

Original Research Paper

# Scrutiny of Relationship between E-Banking Information Quality Dimensions and Customer Satisfaction

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**Abstract:** Poor information quality can have a significant negative effect on the success of an organization. This study investigated the relationship between information quality's dimensions, namely accuracy, completeness, timeliness and relevancy, on the satisfaction of customers towards E-banking services in Palestine's banking sector. It also studied the relationship between the intent to use E-banking services and customer satisfaction. The study implemented a quantitative method for data collection using a questionnaire survey. The results revealed that the accuracy, completeness, timeliness and relevancy of information had a positive effect on customer satisfaction towards E-banking services. Consequently, customer satisfaction affects the intention to utilize such services. The study also offered limitations, conclusions and recommendations for further studies in the future.

**Keywords:** Dimensions, Customer Satisfaction, E-banking, Information Quality Information Systems Success Model, Palestine

## Introduction

The demand of small-medium and large multinational organizations for Information Technology (IT) has grown in the past couple of decades (Tarhini *et al.*, 2016). Because of IT's global progress, there is a greater need for organizations to have the ability to leverage these techniques in order to make sure that they achieve progress and development (Ayyash *et al.*, 2012). In the context of banking, it has been observed that customers are shifting more from traditional to electronic banking methods via Electronic banking (E-banking).

Assessing information systems is a vital aspect that can help determine their efficacy within organizations (Manchanda and Mukherjee, 2014; Davis and Jackson, 2005). According to Ramayah *et al.* (2010), an information system that provides high quality content will improve user engagement with the services provided.

Information is at the center of the current evolving world (Nurse *et al.*, 2011). The importance and value of information cannot be questioned. According to Munir (2015), information quality is one the E-banking industry's basic quality attributes.

Recently, it has been noted that there has been considerable significant rise in the amount of information that organizations can access, along with

their dependency on such information (Baskarada *et al.*, 2006; Ballou *et al.*, 2003). In 2008, Gartner Research reported that organizations that cannot manage their information will have a hard time securing their niche within the business environment (Logan and Newman, 2006). Furthermore, the Gartner survey offered evidence that signified that most of the providers of financial services have experienced issues related to their decision support and operational initiatives. These issues are a result of information with sub-optimal quality  $x$  (Friedman *et al.*, 2004). It was further stated that about 40% of the firms that implemented a customer relationship management strategy were unaware of the issues in information quality within their market surroundings (Knox, 2004).

Buzzacchi *et al.* (1995) stated that both relatively standardized and immaterial financial services were greatly affected by innovations in information technology. Thus, financial services are considered one of the top areas where new information economies are expected to emerge (Dewan *et al.*, 2000). In recent years, E-banking, a distribution channel often used by financial services firms, has increased in significance since its inception during the mid-1990s (Allen *et al.*, 2001).

Chavan (2013) describes E-banking as an Internet portal that allows customers to access various banking

services. The Internet has become an important part of the daily lives of people. It has even changed consumer behavior in various ways. For example, in order to complete certain tasks, banks used to require consumers to visit a bank branch to perform financial transactions (Unyathanakorn and Rompho, 2014).

Given this background, E-banking in virtually any country depends on several factors, including new online banking characteristics, successful Internet access, increase in the amount of households that have Internet and regulatory and legal frameworks. Furthermore, E-banking has had a large impact on how customers use banking services (Al Haliq and Al Muhirat, 2016). Given this context and compared to the manual banking system, E-banking may be able to offer more dependable and timely customer services to meet customer satisfaction (Nupur, 2010).

However, when it comes to Internet banking, providers are faced with the major issue that most of their customers are not motivated to utilize the provided Internet banking services (Ling *et al.*, 2016). This is often attributed to the fact that customers are not yet satisfied with the services being provided by Internet banking. Customer satisfaction is an important factor that allows banks to maintain their competitive advantages.

