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The relationship between Information Quality and Organization Strategic Benefit: an Applied Study on Commercial Banks

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Abstract

This research attempted to study and identify the relationship between information quality and organizational strategic benefit, to measure the level of awareness about information quality different dimensions in the commercial banks, and finally provide recommendations regarding information quality role in improving the organizational strategic benefit. In order to achieve the study objectives, and to conduct the research in a systematic approach, a conceptual framework was developed. The key factors of the conceptual framework were proposed in the following factors of information quality: dependability (timeliness and security) and usability (believability, accessibility, ease of operation, reputation, and value added).

The primary data had been analyzed by multiple regression analysis. The results of the current study indicate that there is a general relationship between information quality and the organization strategic benefit in the commercial banks, and there is a relationship between dependability (timeliness / security) and both the alignment between organizational goals and the information systems, and the improvements in customer relationships. Furthermore, there was a relationship between (believability and reputation) and both the alignment between organizational goals and the information systems, and the improvements in customer relationships. Whereas, there was no relationship between (accessibility, ease of operation, and value added) and both the alignment between organizational goals and the information systems, and the improvements in customer relationships. Researchers are also encouraged to conduct research similar to this study, but using the product aspects of information quality so as to reveal additional relationships that are not evident in this research. Future researches are encouraged to examine the relationship between information quality and organizational strategic benefit in non-for profit companies.

Keywords: Information quality, organizational strategic benefit, commercial banks.

1. Introduction

As modern society become increasingly information driven, the capability and maturityof an organization to manage the quality of its information can mean the differencebetween success and failure. Information quality is becoming the competitive advantagefor many companies. In banking when applied to millions of transactions can add significantly to the bottom line (Kahn et al. 2002).

Information quality is considered one of the key determinants for the quality of an organization's decisions and actions (Slone, 2006). Therefore, information becomes more often a critical resource to organizations. In addition, the past decade presents the upcoming of information systems and technologies that make it possible for managers to use real-time data from the marketplace when making decisions. Furthermore, data warehouses are growing and the direct access of information from various sources by information users is improving rapidly (Lee, Strong, Kahn, & Wang, 2002). These three trends increase the need for high-quality information in organisations.

From this point Wang et al. (1995) indicated that the efficiency of business processes relies on quality information, and the organizations should treat information not only as a subsidiary element, but also as a

product for managing and improving their processes. Kahn et al.(2002) contributed the information quality literature by giving the description of “the characteristics of information to meet or exceed customer expectations” and “information conforming to specifications or requirements”.On the other hand poor information quality causes business processes hinder and catastrophic consequences. Ge,(2009) summarized some of these consequences as customer dissatisfaction, increase in operational costs, reduced capacity and less effective decision making.

One of the major factors in competitive environment is knowledge management and companies for achieving the competitive advantages should concentrate in its information quality.information quality has a vital role in business operation and financial and non-financial aspect such asdecision making as a big role of management. An organization depends on quality of its information for effective operations and decision-making. Tactical and strategic decision-making is especially dependent on the quality of the data used in the decision making process; "The right quality and uniformity are foundations of commerce, prosperity and peace" (Deming, 1990). The correct decision making will lead to a strategic benefit for an organization.

Slone, (2006), explained poor information quality in terms of its impact on operations, impacts at the tactical level and strategic impacts. Wang et al.(1995) indicated the importance of information quality within management responsibilities, operation and assurance costs, research & development, production, distribution, personnel management and legal function. So, what does the quality of information that has so many effects on business operations mean?.

There is evidence that measurements of information quality can be used to predict organisational outcomes (Slone, 2006).However, few researches addressed this relation in literature. Accordingly, in this paper, an investigation was held to explore the relationship between information quality and organization strategic benefit in the Jordanian commercial banks.

The main question for this research is: "How to enhance the organization strategic benefit through the quality of information in the commercial banks?"This primary question will be answered through multiple secondary questions:

1. What aspects of information quality exist in the commercial banks?

2. What is the nature of the relationship between management perception of information quality improvement and the strategic benefit in the commercial banks?

The aim of this research is to introduce the information quality dimensions and understand their affection in the strategic benefit of an organization. Objectives for this research can be summarized as follows:

1. Studying and identifying the nature of relationship between information quality and organization strategic benefit.

2. Showing the level of information quality awareness that has been reached in the studied organization.

3. Providing recommendations and suggestions that might contribute to enhance information quality role in improving organization strategic benefit.

2. Literature Review

2.1 Information quality:

We have been described as an "information" society. Why we haven’t been called "knowledge" society, an "intelligence" society, an "understanding" society, or a “communication" society?.The use of the word "information" as a descriptive adjective has been used to the point that leads to the emergence of several terminologies such as: information age, information society, information economy, information millennium, information revolution. But what does this word "information" mean in these structures and how did it become the new keyword of our social formation’s self-definition?.

According to the Oxford English Dictionary, the earliest historical meaning of the word "information" in English was the act of informing, or giving form or shape to the mind, as in education, instruction, or training. The original meaning of the word "information" derived from the Latin, informare, which means "to put into form". "Informing" therefore carries the sense of "imparting learning or instruction" or more generally conveys the sense " to tell (one) of something". Thus, "information" refers to the action of informing or to that which is told (Machlup, 1983).

