THE EFFECT OF NATIONAL CULTURE ON THE INFORMATION QUALITY IN JORDAN: CONCEPTUAL FRAMEWORK

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Abstract
Information is becoming a signification resource in a societies and organizations.
The purpose of this study is to examine the effects of national culture on the information quality as Conceptual Framework, using the Technology Acceptance Model (TAM). To explore the role that culture plays in the acceptance of information quality concepts and practices.
To understanding of culture and its impact on technology adoption, TAM - Technology Acceptance Model, This paper combination TAM model and culture dimensions as suggested model to predictable acceptance of information quality. A possible contribution is to understanding cultural influences and Information Quality Adoption.
A researcher will attempt to validate Hofstede’s national culture dimensions, TAM model for the case of information quality by extended technology acceptance model (TAM) as theoretical framework to test and predict quality of information and to explore whether national culture influences users' perception and affected information quality. Where the People do things because they believe it is right thing to do.

Keywords: National Culture; Information Quality; Technology Acceptance Model; Jordan
Introduction

Information is money and time. Recent studies show that data quality problems are costing businesses billions of dollars every year, with poor data linked to waste and inefficiency, damaged credibility among customers and suppliers, and an organizational inability to make sound decisions. Information is becoming a significant resource in societies and organizations.

Information quality is becoming recognized as a critical and competitive strength in business. Quality information will improve consumers’ provider choices only if it considers the features of care that consumers perceive as relevant to their provider choices.

Information quality (IQ) is not an entirely new concept, but it has gained increasing attention during the last few years, also in business communities. Much like information, the concept of quality is defined in different ways by different people. The problem of poor data and information quality is widespread and plays a critical role for all organizations whose activity is based on communication and information. Insufficient quality of information and data often leads to numerous negative effects; it can disrupt business processes and interfere with decisions or can compromise communication and understanding among people.

The quality perception is that the customer must believe that the product or service is the right one, satisfies his or her needs, meets his or her expectations, and is delivered with integrity, courtesy, and respect. Further, quality is also described by a number of dimensions (e.g. durability, performance, competitiveness, process capability, freedom from errors, and reliability) being just some of them. Further, these dimensions vary in their importance as a commonly accepted dimension of quality. The perception of quality along these dimensions is based on the information itself, regardless of how that data is used.

Perceptions vary from person to person. Different people perceive different things about the same situation. That lead to culture. Culture is a set of unique values and beliefs that guides
the behavior of people belonging to that culture. These factors can predict a wide range of Human behavior and practices. That culture has an impact on an individual’s decision-making, and played an important role in the adoption and use of a specific system. That means, the Culture influence adopting new technologies.

There is a lack of agreement on the theoretical and empirical relationships between quality information and culture, and their relative power as predictors of quality of information; and that most empirical studies have been conducted in North American culture, mostly in U.S firms.

The purpose of this study is to examine the effects of national culture on the information quality, using the Technology Acceptance Model (TAM). To explore the role that culture plays in the acceptance of information quality concepts and practices. The research question: Is Hofstede’s dimensions of cultural play differences distinct roles in influencing the acceptance IQ adoption?

To understanding of culture and its impact on technology adoption, TAM - Technology Acceptance Model, and what components of Information Quality will the researcher address in adapting TAM to the study of Cultural influences and Information Quality Adoption. A researcher will attempt to validate Hofstede’s national cultural dimensions, TAM model for the case of information quality by extending the technology acceptance model (TAM) as a theoretical framework to test and predict the quality of information and to explore whether national culture influences users' perception and affected information quality. And to explore perceptions of information quality held by information technology professionals and held by data consumers. Where the People do things because they believe it is the right thing to do.

**Culture and the Levels of National Culture**
The term culture can refer to professional culture, organizational culture, and national culture. According to Hofstede, national culture is defined as “the collective programming of the mind which distinguishes the members of one human group from another” (Hofstede, 2000). Hofstede argued that they couldn’t assume that organizational cultures exist independently of national cultures because organization’s culture is nested within a national culture. These mental programming shapes shared values, beliefs, assumptions, expectations, perceptions and behavior. Therefore, national culture influences human resource practices and organizational behavior. Hofstede developed a definition of culture based on knowledge: “Culture is the means by which people communicate, perpetuate, and develop their knowledge about and attitudes toward life”. So a Culture is a set of unique values and beliefs that guides the behavior of people belonging to that culture.