In the Palestinian context, it is believed that the country can develop E-banking services easily. Nevertheless, a study conducted by Wungwanitchakorn (2002) revealed that in most developing nations, E-banking are still in their infancy. Therefore, in order for banks to leverage the benefits of E-banking, they need to determine how their potential customers perceive their services. They also need to identify the factors that affect the level of customer satisfaction, such as the quality of information provided by E-banking and their continuous dealings with the services. As a matter of fact, customer satisfaction is an important marketing element, given the relationship between overall service performance and satisfaction (Truch, 2006). Because banks have invested billions of dollars in internet infrastructure, customer satisfaction is increasingly becoming a core success factor in E-banking (Bauer *et al.*, 2005). Nonetheless, low customer satisfaction is still one of main challenges when it comes to developing E-banking services in the context of the Palestinian banking sector.

Several studies have examined the quality of the information that information systems generate. However, because web quality and its measurement is complex, it is believed to have multidimensional aspects that have not been investigated by prior studies (Aladwani and Palvia, 2002). As such, the main concern during the evaluation of information systems is how to determine the criteria for quality

(Buyukozkan *et al.*, 2007). In the E-banking context, high quality information systems also improve the customers' intention to adopt the services (Ayyash, 2015). Therefore, it is vital to have good information quality in order to improve the satisfaction of customers towards the E-banking services being provided.

The current research has its basis in the need to study the relationship between the quality of the information dimensions and customer satisfaction. Customer satisfaction contributes to the improvement of the adoption rate of E-banking services in Palestine. The findings of the research are expected to have valuable contributions to the development of appropriate strategies within the banking sector. It is also expected to help customer satisfaction. The aim of the study was to minimize the literature gap by conducting empirical examinations of the information quality dimensions that affect customer satisfaction towards the E-banking services in Palestine. It is expected that the results will reveal how information quality dimensions influence customer satisfaction towards E-banking services. Moreover, it will reveal the influence of the latter on the intention of customers to use the services.

Furthermore, the study's findings are expected to be considered as bases for future developments of E-banking strategies that are more effective in promoting and achieving customer satisfaction. The study's best contribution was its investigation of the information quality dimensions that affect customer satisfaction in the Palestinian banking sector's E-banking services.

## Theoretical Background

### *Information System Success Model*

The DeLone and McLean Information System Success Model has been theoretically and empirically evaluated by several studies. Researchers have also tested applicability to various sectors. Furthermore, it has achieved acceptance among researchers (Manchanda and Mukherjee, 2014).

DeLone and McLean (1992) proposed an information system success model that has the capacity determine an information system's level of success. According to Sang and Lee (2009), several research works have validated the IS success model of DeLone and McLean (Rai *et al.*, 2002; Seddon and Min-Yen, 1994). Moreover, they have stated that this model has also been utilized in consumer e-commerce analysis (Delone and Mclean, 2004; Molla and Licker, 2001). DeLone and McLean (1992) came up with this model in order to determine the success of IS and for it to even act as a basis for future research. The authors developed six dimensions that they used to measure the system's success, namely use, system quality, user satisfaction,

organizational impact, information quality and individual impact.

It has been noted that the quality of the system and information has an influence on the use and user satisfaction. They exert effects both separately and together. Others can be affected by the intention to use and user satisfaction, while directly affecting individual impact. In turn, the organizational impact is affected by the individual impact (DeLone and McLean, 1992).

This model (DeLone and McLean, 1992) is often called the original model. However, this model is still not complete. DeLone and McLean (2003) updated their model to include the research studies that were performed between 1992 and 2003. The updated model has the following enhancements: The addition of 'service quality' to reflect the importance of service in ensuring successful e-commerce systems, addition of 'intention to use' as a measure of user attitude and considering it as an alternative 'use' measurement and conflating 'individual impact' and 'organizational impact' in a 'more parsimonious' net benefits 'construct'.