The emergence of the information quality concept is referred to the early stages of using computers (Slone, 2006). Consciousness of information quality as an issue emerged when researchers gradually developed an

awareness of the need to measure data quality, and began the work of convincing others of that need (Slone, 2006).

Data quality and information quality are often used interchangeably. However, there is tendency to use data quality to refer to technical issues and information quality to refer to non-technical issues (Madnicket et al, 2009). Data can be regarded as a product that is produced by organisations through a data manufacturing process (Madnicket al. 2009).Information is said to consist of facts and data, which are organised for a particular purpose; information quality is a major criterion for measuring the success of an information system, and decision quality is a function of information quality (Jung 2004). From this perspective, the term information can be used to refer to both data and information (Strong, Lee, & Wang, 1997). However, the reverse is not always applicable; that is, data collected and stored in a data warehouse cannot be considered information as these data are not yet organised and processed to give meaning for a recipient. Wang urges organisations to manage information as they manage products if they want to increase productivity. Wang finds an analogy between quality issues in product manufacturing and those in information manufacturing and asserts that information manufacturing can be viewed as processing system acting on raw data to produce information products.

While there is no single definition of Information quality, it is often defined as the degree of usefulness of information or its "fitness for use" for a particular task or activity system [Slone, 2006] and this definition is widely adopted in the quality literatures [Wang and Strong ,1996]. From the viewpoint of information consumer, Wang and Strong [1996] define information quality as the information that is fitness for use by information consumers. They argue that ultimately it is the consumer who will judge whether or not an information product is fitness for use.

The "fit-for-use" paradigm has been embraced by researchers for a number of reasons. Firstly, it puts into common language the action of information quality while still remaining enigmatic and relative like the concept it is used to define. More importantly though, it gives information quality a context (Strong et al., 1997a); that is; it suggests that information quality cannot be defined and assessed outside of the reason for which it exists.

However, information consumers are not very capable of finding errors in information and altering the way they use the information [Wang, Storey & Firth, 1995]. So from the data perspective, information quality can be defined as the information that meets the specifications or requirements [Wang, Storey & Firth, 1995]. With the two major definitions of information quality, information quality research is divided into two communities: management and database [Ge, 2009]. By combining the two perspectives, Slone (2006) points out that information is of high quality if it is free of defects and possesses desired features.

One of information theories is information theory, developed primarily by Claude Shannon and his colleagues at Bell Labs in the 1940s (Shannon & Weaver, 1949). Information theory,

Shannon and Weaver (1949) noted that the effect of information on its recipient (user) can be measured at a technical level, a semantic level, or an effectiveness level. The technical level relates to how well a system transmits the symbols of communication, the semantic level concerns the explanation and interpretation of meaning by the receiver relative to the intentional meaning of the sender, and the effectiveness level concerns how well the meaning delivered to the receiver affects his/her actual behaviour. This information theory was initially the result of a very practical discussion of certain basic problems such as: How is it possible to define the quantity of information contained in a message or telegram to be transmitted? How does one measure the amount of information communicated by a system or telegram signals? How does one compare these two quantities and discuss the efficiency of coding devices? (Slone, 2006).

Mason (1978), extended Shannon and Weaver's model by labelling effectiveness as influence, and represented the levels as a series of events that take place at the receiving end of an information system. According to Mason (1978), there are five stages to the process of communication: the production of information, the product itself, the recipient of information, the influence it has on the recipient, and the influence information has on the performance of the system. Mason explains that the effectiveness level includes influence of the message on the recipient's (user's) behaviour. Thus, evaluation and application of information may effect a change in the user's behaviour.

Delone and Mclean's model takes Shannon and Weaver's hierarchy of levels as the foundation for modelling System Quality and Information Quality as drivers of User Satisfaction. Then Delone and Mclean applied Mason's arguments to model Use and User Satisfaction (response to use of IS output) as antecedents of Individual Impact (effect of information on behaviour) and Organisational Impact. Deleon and Mclean ascribed a category to each stage, as represented in table 1 A core characteristic of the Delone and Mclean model is that

Information quality is considered as an information systems success variable, and is incorporated in their information systems success model.

Table 1 Delone and Mclean categories of IS success (1992: 62)

Communication problems (Shannon and Weaver, 1949)	**Stages of communication (Mason, 1987)**	**Success category Delone and Mclean (1992)**
Technical level	Production	System quality
Semantic level	Product	Information quality
Influence level	Recipient	Information use
	Influence on Recipient	User satisfaction Individual impact
	Influence on system	Organisational impact

Source Delone and Mclean (1992: 62)