Hofstede proposes four cultural dimensions: Individualism-collectivism, masculinity-femininity, power distance, and uncertainty Avoidance. The major assertion of Hofstede’s framework is that there are shared values, beliefs and norms that are culture specific and these factors can predict a wide range of human behavior and practices.

In cognitive terms, Hofstede noted national culture is viewed as a set of shared meanings transmitted by a set of mental programs that control responses in a given context. The basic thesis of a cognitive approach to culture is that processing frameworks acquired in one culture persist and influence behavior even though contextual circumstances change (Hofstede, 2000). Hofstede definition these dimensions as follows: Power Distance (PD): The extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally (p. 98). Uncertainty Avoidance (UA): The extent to which the members of a culture feel threatened by uncertain or unknown situation (p. 161). Individualism (IND) it stands for a society in which the ties between individuals are loose (p. 225) and known as individualism/collectivism: versus societies in which the interests...
of the group prevail over the interest of the individual. Masculinity/femininity: masculinity stands for a society in which social gender roles are clearly distinct while femininity is a society having gender roles overlap (Hofstede, 2001).

This research employs Hofstede’s model, because it has been shown as a reliable and useful tool to identify and explain the cultural differences in numerous studies across many disciplines.

**Information Quality**

Kahn, Strong and Wang (2002) defined Information quality is the characteristic of information to meet or exceed customer expectations. Wand and Wang (1996) define data quality as the quality of mapping between a real world state and an information system state.

In a more recent work, Eppler (2003) adopts both definitions of quality - meeting the customer expectations and meeting the activity requirements - acknowledging the important duality of quality: subjective (meeting the expectations) vs. objective (meeting the requirements). Wang and Strong (1996: 6) define ‘data quality’ briefly as “data that are fit for use by data consumers”. Wang and Strong (1996) show that users view some quality dimensions as impartial and other dimensions are viewed as being contextual and the perception of quality along these depends on the decision context in which the data is used.

Lane Keller and Staelin (1987) defined information quality as the information’s inherent usefulness to consumers in assessing the utility of an alternative. In studying the effects of quality and quantity of information on decision effectiveness, they operationalized information quality as the cumulative score of an individual’s importance weights for certain attributes provided. In that case, the attributes were associated with job preferences. A major conclusion that consumer’s perceptions of the usefulness of an informational environment are strongly associated with their measure of information quality.

**Definition and Identification of IQ Dimension**
Over the last two decades, different sets of IQ dimensions have been identified from both the database and management perspectives. Various studies have confirmed that IQ is as a product has multiple attributes and dimensions (Delone & McLean, 1992; Goodhue, 1995; Ballou, Madnick, and Wang, 2003; Pipino, Lee & Wang, 2002; Wang and Strong, 1996; Ballou and Pazer, 1985). A multiple frameworks are proposed for capturing IQ requirements (e.g., Redman, 1995; Lee, Strong, Kahn and Wang, 2002; Wang and Strong, 1996; Strong et al., 1997; Pipino et al., 2002; Miller, 1996), each viewing and treating this concept differently. Lists of information quality dimensions have been produced by Wang and Strong (1996). They report the results of a study that identified the attributes of data quality that were important to data consumers. Wang and Strong took an empirical approach to studying data quality. They followed the methods developed in marketing research for determining the quality characteristics of the products. They first collected data quality attributes from data consumers, then collected importance ratings for these attributes and structured them into a hierarchical representation of data consumers’ data quality needs. From initial 179 data quality attributes Wang and Strong (1996) developed a hierarchical framework with four data quality (DQ) categories and fifteen dimensions:

The first Intrinsic DQ included Accuracy, Objectivity, Believability, and Reputation. The second Contextual DQ included Relevance, Value-Added, Timeliness, Completeness, and appropriate Amount of Data. The third Accessibility DQ included Accessibility, Access security, ease of operations. The fourth Representational DQ included Interpretability, Ease of understanding, concise representation, and Consistent representation.

Wang and Strong’s framework (1996) has more dimensions than works of some other researchers. Earlier, most studies were based on a small set of quality attributes that were commonly selected (for instance, accuracy only). The framework has been utilized and advocated later by Wang et al. (1998), Wang (1998), Kahn et al. (2002) and Lee et al. (2002).
Although the exact number of dimensions considered and the arrangement of the dimensions varies somewhat from researcher to researcher, the essence of this model now has broad support among the information quality research community.