DeLone and McLean's model for information systems has found wide uses in numerous studies (Ramdan *et al.*, 2014; Romi, 2013; Khayun *et al.*, 2012). The DeLone and McLean model has been used by the banking sector to carry out empirical studies (Vanniarajan, 2009; Hussein, 2009; Aburas *et al.*, 2013; Mashhour, 2008). Most of these studies focused on electronic banking (Olatokun and Owoeye, 2012; Okechi and Kepeghom, 2013; Andoh-Baidoo *et al.*, 2010; Zhu and Lin, 2010).

As such, the DeLone and McLean (2003) model was adopted in this present study. Information quality was considered a factor that influences user satisfaction towards E-banking services in the context of Palestine. Moreover, literature by (Chau and Hu, 2001), (Venkatesh *et al.*, 2003) indicated that the intention to use can be seen as an important predictor of the actual use of the system.

### *Information Quality Dimensions*

The banking sector has been using information systems widely. These systems are very suitable since banking organizations are intrinsically information intensive. E-banking offers banks the opportunity to provide services that are distinct from traditional banks, including the provision of financial information services, online loan applications, investment products (e.g., bonds purchasing) and other financial services (e.g., purchasing car or life insurance). Moreover, e-banking can provide third-party services (e.g., online payments for taxes and bills) and other products (Jovovic *et al.*, 2016).

Therefore, high quality Information Systems (IS) are more useful in convincing users and improving

their intention to utilize the provided services (Ramayah *et al.*, 2010). According to Munir (2015), one of the basic attributes of E-banking quality is information quality. Thus, achieving information quality is vital in improving user satisfaction towards the E-banking services being offered. Thus, the quality of information provided by IS is a vital factor in convincing customers of the usefulness of the system (Chuan-Chuan Lin and Lu, 2000).

According to DeLone and McLean (1992), information quality is a measure of the information system's output. It can also be defined as the measure of the information that is produced by the system (Jennex *et al.*, 1998; Maes and Poels, 2006). According to the model, information quality is the most important factor that determines system use and user satisfaction. Ultimately, it will lead to regular adoption (Wang and Liao, 2008; Wangpipatwong *et al.*, 2005). Empirical studies have proven that information quality have strong associations with system use (Rai *et al.*, 2002), particularly in the context of E-commerce systems (Molla and Licker, 2001).

According to DeLone and McLean (2004), relevance, completeness, currency, accuracy and dynamic content are just some of the characteristics that are related to desirable content. It is generally accepted that the development of a measure for information quality should have its basis in the kind of information system that is under study (Wixom and Todd, 2005). This proposed model of this study follows the DeLone and McLean information system's success taxonomy. It also conceptualizes the quality of information from E-banking as the desired output quality from E-banking services.

As previously stated, information quality is considered as the measure of the system's output. This is why users often evaluate the value of information in the context of the characteristics that they require. According to literature, some examples of the dimensions of information quality include reputation, believability, interpretability, completeness, value-added, reliability, objectivity, price, accuracy, timeliness, latency, verifiability, security, availability and response time (Naumann and Rolker, 2000). Hussein *et al.* (2007) also stated that information quality includes the accurate, complete, organized, comprehensible and timely information that the website of the system supplies.

A study by Ayyash (2015) revealed that in the IS field, the most commonly used information quality dimensions are accuracy, relevancy, timeliness and completeness of information. Therefore, given their high frequencies, this study has chosen them as representatives of the information quality dimensions. These dimensions were used to evaluate the quality of information provided by the E-banking services

and assess the satisfaction of customers in the Palestinian context.