2.2 Information quality frameworks

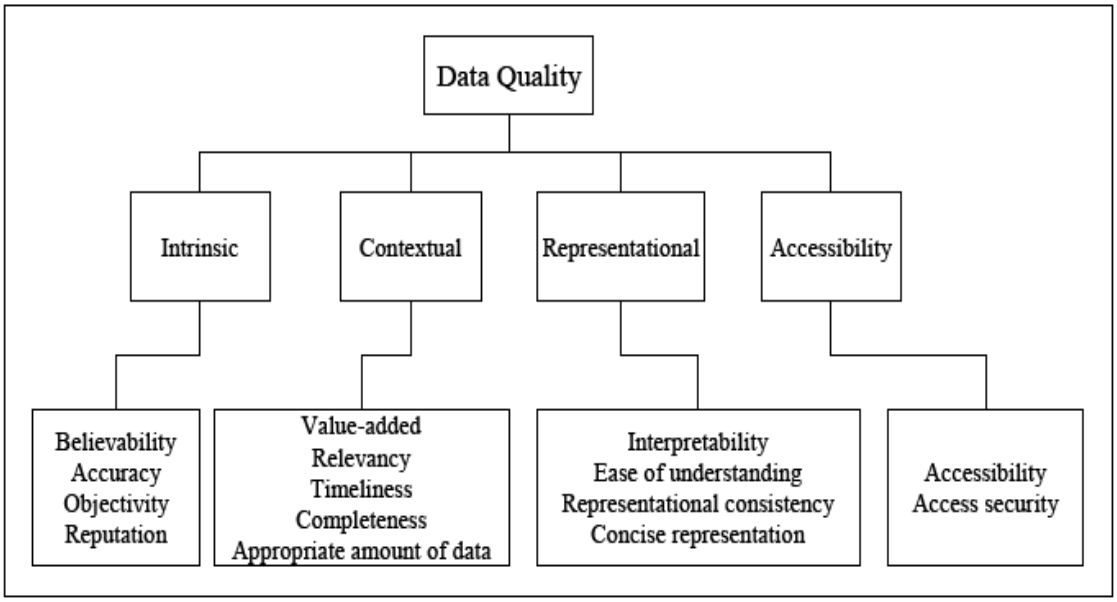
Despite the sizeable body of literature available on information quality, relatively few researchers have tackled the difficult task of quantifying conceptual definitions of its various constructs.

An early framework for characterizing data quality research was presented in Wang et al. (1995). It was derived from ISO 9000 based on an analogy between physical products and data products. The framework consisted of seven elements that impact data quality: (1) management responsibilities; (2) operation and assurance costs; (3) research and development; (4) production; (5) distribution; (6) personnel management; and (7) legal function. Data quality research in 123 publications up to 1994 was analyzed using this framework.

Different information quality was observed but they choose the most commonly occurring, those dimensions were accuracy, timeliness, completeness, and consistency. Some dimensions occurring less frequently included credibility and traceability. Among Wang et al. findings, they noted that "previous research has focused primarily on the accuracy requirements". They also noted, data quality is a multi-faceted concept that includes not only accuracy, more research is needed on the other dimensions as well, and they called for research on an overall data quality metric (Wang, Storey& Firth, 1995). The ISO 9000 concept of "Specification and Design" translates into the requirement to precisely determine different quality aspects of data, such as acceptance and rejection criteria, consistent with management policy, and subject matter to management processes. Adopting a customer perspective similar to the one advocated by Juran ,Wang et al. noted, the "use of the term ‘data product’ emphasizes the fact that the data output has value that is transferred to customers, whether internal or external to the organization" (Wang, Storey & Firth, 1995).

To assess the quality of organisational data, Wang and Strong (1996), defined a data quality framework that contained 20 quality dimensions. These were later reduced to 15 and assembled into four categories, ; those categories are: intrinsic, contextual, representational, and access. The framework has been validated across a range of industrial and government locations. Wang and Strong (1996) suggest several ways in which this hierarchical framework can be applied, including the use of a questionnaire to measure perceptions of data quality, development of quality improvement methods to improve data quality and as a checklist during data requirements analysis. Figure 1 illustrates Wang and Strong’s model 1996 of data quality as a multi-dimensional construct. Not to mention that the number of data quality attributes and the arrangement of such attributes within different categories differs from researcher to another, but this model has got a big support among the several quality researchers.

Figure 1.Data quality as a multi-dimensional construct (Wang & Strong, 1996).



Source: Richard Y.WANG and Diane M.STRONG, "Beyond Accuracy: What Data Quality Means to Data Consumers?", Journal of Management Information Systems, Vol. 12, No.4. 1996, p.20

Kahn et al. (2002) acknowledged that information quality can also be conceptualized as a service. A service, unlike a product, "is perishable, for you cannot keep it; it is produced and consumed simultaneously". In addition to being aware of the service aspect of information quality, Kahn, Strong, and Wang identified additional categories to group quality dimensions, they depend on the general quality literature to specify their two categories. Their two categories are "conformance to specifications" and "meeting or exceeding customer expectations". By combining these two characterizations with the product and service aspects of information quality, they developed a significant extension of the Wang and Strong (1996) model, called the "product and service performance model for information quality (PSP/IQ)" (Kahn, Strong & Wang, 2002). The PSP/IQ model is represented as a two-by-two grid, this model is shown in Figure 2 (Kahn, Strong & Wang, 2002).

Figure 2.The PSP/IQ model.

	Conforms to Specifications	**Meets or Exceeds Consumer Expectations**
Product Quality	Sound Information • Free-of-Error • Concise Representation • Completeness • Consistent Representation	Useful Information • Appropriate Amount • Relevancy • Understandability • *Interpretability* • *Objectivity*
Service Quality	Dependable Information • Timeliness • Security	Usable Information • Believability • Accessibility • Ease of Manipulation • Reputation • Value-Added

Source: Kahn, B. K., Strong, D. M., and Wang, R. Y. (2002). Information quality benchmarks: Product and service performance. Communications of the ACM, 45(4), 184-192.