Delone and McLean (1992, 2003) mentioned most measures of information quality are from the perspective of the user the information system and are subjective measures. It refers to measure of information and data for desired characteristics as the quality of output from a system included accuracy, precision, currency, reliability, completeness, conciseness, accessibility, adaptability, relevance, understandability, meaningfulness, timeliness, comparability and format (Delone and McLean, 1992).

IQ construct has been operationalized in many different ways. For example, Bailey and Pearson’s (1983) instrument will be used to operationalize the Information Quality construct in this study. Bailey and Pearson identified nine characteristics of information quality including: accuracy, precision, currency, output timeliness, reliability, completeness, conciseness, format and relevance and this began a stream of research in user satisfaction (Bailey and Pearson, 1983, pp 530-545), and is widely accepted and considered as the standard instrument in the IS field to assess Information Quality; The instrument was used previously by many scholars (e.g. Khalil and Elkordy, 1999; Jaafreh, 2011).

This study will include these five formative components of the information quality construct: Accuracy, Completeness, Relevance, timeliness and formatting, because of it’s more frequently in a literature. Bailey and Pearson (1983) operationalized information quality by asking if the output of the system is accurate, timely, complete, relevant, and in a preferred format etc.

To measure IQ the researcher determined the definition of operationalization of Information Quality variables and questionnaires adopted from Bailey and Pearson (1983) and Delone and McLean (1992; 2003) and others who used the same dimensions as shown in Table (1)
**Technology Acceptance Model (TAM)**

A key purpose of TAM is to provide a basis for tracking the impact of external factors on internal beliefs, attitudes, and intentions. TAM was formulated in an attempt to achieve these goals by identifying a small number of fundamental variables that deal with the cognitive and affective determinants of computer acceptance (Davis et al., 1989).

Davis adapted Ajzen and Fishbein’s (1980) Theory of Reasoned Action (TRA) to model (figure 1) intentions to accept information technology. Davis’ (1989) technology acceptance

<table>
<thead>
<tr>
<th>Measures</th>
<th>operationalization definitions of measures</th>
<th>Related Research</th>
<th>The questions that adopted from Delone and McLean (1992,2003) and other study example</th>
<th>Studies related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>The comprehensiveness of the output information content. Bailey and Pearson (1983). The information covers all relevant and present dimensions</td>
<td>Information provided by System S is comprehensive (provides me with all the information I need).</td>
<td></td>
<td>Nelson et al., 2005; Lee et al., 2002; Bailey and Pearson (1983); Strong et al , 1997; Wixom and Todd , 2005 .</td>
</tr>
<tr>
<td>Relevance</td>
<td>The degree of congruence between what the user wants or requires and what is provided by the information products and services (Bailey and Pearson, 1983)</td>
<td>System S provides a set of information that seems to be exactly what is needed to do my work.</td>
<td></td>
<td>Lee et al., 2002; Gable et al., 2008; Bailey and Pearson (1983) ; Lee et al, (2002); Strong et al (1997).</td>
</tr>
<tr>
<td>Information quality (overall)</td>
<td></td>
<td>Overall, In general provides me with high-quality information</td>
<td></td>
<td>Wixom and Todd 2005; Nelson et al., 2005.</td>
</tr>
</tbody>
</table>

**Table 1: operationalization of IQ constructers**
model was extensively tested and is widely accepted among researchers in the field of IT as a theoretically based model with good predictive validity. TAM explains the causal links between beliefs and users’ attitudes, intentions, and actual usage of the system.

Davis et al. (1989) defined perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance” (p. 320). Within the organizational context, people are generally reinforced for good performance by raises, promotions, bonuses, and other rewards. A system high in perceived usefulness, in turn, is one that a user believes will lead to a positive use performance relationship. Perceived ease of use refers to “the degree to which a person believes that using a particular system would be free of effort” (p. 320).

Since Davis’ (1989) explanation of these constructs, numerous researchers discovered that technology acceptance theory yields consistently high explained variance for why users choose to utilize systems.

Depicted in Figure 1 is Davis’ (1989) model which is included a major three variables are Perceived usefulness (U) and perceived ease of use (EOU) are independent variables. The dependent variable is the system usage. Other mediating variables of TAM include the behavioral intention to use.