### *Customer Satisfaction and Intention to Use E-Banking Services*

For the past two decades, customer satisfaction has been considered as a strategically valuable aspect for numerous companies (Wang and Pho, 2009). For example, customer satisfaction is considered by the service industry as one of the most important precursors of positive outcomes, including the continued intent to utilize a particular service (Lee *et al.*, 2015). Al-Tit (2015) found out that customer satisfaction is positively affected by service quality and thus suggested that such satisfaction leads to customer retention. Customer satisfaction measures the extent by which the product or service of a firm meets customer expectations (Saleem and Rashid, 2011). Moreover, this concept is considered an important factor in the intention to adopt new technology (Negasha *et al.*, 2003; Yoon *et al.*, 1995). Banks need to make themselves different because if customers only see little to no difference in the provided services, they are more likely to consider new offers as being the similar or even the same to the services that are provided by their competitors.

E-service quality is a vital part of Internet banking and banks since it affects customer satisfaction (Ling *et al.*, 2016). Furthermore, information quality is the main factor that determines the use of the system and user satisfaction, the latter of which ultimately results to regular adoption (Wangpipatwong *et al.* 2005; Wang and Liao 2008). Therefore, customers with higher satisfaction levels are more likely to use the same service compared to other customers. According to DeLone and McLean (2003), information quality can be seen as a measure of the output of the system. Thus, users normally evaluate the value of the information based on the qualities they desire, such as accuracy, completeness and timeliness. In this study, satisfaction is referred to as customer satisfaction towards online banking services, particularly the characteristics of the information generated by Palestinian E-banking websites.

### **Research Model**

In previous empirical studies focused on E-commerce systems, it has been revealed that the use of the system is related to information quality. Nevertheless, Ayyash (2015) has stated that literature has still not examined the subject of information quality adequately.

E-banking channels are an important interface between the bank and the bank's customers (Stamoulis *et al.*, 2002). Thus, the utilization of these

channels allows customers to conduct electronic transactions with the bank's computer network (Jayachandran *et al.*, 2005). There is therefore a need to examine the system's information quality along with its effect on intention to use and customer satisfaction. These factors are all needed for the successful conduct of E-banking practices.

Studies that examined the reality of information systems have emphasized how important it is to ensure the quality of the information that is being provided by the systems. The goal is for it to help improve customer satisfaction. As such, several information quality frameworks have been developed and proposed throughout the years by numerous researchers in various fields (e.g., Bailey and Pearson, 1983; Shanks and Corbitt, 1999; DeLone and McLean, 2003; Dedek, 2000; Hussein *et al.*, 2007; Leung, 2001; Katerattanakul and Siau, 1999; Eppler and Muenzenmayer, 2002; Kahn *et al.*, 2002; Stvilia *et al.*, 2005). Although these prior studies provide similar information quality predictors, very few of them have focused on obtaining dimensions of information quality that influence customer satisfaction in Palestinian E-banking services based on the model of DeLone and McLean for information systems success (Ayyash, 2015).

Thus, in order to address the need for more studies that focus on information quality dimensions and how they affect customer satisfaction towards Palestinian E-banking services, this research aimed to find answers to the following major research question: What relationships exist between the dimensions of information quality and customer satisfaction and how does the latter affect the intention to use E-banking services? To further narrow down the question, it was sub-divided into the following:

- What relationship exists between customer satisfaction and information accuracy?
- What relationship exists between customer satisfaction and information timeliness?
- What relationship exists between customer satisfaction and information completeness?
- What relationship exists between the intention to use and customer satisfaction?

Because the primary aim of this study was to examine the relationships between customer satisfaction, the intention to use and information quality dimensions, a research model that was made up of DeLone and McLean's (2003) IS success model was developed (Fig. 1) (Ayyash, 2015).

Given this study model, five hypotheses were formulated to test and determine the relationship level between the variables to determine if various hypotheses should be accepted or rejected.