Product quality and service quality are represented in the figure as rows, and specification versus expectations make up the columns. As shown, the various information quality dimensions from the Wang and Strong (1996) model map onto this two-by-two grid, and each of the quadrants has been assigned a short, descriptive name. On the product side, the product-conformance quadrant is referred to as "sound information" which means that the characteristics of the information supplied meet information quality standards and the product-expectations quadrant represents "useful information" which means that the information supplied meets information consumer task needs. On the service side, the service-conformance quadrant represents "dependable information" which means that the process of converting data into information meets standards with "usable information" which

means that the process of converting data into information exceeds information consumer needs making up the service expectation quadrant. Illustrations for the different dimensions of information quality had been stated by Kahn, Strong, and Wang as follows:

- Accessibility: the extent to which information is available, or easily and quickly retrievable.
- Appropriate Amount of Information: the extent to which the volume of information is appropriate for the task at hand.
- Believability: the extent to which information is regarded as true and credible.
- Completeness: the extent to which information is not missing and is of sufficient breadth and depth for the task at hand.
- Concise Representation: the extent to which information is compactly represented.
- Consistent Representation: the extent to which information is presented in the same format.
- Ease of Manipulation: the extent to which information is easy to manipulate and apply to different tasks.
- Free-of-Error: the extent to which information is correct and reliable.
- Interpretability: the extent to which information is in appropriate languages, symbols, and units, and the definitions are clear.
- Objectively: the extent to which information is unbiased, unprejudiced, and impartial.
- Relevancy: the extent to which information is applicable and helpful for the task at hand.
- Reputation: the extent to which information is highly regarded in terms of its source or content.
- Security: the extent to which access to information is restricted appropriately to maintain its security.
- Timeliness: the extent to which the information is sufficiently up-to-date for the task at hand.
- Understandability: the extent to which information is easily comprehended.
- Value-Added: the extent to which information is beneficial and provides advantages from its use.

2.3 Information Quality and Organization Strategic Benefits

In describing the role of information systems and technology in the organization's competitive activities, Porter and Millar said "every value activity has both a physical and an information-processing components" (Porter & Millar, 1985). Poor information quality has adverse effects on organizations at operational, tactical, and strategic levels(DeLone& McLean, 2003). At the operational level, customers will be dissatisfied and employees will lack job satisfaction because ofinaccurate or incomplete information. At the tactical level, the quality of decision making will be adversely affected by irrelevantinformation. Selection and execution of a sound business strategy will become difficult because of inaccurate or delayedinformation. On the other hand, high information quality in terms of information content (i.e., accuracy,completeness, relevance to decision making) can lead to high organizational impact in terms of market information support(i.e., anticipating customer needs) and internal organizational efficiency (i.e., high-quality decision making). Slone (2006) examine the relationship between information quality and organizational outcomes, with information intensity hypothesized as a moderator of that relationship. The study revealed evidence that the relationship between the quality of information and organizational outcomes is systematically measurable, in that measurements of information quality can be used to predict organizational outcomes, and that this relationship is, for the most part, positive.

3. Research model and Hypotheses

From a theoretical point of view, several frameworks have been put forth for managing information quality in the organization such as the Product and Service Performance model for Information Quality developed by Kahn et al. in 2002. From a practical point of view on the other hand, various approaches to applying knowledge about information quality management in an organizational context have been developed. In spite of these advances, there has thus far been very little understanding from either a theoretical or practical perspective of the relationship between information quality improvement activities and the strategic benefit for the organizations. Consequently, a need was identified for this research to provide a common conceptual framework for evaluating the relationship between information quality and organizational strategic benefit.

To identify the relation between the information quality and organisation strategic benefits and how they affect each other; two types of variables were stated in this research: Independent variables measuring some aspects of information quality, and dependent variable measuring the organization strategic benefit.
In this research, Information Quality is defined as a multi-dimensional construct that characterizes the extent to which information is fit for use for a particular purpose. In line with Kahn et al. (2002) Information quality is measured by two main characteristics: dependability of information and the usability of information. Dependable information refers to Information that is delivered in a sufficiently timely fashion and a sufficiently secure manner to conform with specifications associated with its intended use.Usable information defined as

Information that meets or exceeds the expectations of the consumers of that information with respect to its appropriateness of amount, interpretability, objectivity, relevancy, or understandability.
In this research, the variable of primary interest (the dependant variable) is the strategic benefit of an organization. Mirani and Lederer on 1998, proposed that the strategic benefit of an organization includes: Competitive Advantage; Alignment between the organizational goals and the information systems; and Customer relationship improvements. In this study we will select only two out of the three strategic benefits of the organization; the alignment between business and the information systems and the customer relationship improvements.

Logically, one can argue that the higher the dependability in information quality, the more likely the organization will achieve a better strategic benefit among its different stakeholders. The more sufficient information to the work and the access to it is sufficiently restricted from unauthorized access, the more beneficial results in the organization strategic benefit.Also, the higher the usability in information quality, the more likely the organization will gain the best strategic benefit. The more information is credible, retrievable, easy to aggregate, in a good presentation, and adding value to the work, the more beneficial results in the organization strategic benefit.

These hypothetical relationships are diagrammed in the figure 3.

