as a key factors affecting AIS and IS acceptance and improve the organizational performance.

The study found out that use AIS can influences and improve organizational performance.

IX. Conclusion and Implications

This study examined the effects of information quality and data quality on the organizational performance among commercial and Islamic banks in Jordan. The further evaluates the significance of adopting AIS and its strategic importance among the finical institutions. The results established that financial institutions particularly the banking sector should take into consideration the significance of information quality & data quality in AIS. What this means is that, the information quality of AIS provides an essential role towards improving the organizational performance. In particular, information quality plays a vital and crucial role in improving the organizational performance at the very least within the designed framework of bank institutions in Jordan. Findings from this study is beneficial among banking sector in assisting and prioritize the company's activities towards meetings the desires and demands of its respective institutions. For this reason, organization's management and other stakeholders should recognize the importance of information quality with the view to ensuring that the organizations remain competitive and vibrant. There is need to harmonize and standardize the implementation of AIS in the banks to create uniformity and assist the regulatory authorities in their supervisory roles. Poor management of AIS due to technical challenges, communication problems, and poor training and maintenance culture should be overcome by these financial institutions otherwise it may results into low productivity and the loss of confidential data and records. Furthermore, high priority and more emphasis should be placed on the continuous improvement of AIS among the banks, as that will enable them to keep pace with technological developments within the financial sector. The outcome of this approach will also reflects positively on the bank's administrative functions particularly in the areas of planning and decision making. Subsequently, further comprehensive researches are encouraged to explore the role of organization culture as a moderator in the relationship between information quality as a success factor in AIS and the organizational performance. Additional research should evaluates the reasons why some financial institutions in Jordan are yet to fully adopt the AIS. Each of these suggestions could assist the financial institutions in Jordan to improve on their competitiveness in today's business environment.

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APPENDICES

Appendix 1: The Measurement Model

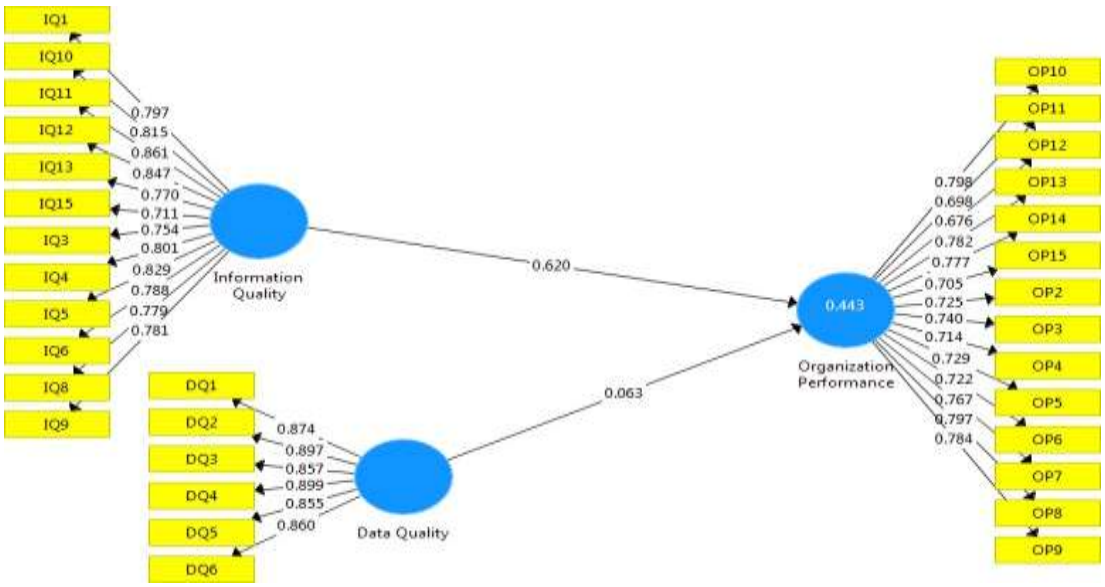

Figure 1.1: Testing Measurement Model of PLS 3 Approach

Appendix 2: Assessing the Structural Model of PLS 3

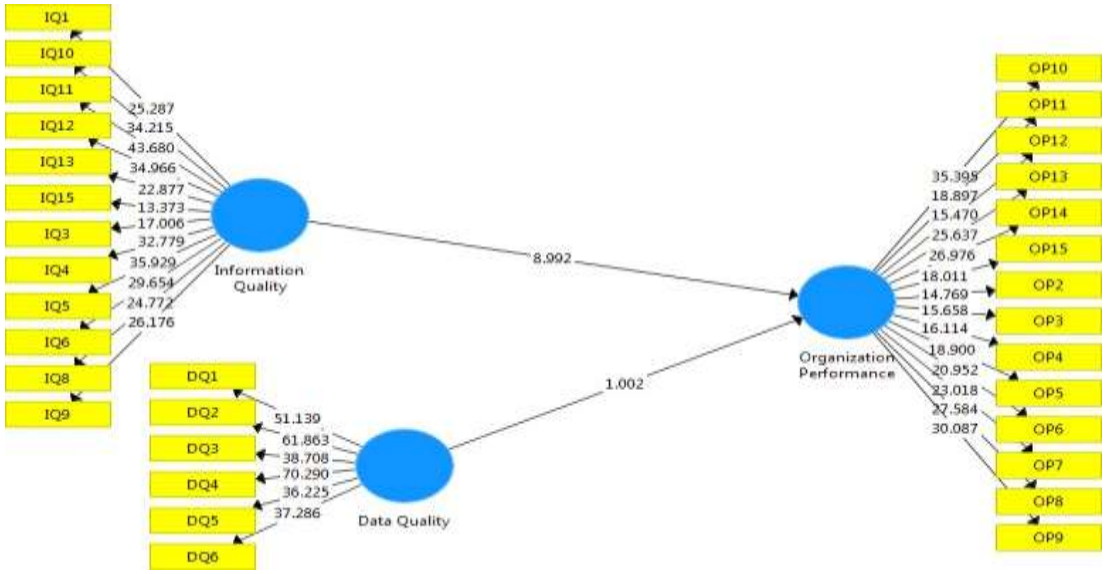

Figure 1.2: PLS Structural Models

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