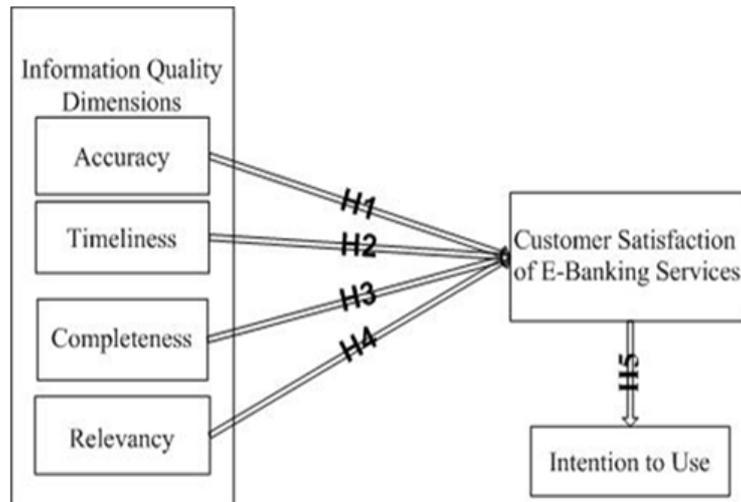


Fig 1. Research model (Ayyash, 2015)

## Research Methodology

### *Questionnaire, Measurements and Data Analysis*

The study made use of a questionnaire survey that was made up of close-ended questions that offered the respondents a consistent reference structure for the answers. A 5-point Likert scale was used to measure the questionnaire items. Data about the research constructs were collected using scales that started from 1 or strongly disagree to 5 or strongly agree. Furthermore, 3 was neutral. The scales' content validity was ensured by choosing items that were reflective of the constructs' concepts and as confirmed by previous studies. However, they were also modified to suit the context of E-banking. The study involved three Palestinian banks that were randomly chosen. The sample respondents all possessed knowledge on banking services and all owned personal bank accounts. A total of 108 questionnaires in all were distributed, answered and retrieved.

Majority of the respondents (66.7%) were males and the rest were females. Most of the subjects also belonged to the 30-40 age range. Furthermore, most of them had been using the Internet for 3-10 years (48.1%), which is an indication of their experience in utilizing online services. Majority of the respondents possessed bachelor degrees (67%) or even had higher levels of education.

The study used three information accuracy scale items that were based on the scale by Wixom and Todd (2005). Moreover, six information relevancy scale items were taken from Lee *et al.* (2002) and three information timeliness scale items were obtained from Su and Jin (2006). Additionally, five customer satisfaction scale

items were obtained from Abu-Dalbouh (2012) and five intentions to use scale items were taken from Carter and Bélanger (2005).

Two different tests were used to validate the hypotheses, multiple regression and linear regression tests. A multiple regression analysis was used to examine the relationship between the customer satisfaction towards E-banking services and independent variables since they were both viewed as having equal importance. Subsequently, the researchers used a simple test to study the relationship between the intention to use E-banking services and customer satisfaction.

The current study explored the relationships between the dimensions of information quality, customer satisfaction towards E-banking services and the customers' intention to utilize e-banking services. These relationships were studied by using descriptive statistics and factor analysis. The measurement scale's validity was confirmed through the conduct of an exploratory factor analysis. Meanwhile, the influence exerted by the four information quality dimensions (i.e., timeliness, accuracy, completeness and relevance) was tested using regression analysis.

### *Tests for Reliability and Validity of the Measures*

A literature review was used to confirm the study's content validity, while a factor analysis was used to confirm its construct validity. All the study's items obtained factor loading values that were more than +0.40. This signifies that every item had a significant correlation to its respective factors and that a single set of items was capable of measuring a single concept. Table 1 shows the validity of the measurements.