Figure 1: Technology acceptance model (TAM) (Davis, 1989)
TRA indicates that behavior (e.g., toward an information system or system usage) is best predicted by intentions, and that “intentions are jointly determined by the person’s attitude and subjective norm concerning the behavior” (Ajzen & Fishbein, 1980). Attitude describes an individual’s positive or negative feelings (evaluative affect) about performing the target behavior (e.g., Fishbein & Ajzen). Davis et al. (1989) found that behavioral intention to use the system is significantly correlated with usage, and that behavioral intention is a major determinant of user behavior, while other factors influence user behavior indirectly through behavioral intentions.

According to the TAM model perceived usefulness and perceived ease of use are major beliefs that influence Behavioral Intention to system use and eventually lead to actual system use. When IT professionals foster users’ beliefs in ease of use and usefulness of the focal IT, adoption and usage are likely to occur. TAM is widely regarded as a relatively robust theoretical model for explaining IT use. From a practitioner perspective, TAM is useful for predicting whether users will adopt new information technologies.

**Conceptual Research model and hypotheses**

The objective of this study is to examine the national culture and information quality. Based on the above literature review, a research framework was developed. Figure (2) illustrated this relationship. In this framework, national culture dimensions, and perceived usefulness are independent variables and information quality is a dependent variable correspondingly.
Researchers have developed the following suggested hypotheses to test the proposed conceptual model, which are:

H1: There is a positive relationship between national culture and Behavioral intention to use.
H 1-1: There is a positive relationship between Individualism/Collectivism and Behavioral intention to use.
H 1-2: There is a positive relationship between uncertainty avoidance and Behavioral intention to use.
H 1-3: There is a positive relationship between power distance and Behavioral intention to use.
H 1-4: There is a positive relationship between Masculinity/femininity and Behavioral intention to use.

H2: There is a positive relationship between perceived usefulness and behavioral intention to use.
H3: There is a positive relationship between behavioral intention to use and information quality.
H4: There is a positive relationship between national culture and information quality (IQ).
H 4-1: There is a positive relationship between Individualism/Collectivism and IQ.
H 4-2: There is a positive relationship between uncertainty avoidance and IQ.
H 4-3: There is a positive relationship between power distance and IQ.
H 4-4: There is a positive relationship between Masculinity/femininity and IQ.

Review Literature

Delone and McLean (1992, 2003) in seeking an explanation for IS success as a dependent variable, they developed taxonomy of IS success consisting of six dimensions: system quality,
information quality, service quality, use, user satisfaction, net benefits. This taxonomy as Delone and McLean described it; the arrangement of these dimensions is intended “to suggest an interdependent success construct while maintaining the serial, temporal dimension of information flow and impact” (p. 83). They reviewed were several articles that evaluated the role of information quality, which was shown “to be strongly associated with system use and net benefits” (p. 21). Managing data quality is critical to the success of information systems (IS). Quality influences IS adoption and end-user satisfaction at the individual level, thus affecting the positive contribution of information systems to organizational performance (Delone & McLean, 1992).

IS literature suggests that information quality has an impact on information satisfaction (Wixom and Todd, 2005; Delone and McLean, 2004; Park and Kim, 2006). Many studies provided strong support for the effects of information quality on individual performance (Seddon and Kiew, 1994; Wixom and Watson, 2001).

Ahn, Ryu, & Han (2007) investigated the effect of playfulness on user acceptance of online retailing and tested the relationship between Web quality factors and user acceptance behavior. The results showed that playfulness plays an important role in enhancing user attitude and behavioral intention to use a site. They also found that Web quality, categorized into system, information, and service quality, had a significant impact on the perceived ease of use, and usefulness, and consequently, that it encouraged website use in the context of online retailing.

Traditionally, sociologists have referred to the study of how groups of people share meaning and resolve their common problems as the study of culture (e.g., Hofstede, 1991). Straub, Keil, & Brenner, (1997) they conducted a three-country study to test the TAM across cultures— Japan, Switzerland and the United States. The study administered the same TAM
construct instruments to employees in three different airline companies, all of them had access to the same IS, i.e. Email. The results demonstrated that TAM holds for both the U.S. and Switzerland, but not for Japan. This implies that TAM may not predict technology use across all cultures in the world. They did not attempt to relate TAM to any cultural instrument. In fact, the authors, and others, point out that caution should be exercised when interpreting these findings since social and cultural norms could predict IT use.