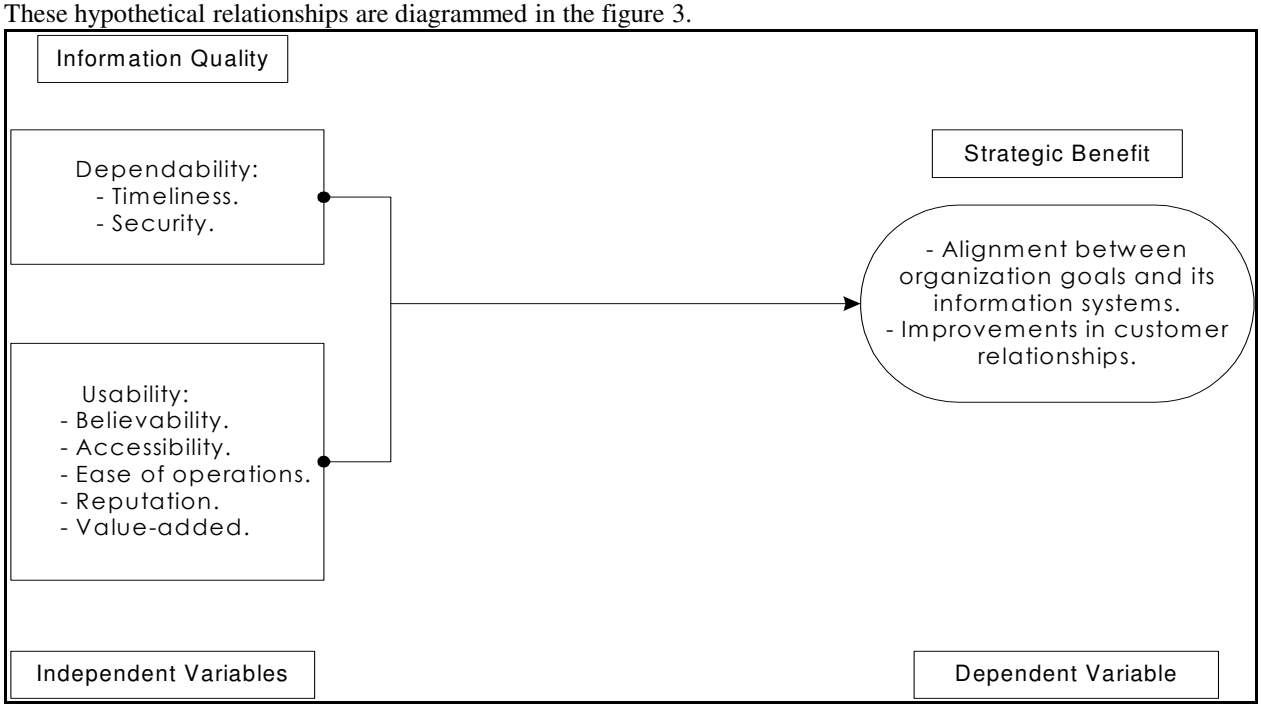


Figure 3.The theoretical model of this research.

Based on the above conceptual framework, there are four hypotheses constructed in this research:
H_0: There is no statistically significant relationship between information quality and the strategic benefit of the organization.

H_0.1: There is no statistically significant relationship between the dependability of information and the alignment between organization goals and information systems in that organization.

H_0.2: There is no statistically significant relationship between the usability of information and the alignment between organization goals and information systems in that organization.

H_0.3: There is no statistically significant relationship between the dependability of information and the improvements in the customer relationship.

H_0.4: There is no statistically significant relationship between the usability of information and the improvements in the customer relationship.

4. Research Methodology

4-1 Population and sample

The population of study consisted of employees of the central bank of Jordan and all commercial banks licensed and working in Jordan, and these comprise 24 banks. Since this study addresses the relationship between information quality and the organization strategic benefit, strategic planning is of particular importance in this study. Therefore, the levels of strategic planning represented by the three levels of management that take part in such strategic planning was the focus of primary data collection. From the sampling frames of the 24 banks and the central bank of Jordan, a total of 120 subjects were chosen as samplesas follows:

1. The top management level which is responsible for the strategic planning of the organization.
2. The middle management level which is responsible for the tactical planning in order to implement the strategic planning.
3. The first line management level which is responsible for the operational day to day planning and employees who implement such operational plans.

The total number of responses received in response to the invitations was 100 questionnaires out of 125 invitations.The response rate per management level were:

1. 14.3% for the top management level (distributed questionnaires were 7 and returned were 1).
2. 80% for the middle management level (distributed questionnaires were 10 and returned were 8).
3. 84.3% for the first line employees (distributed questionnaires were 108 and returned were 91).

4.2 Measures

A questionnaire was used to obtained data across four dimensions consisting of: 1) Dependability; 2) Usability; 3) Alignment between organizational goals and the information systems; and 4) Improvements in the customer relationships. The survey items were based on existing items from validated instruments found in the research literature,

For this research, the independent variables are used to measure the service aspects of information quality. The service aspects of information quality as it was proposed by Kahn, Strong, and Wang on 2002 through their development of the Product and Service Performance model for Information Quality consists of two major concepts:1) Dependability; 2) Usability. the two independent variables measured by breaking the variablesinto dimensions, facets, or properties that are detailed in the following table:

Table 2: Operational definition of Information Quality/ Usability

Variable Property	**Property meaning**	**Expressing the property**
Dependable information	refers to Information that is delivered in a sufficiently timely fashion and a sufficiently secure manner to conform with specifications associated with its intended use	
1. Timeliness	How much information is sufficiently up-to-date?	• This information is sufficiently current for our work. • This information is sufficiently timely. • This information is sufficiently up-to-date for our work.
2. Security	How much information is protected against unauthorized access?	• This information is protected against unauthorized access. • Access to this information is sufficiently restricted. • This information can only be accessed by people who should see it.
Usable information	relevant to the consumer's task and sufficient to support decision making	
1. Believability	Is the information trustworthy?	• This information is believable. • This information is trustworthy. • This information is credible.
2. Accessibility	Is the information easily accessible when needed?	• This information is easily retrievable. • This information is easily accessible. • This information is easily obtainable. • This information is quickly accessible when needed.
3. Ease of operation	Is information easily manipulated to meet business needs and can be combined with other information?	• This information is easy to manipulate to meet our needs. • This information is easy to aggregate. • This information is easy to combine with other information.
4. Reputation	Does information come from a good source and has a good presentation?	• This information has a good representation. • This information has a reputation for quality. • This information comes from good sources.
5. Value added	How much the information add a value to the task or related work?	• This information provides a major benefit to our work. • This information will increase the value of our work when using it. • This information adds value to our tasks.

The dependent variable is that variable strategic benefits measured by two dimensions (Mirani and Lederer. 1998):

1. Alignment between the organizational goals and the information systems.
2. Customer relationship improvements.

Alignment between business and the information systems: means a well alignment between the stated organizational goals and the quick response to the internal or external change. Improvements in the customer relationships will be measured in terms of offering new and better services and products to customers.

Table 3: Operational definition ofstrategic benefit

Variable Property	Expressing the property
organisation strategic benefit	
Alignment between business and information systems	• Align well with the stated organizational goals. • Help establish useful linkage with other organizations. • Enable the organization to respond more quickly to change.
Improvements in the customer relationships	• Improve customer relations. • Provide new services or products to customers. • Provide better services or products to customers.

The questionnaires were pre-tested and distributed to members of the postgraduate students and academics who are in the information systems area of specialization. The questionnaires were also translated to Arabic to cater for banks staff.
The respondents were asked to critically evaluate the questionnaire with regards to its objective, contents, clarity and ease of completion, and they also assist in translation and validating the Arabic version of the survey. After the pre-testing stage, a modified questionnaire was developed for the purpose of conducting a pilot study. The pilot study was carried out in three banks .Ten questionnaires were distributed to each bank with high volume of check clearing. About 20 questionnaires were collected and they were found reliable. Prior to the actual fieldwork, the questionnaires were refined and rephrased accordingly.

4.3 Hypotheses testing Results

In order to test the study hypotheses formulated, a series of simple and multiple linear regression analyses was conducted to calculate direct and indirect path coefficients (Beta coefficient). Simple linear regression is a useful statistical method for exploring the relationship between dependent and independent variables. In social and natural science research, linear regression is widely used mainly for its simplicity and ability for producing output quickly. Hypotheses are considered supported when path coefficients (Beta) are significant at the 0.05 level. The SPSS 11.5 package for Windows was used for all statistical computations. The path coefficients were calculated using simple linear regression technique for the following:

1- Independent variables (information quality) separately regressed with the dependent variable (strategic benefit). This represents H0.

2- Using (dependability of information and the usability of information) as independent variables and regression was run for dependent variable (alignment between organization goals and information system). Those represent (H0.1 and H0.2).

3- Using (dependability of information and the usability of information) as independent variables and regression was run for dependent variable (improvements in the customer relationship) .Those represent (H0.3 and H0.4). The multiple regression results for the path associated with the variables were presented in Table 3.

For testing H0 a simple linear regression was conducted to check the effects of information quality on strategic benefit. The regression analysis shows that 21 percent of the variance in strategic benefit is explained by information quality (R^2 =.210). The regression model is significant in explaining strategic benefit; the t-tests of is significant ($p<.05$). These results indicate partial support for hypothesis H0.

For examining H0.1 and H0.2, a regression analysis was performed to check the effects of dependability of information and the usability of information on alignment between organization goals and information system. The results indicated dependability of information and the usability of information both were predictor variables. The regression analysis shows that 46 percent of the variance in alignment between organization goals and information system is explained by dependability of information (R^2 =.460) ($p < .05$). The t-tests of Timeliness and Security factors in explaining alignment between organization goals and information system is significant ($p<.05$) Timeliness ($t = 6.452$), Security ($t = 3.658$), The standardized Beta values for Timeliness (0. 516) and for Security (.292) also indicate that Timeliness has more impact than Security. Overall the results indicate support for the hypothesis H0.1

The regression analysis shows that 38 percent of the variance in alignment between organization goals and information system is explained by information usability (R^2 =..376). ($p < .05$). The t-tests of believability; Accessibility; Ease of operation; Reputation; and Value added factors indicates that only believability (t = 3.029) and Reputation(t = 2.651) have significant impact ($p<.05$). The standardized Beta values for believability (.363) and for Reputation (.266) also indicate that Believability has more impact than Reputation. Overall the results indicate support for the hypothesis H0.2

The regression analysis shows 33 percent of the variance in improvements in the customer relationship is explained by dependability of information(R^2 =..333). ($p < .05$).