Table 1. Measurements of the study

Construct	Item	Loading	St. Error.
Information Accuracy	Information Accuracy 1	0.864	0.517
	Information Accuracy 2	0.904	0.508
	Information Accuracy 3	0.899	0.532
Information Timelines	Information Timelines 1	0.840	0.501
	Information Timelines 2	0.889	0.518
	Information Timelines 3	0.893	0.567
Information Completeness	Information Completeness 1	0.906	0.500
	Information Completeness 2	0.883	0.497
	Information Completeness 3	0.865	0.563
Information Relevancy	Information Relevancy 1	0.425	0.490
	Information Relevancy 2	0.648	0.564
	Information Relevancy 3	0.699	0.573
	Information Relevancy 4	0.800	0.639
	Information Relevancy 5	0.735	0.564
	Information Relevancy 6	0.718	0.627
Customer Satisfaction	Customer Satisfaction 1	0.608	0.723
	Customer Satisfaction 2	0.709	0.798
	Customer Satisfaction 3	0.772	0.690
	Customer Satisfaction 4	0.757	0.652
	Customer Satisfaction 5	0.639	0.662
Intention to use	Intention to Use 1	0.967	0.452
	Intention to Use 2	0.537	0.527
	Intention to Use 3	0.696	0.709
	Intention to Use 4	0.876	0.510
	Intention to Use 5	0.459	0.879

Table 2. Cronbach's Alpha values for reliability test

Section of Questionnaire	Measurement tool	Cronbach's alpha coefficient value
B	Information Accuracy	0.867
C	Information Timelines	0.845
D	Information Completeness	0.859
E	Information Relevancy	0.765
F	Customer Satisfaction	0.734
G	Intention to Use	0.853
	Overall Reliability (25 items)	0.824

The internal consistency method was used to evaluate reliability of the measurement tools. A reliability test was conducted for the survey items found in Sections B, C, D, E, F and G. Table 2 shows the results of the reliability test for each section of the questionnaire.

Because each measurement tool has an acceptable Cronbach's alpha value, no item was deleted. This means that all the items achieved good internal consistency.

## Results

Validation of the hypotheses was done using two different tests - linear regression and multiple regression. The relationship of the independent variables with the customer satisfaction towards E-banking services was studied using multiple regression analysis.

The following hypotheses were evaluated during the initial regression tests:

**H1:** Information accuracy will have a positive effect on customer satisfaction towards E-banking services.

**H2:** Information timeliness will have a positive effect on customer satisfaction towards E-banking services.

**H3:** Information completeness will have a positive effect on customer satisfaction towards E-banking services.

**H4:** Information relevancy will have a positive effect on customer satisfaction towards E-banking services.

For the four hypotheses, the standard mode was used to run the multiple regression test, with customer satisfaction towards E-banking services representing the dependent variable. The information quality dimensions of accuracy, completeness, timeliness and relevancy were the independent variables. Table 3 shows the results of the analysis. As seen in the table, information accuracy has a significant relationship

with customer satisfaction towards E-banking services at ( $\beta = 0.256$ ,  $t = 2.576$ ,  $p < 0.001$ ). Furthermore, information timeliness has a significant relationship to customer satisfaction towards E-banking services at ( $\beta = 0.160$ ,  $t = 1.888$ ,  $p < 0.001$ ), information completeness had a significant relationship to customer satisfaction towards E-banking services at ( $\beta = 0.083$ ,  $t = 1.087$ ,  $p < 0.001$ ) and information relevancy had a significant relationship to customer satisfaction towards E-banking services at ( $\beta = 0.461$ ,  $t = 3.951$ ,  $p < 0.001$ ).

Table 3 also shows the statistical significance ( $R^2$ ) with  $F = 146.536$  and  $p < 0.001$ , given how the four independent variables had a positive correlation to customer satisfaction towards E-banking services ( $R = 0.922$ ). Thus, an R-square value of 0.851 signifies that the variables could account for over 85.1% of the variance observed in customer satisfaction towards E-banking services. The standard estimated error had a value of 0.15122. This signifies that all the independent variables had a significant effect on customer satisfaction towards E-banking services. Hence, the findings supported the hypotheses.