When investigating the aspect of culture, IT researchers have primarily relied upon the national cultural dimensions by Hofstede, which reflects a “national character” portrait of a society. The examination of cross-cultural working and IS is dominated by Hofstede-type studies (Myers and Tan 2002). Straub (1994) used Hofstede’s dimensions to study the diffusion of e-mail and fax in the United States and Japan. He found that the uncertainty avoidance characteristic of the Japanese caused them to be less likely to accept e-mail. He also concluded that culture played an important role in the adoption and use of electronic communications media.

Robichaux and Cooper (1998) developed a research model in order to identify the interaction of culture and group support systems (GSS). Their research made use of Hofstede’s cultural dimensions and the TAM and focused on North American countries. Although, the authors did not empirically test their model, they did develop several propositions. Other studies on the influence of cultural on GSS use include Watson, Ho, & Raman (1994) study of Singaporean groups’ use of GSS. However, in both of the studies, the technology was already accepted and in use. The research measured this use and the effect of culture on how the groups used the system. More recently, Srite and Karahanna (2006) used the extended TAM with Hofstede’s cultural dimensions as moderators to study the role of national cultural values on the acceptance of information technology. However, their data was collected from
graduate and undergraduate students who attended the same university. They did not draw their sample directly from specific countries.

The study Khalifa and Cheng (2002) which were conducted in Hong Kong did not arrive at a similar conclusion whether the TAM cannot equally predict user behavior across culture. It calls our attention to considering the cultural dimensions of the TAM when studying user behavior in other cultures than just North America. MacGregor et.al. (2005) He mentioned that high power distance cultures will not gain the same benefit from some agile practices. For example, in a culture where an employee rarely, if ever, contradicts and/or speaks freely in front of a manager, the benefit of a daily Scrum would be minimized if not completely lost. The issue of ‘face’ in conjunction with the “customer on site” practice may interfere with a team’s ability to engage in out-in-the-open risk assessment activities. Veiga, Floyd & Dechant (2001) this study discussed the effects of national culture on the acceptance of IT, using the Technology Acceptance Model (TAM). The authors compared acceptance in Japan and the United States and the findings suggest that Hofstede’s dimensions of cultural differences play distinct roles in influencing the acceptance.

Hofstede (2000) the paper investigates the specific attributes of countries that influence IT adoption speed. Findings show that cultural variables (individualism and uncertainty avoidance) can be used to predict the ease and speed of changes. Cultures of high uncertainty avoidance are slow in adopting new technologies.

**Research Methodology**

To test the proposed research model, researchers adopted the survey method for data collection. The researchers developed the items in the questionnaire either by adopting measures that had been validated by other researchers and by converting the definitions of constructs into a questionnaire format.
We employed the measurement items for TAM constructs from previous studies (Davis, 1989; Davis et al., 1989; Venkatesh, & Davis, 2000). Scales of perceived usefulness and behavior intention to use were modified from those developed and rigorously validated by Davis (1989). Davis’ TAM instrument was replicated and validated and has subsequently been used, in its original or modified forms, in numerous studies in a range of contexts. An extensive meta-analysis of TAM studies was undertaken by Lee and Strong (2003).

To measure IQ the researcher determined the definition of operationalization of Information Quality variables and questionnaires adopted from Bailey and Pearson (1983) and Delone and McLean (1992; 2003). where items national culture adapted from Hofstede's dimensions national culture. The sample will be consisted of individual in banking sector in Jordan. Unit of analysis will be the individual. Data collection will be conducted through questionnaires. So that Most of the questions in the survey are based on previous well-validated instruments.

**Conclusion and Future Research**

This paper's objective is to explore the national culture affected information quality based on the TAM model which is extended by suggesting a more coherent conceptual framework. To understand the role of technology acceptance theory in quality of information, and to explored national culture affected information quality and to explores perceptions of information quality held by information technology professionals and held by data consumers.

The researcher supports their suggested model by reviewing a number of related studies which investigated the information quality and were influenced by national culture as intentional behavior. Then, the researchers aimed at the next coming step are to validate the proposed model through empirical investigation and testing.

Researcher encourages researchers to study the role of national culture in information systems in general and on another sector in Jordan.
References