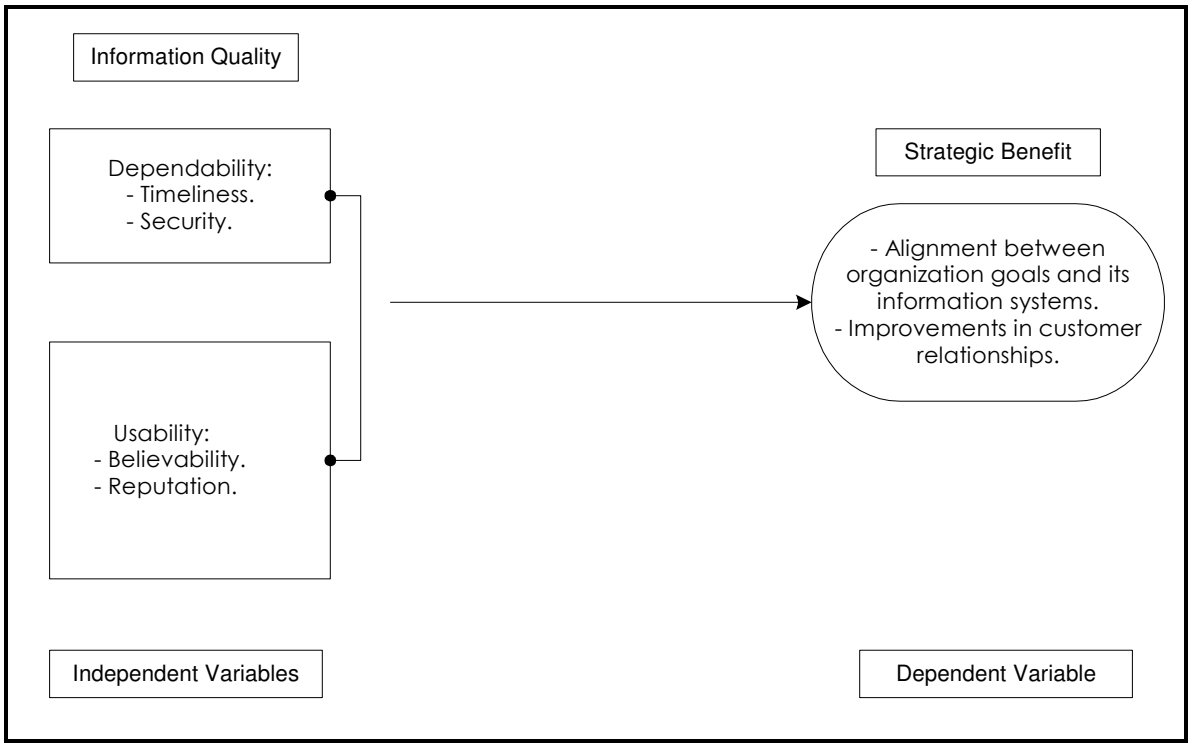
The t-tests of Timeliness and Security factors in explaining alignment between organization goals and information system is significant ($p<.05$) Timeliness (t = 3.551), Security (t = 4.311), The standardized Beta values for Timeliness (0.315) and for Security(.383) also indicate that Security has more impact than Timeliness. Overall the results indicate support for the hypothesis H0.3.

The regression analysis shows that 45 percent of the variance in improvements in the customer relationship is explained by information usability (R^2 =.454). ($p< .05$). The t-tests of believability; Accessibility; Ease of operation; Reputation; and Value added factors indicates that only Reputation(t = 2.693) has significant impact ($p<.05$). Overall the results indicate support for the hypothesis H04. Thus the findings of the regression models are illustrated in Exhibit 1.

Table 3: Regression analysis results for Hypothesis tastings

Hypothesis	Dependent variable	Independent variables	Dimension	B	R^2	t value	P	Result
H0	**strategic benefit**	information quality		.458	.210	5.078	.000	Accept
H0.1	**alignment between organization goals and information system**	dependability of information	Timeliness	.516	**.460**	6.452	.000	
			Security	.292		3.658	.000	
H0.2	**alignment between organization goals and information system**	information usability			.376		.000	Accept
			Believability	.363		3.029	.003	
			Accessibility	-.150		-1.282	.203	
			Ease of operation	.122		1.125	.264	
			Reputation	.266		2.651	.009	
			Value added	.151		1.548	.125	
H0.3	**improvements in the customer relationship**	dependability of information			**.333**		.000	Accept
			Timeliness	.315		3.551	.000	
			Security	.383		4.311	.000	
H0.4	**improvements in the customer relationship**	the usability of information			**.454**		**.000**	Accept
			Believability	.288		2.570	0.12	
			Accessibility	.092		.838	.404	
			Ease of operation	.111		1.097	.276	
			Reputation	.253		2.693	.008	
			Value added	.118		**1.288**	.201	

EXHIBIT 1 Empirical research model



5. Discussion, Conclusion, and Implication for Further Research

The empirical results of this research contribute to the strategy literature by representing that the quality of information has a quantifiable relationship to the quality of decisions as reflected in organizational outcomes. The recognition of the importance of this relationship traces all the way back to the earliest writings on institutional economics (Commons, 1931; Cranfill, 1940), yet retains its relevance in contemporary literature (DeLone& McLean, 1992, 2003; Porter, 1991; Porter & Millar, 1985). The results of this research also contribute to the information quality literature by representing that the quality of information has a systematically quantifiable relationship to the quality of decisions as reflected in organizational outcomes.