The next step was to perform a simple regression analysis between the intention to use e-banking services and customer satisfaction towards E-banking services based on the following hypothesis:

**H5:** Customer satisfaction towards E-banking services will have a positive effect on the intention to use.

The results gave an  $R^2$  value of 0.359, signifying that customer satisfaction towards E-banking services accounted for 35.9% of the variance observed in the intention to use. The estimated standard error value was at 0.30577. The results also showed that customer satisfaction towards E-banking services had a significant relationship with the intention to use at ( $\beta = 0.599$ ,  $t = 7.701$ ,  $p < 0.001$ ) (Table 4 for results). The value of the significance of customer satisfaction towards E-banking services did not go over 0.05, which is an indication that there was a positive significant relationship between the two variables. A statistically high significant  $R^2$  was obtained at  $F = 59.313$  and  $p < 0.001$ . This supports hypothesis (H5).

In summary, the results supported the proposed hypotheses that information quality's dimensions (i.e., accuracy, completeness, timeliness and relevancy) had a positive influence on customer satisfaction towards E-banking services. Furthermore, the results supported the proposed hypothesis that customer satisfaction towards E-banking services was positively related to the intention to use.

Table 3. Regression results from information quality dimensions and customer satisfaction

Model	Standardized beta coefficients
Information Accuracy	0.256
Information Timeliness	0.160
Information Completeness	0.083
Information Relevancy	0.461
$R^2$	0.851
Adjusted $R^2$	0.845
F value	146.536

Table 4. Regression results on customer satisfaction towards E-banking services and the intention to use

Model	Standardized coefficients beta
Customer satisfaction towards E-Banking services	0.599
$R^2$	0.359
Adjusted $R^2$	0.353
F value	59.313

## Discussion

This study mainly aimed to examine the relationship between the information quality dimensions of accuracy, completeness, timeliness and relevancy and the satisfaction of customers towards E-banking services. This study's secondary aim was to investigate the relationship between the intention to use E-banking services and customer satisfaction. A thorough review of the literature revealed that very few studies had chosen to focus on the information quality dimensions, especially those that affect customer satisfaction towards E-banking services. Ayyash (2015) has even argued that studies that aimed to determine the information quality dimensions that affect customer satisfaction in the Palestinian context of E-banking services were few and very seldom. Hence, the researcher aimed to address this issue by pursuing this research. The results will potentially help policy makers within the banking industry aim their focus on the information quality dimensions that significantly influence customer satisfaction. The following sections will further explain the detailed findings and their expected contributions.

### *Information Quality Dimensions and Customer Satisfaction towards E-banking Services*

Several studies found in current literature have studied the quality of information in terms of e-government and e-commerce. Wangpipatwong *et al.* (2005), for example, was able to prove the important influence of information quality on the utilization of e-government websites. Moreover, David *et al.* (2004) stated that an important determinant in the inclination towards the utilization of e-government is information quality. On the other hand, Almahamid *et al.* (2010) discovered that there exists a positive relationship

between the intention to use e-government services and information quality. Similarly, Ayyash *et al.* (2013) also stated that perceived information quality positively has a significant impact on the user's trust in the initiative of adopting e-government in public organizations. However, very few researches have studied the effect of information quality dimensions on the satisfaction of customers towards the Palestinian E-banking services sector.

Moreover, given the lack of physical interaction with the items in an online environment, the customers' online purchase decisions are affected by information quality (Wixom and Todd, 2005; Kim and Lennon, 2008). Setia *et al.* (2013) stated that in India's banking industry, customer service capabilities are positively related to information quality. However, in current literature about information quality, the emphasis has always been on the character differences among domains (marketing, information systems, accounting, etc.) (Harrison, 2016). For example, in terms of information systems, the issue of information quality mainly determines the construct as successful technology's determinant (e.g., DeLone and McLean, 1992). A related study by O'Reilly (1982) emphasized distinct attributes like accessibility, while a study by Wixom and Watson (2001) emphasized accuracy, completeness, consistency and comprehensiveness and examined how these lessen the effort and time required to make decisions among end users. In contrast, data reliability is the most commonly examined aspect in auditing and accounting (e.g., Johnson *et al.*, 1981). Lastly, in terms of marketing, the emphasis is on information quality's dimensions, such as access and integration (e.g., Jayachandran *et al.*, 2005).