The study reveals that the dependability with its two dimensions (security and timeliness) has relationships with both dimensions of strategic benefit (the alignment between organizational goals and the information systems, and the improvements in customer relationships). Such results were not surprising since:

Timeliness information is needed to track the up-to-date information from different departments that is useful for giving the current status of bank performance, this will help the middle and top management to compare the current and planned goals and accordingly noticed any gap between the two early. This will give the management the opportunity to revise its plans and resources and achieve its organizational goals.

On the other hand, timely information help the management to gain the big picture about its customers and competitors and different stakeholders and so respond quickly to improve its customer relationships by updating its services for the benefit of its customers and offering newly services to comfort its customers.

Secure information helps in protecting any information from unauthorized access. Organizational goals are those goals that aim to achieve wealth and profit for organization stakeholders and so such goals consist the organization strategy. Organization strategy must be classified as confidential data for its effect on the competitive advantage for the organization, consequently protecting information is a main reason behind keeping the alignment between organization goals without any hesitation that competitors will gain the critical information and break such alignment.

On the other hand, secure information helps the organization to keep its customers loyal since their accounts and benefits will not distributed outside the organization.

The study results also reveals that the usability variable has mixed results, only two dimensions (believability and reputation) out of five dimensions have relationship with the strategic benefit variable. Other usability

dimensions (accessibility, ease of operation, and value added) have no relationship with the strategic benefit variable. Such results for believability and reputation were not surprising since :

1. Believable information is crucial for any business to achieve its goals and serve its customer. Any organization need to get trustworthy information to correctly establish its processes, delivering its services and responding quickly to its customer.

Trustworthy information help the organization to achieve the alignment in its business goals since this type of information when used make it possible for the organization to concentrate on achieving the goals rather than wasting the time in re-auditing the information.

On the other hand, credible information reduces the delay time in customers' requests and this will help the customers to be loyal for this company and improve the customer relationships.

2. Information with a good reputation is not less important than believable information since information with a good reputation is that information that come from a good source; a source that you can relay on without any hesitation of its correctness.

Information with a good reputation is well known for its high quality information, high quality information helps the organization to achieve its goals correctly from the beginning and improving the customer relationships by delivering quality services and amazing offers.

The negative results for accessibility, ease of operation, and value added can be explained as follows :

organization intentionally make it possible to access its information to maximize its security as much as possible. This is the reason behind the result that there is no relationship between accessibility and both the alignment between organizational goals and the information systems, and the improvements in customer relationships.

1. Ease of operation: as we can noticed from the hypothesis testing that there is no relationship between ease of operation and both the alignment between organizational goals and the information systems, and the improvements in customer relationships. This is not a surprising result because of two main reasons. First, organizations is not fully automated environment and depends on some of its processes heavily in papers, using papers make it the man's effort to manipulate the data and this will lead to wasting time in looking for other related information so as to be aggregated together. Second, the hierarchy for some organizations is not fully completed. This may have a bad effect that the same job may be done by multiple departments or took its input from multiple departments with different goals and this make it difficult to combine the different types of information to serve customers or to achieve your department goals that may different from other departments' goals.

2. Value- added information: the idea behind information is that it provide us with what we need to achieve our work and so we can say that it adds value to our work. It may be seemed that there is a contradiction between result that "If the information is credible, then how come it didn't add value to the task?". The answer for this question is that ,in banks, they count information as one of their valuable assets and they give a special attention to it but what some banks really suffer from is the high turnover rate, this may lead to leaving some work not completely done or not understandable or leaving many and heavy tasks on less number of employees. And this will have it bad effect on the synergy needed between employees and between tasks.

This is a fatal point that the organization need to take a special attention to it and try to increase their employee retention periods in order to benefit from the value the information adds to the task.

Recommendations

Based on this research hypothesis testing, it will be recommended for banks to apply the security concept precisely in that you must reduce your security level to the point which is necessary to run the business. Accordingly, giving the proper access to the authorized personnel since too much reducing the access to the different information classes will make it difficult for business processes to run without delay.

Another point to recommend is that it will be good to automate most of the business processes since automation will make it easy for the information to be found and manipulated or used by other people. And of course, a central point to put the data in will help in not repeating data or having two contradictory data at the same time.

Last recommendation is to reduce the turnover rate for the employees will have its good effect on generating information that is beneficial and consequently creating the needed synergy between employees and tasks.

5.3Future research

This research has revealed a measurable relationship between information quality and the organization strategic benefit. Consequently, this research raised a number of issues that could form the basis of future research.

Following are a few suggestions regarding further investigations that may serve to broaden our understanding of the relationship between information quality and organizational strategic benefit and to gain more meaningful results.

1. Research similar to this study, but using a different regression model or a different analytical approach. It is highly recommended to use path analysis which is an extension of the regression model, used to test the fit of the correlation matrix against two or more causal models which are being compared by the researcher. Such a study could build directly on the findings of this research by adding explanatory power to the analysis.

2. Researchers are also encouraged to conduct research similar to this study, but using the product aspects of information quality so as to reveal additional relationships that are not evident in this research.

3. Future researches are encouraged to introduce a moderating variable to this research so it will help in better understanding of the relationship between information quality and strategic benefit in the organization.

Broadening the scope of this research demanded a larger population. Expanding the research to cover another Jordanian IT companies or different industrial sectors will also give a space for future researches.

Future researches are encouraged to examine the relationship between information quality and organizational strategic benefit in for non-profit companies.

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