A more specific aspect of E-banking study focuses on how information quality is related to issues about system content, including timeliness, accuracy, relevance and completeness (e.g., DeLone and McLean, 2003; 2004; Ayyash, 2015).

Information accuracy refers to the level of data that is considered reliable, correct and measured in a manner that is precise (Wang and Strong, 1996). In the field of E-banking, the information systems' accuracy is related to the spelling, facts, rules and consistency of information, along with the continuity that is observed on the site. The results of regression analysis supported hypothesis (H1). This result signifies that in Palestine, information accuracy is significantly and positively related to customer satisfaction towards E-banking services ( $\beta = 0.256$ ,  $p < 0.001$ ). Thus, higher satisfaction towards E-banking services is related to higher information accuracy levels.

On the other hand, information timeliness is defined as the output information's availability at the right time (Bailey and Pearson, 1983). In this case, the results of

the regression analysis supported the hypothesis at ( $\beta = 0.160$ ,  $p < 0.062$ ). Furthermore, information completeness is used to refer to the level at which information is considered enriching based on its depth, breadth and ability to handle the required task (Bailey and Pearson, 1983). The results of the regression analysis supported the hypothesis that is related to information completeness at ( $\beta = 0.083$ ,  $p < 0.283$ ). Moreover, the results from the information relevancy were also found to be in support of the relationship at ( $\beta = 0.461$ ,  $p < 0.000$ ). Thus, the results obtained from the regression analysis were also found to support the second, third and fourth hypotheses. This is indicative of the fact that in Palestine, information completeness, timeliness and relevancy are significantly and positively related to the satisfaction of customers towards E-banking services. This also signifies that higher levels of information completeness, timeliness and relevancy will result into higher satisfaction towards E-banking services.

#### *Customer Satisfaction towards E-banking Services and their Intention to Use*

Customer satisfaction is one of the top criteria for the implementation of successful information systems. Therefore, it is vital to evaluate satisfaction and its determinants in order to measure the value and efficacy of any investment towards an information system (Kassim *et al.*, 2012). Customer satisfaction thus refers to the collection of evaluations, perceptions and psychological outcomes that are related to the consumption of experiences associated with a product/service (Saha and Zhao, 2005). Majority of banks offer e-banking as a new e-service channel that provides customers with various online services along with the added convenience of transactions and information access (Klien and Quelch, 1997; Polatoglu and Ekin, 2001). Previous studies have all agreed that E-banking services have a significant effect on customer satisfaction (e.g., Gbadeyan and Akinyosoye, 2011; Alabar, 2012; Ojokuku and Sajuyigbe, 2012; Oladejo and Akanbi, 2012).

This study's findings supported hypothesis (H5) and confirmed that in Palestine, customer satisfaction towards E-banking services is significantly and positively related to their intention to utilize the services at ( $\beta = 0.599$ ,  $p < 0.000$ ). This finding coincides with previous studies, such as those of Cronin and Taylor (1992; Rust and Oliver, 1994; Patterson and Spreng, 1997; Cronin *et al.*, 2000; Tian-Cole *et al.*, 2002). These previous studies have all proved customer satisfaction and service quality have a positive impact on the customer's perceptions and intention to purchase. It has been stated clearly that customers who are more satisfied of the E-banking services are more likely to use such services.

## Conclusion, Limitations and Recommendations

This study had five hypotheses that were related to the relationship between customer satisfaction about E-banking services in Palestine and the dimensions of information quality. It also examined the effect of customer satisfaction on the customers' intention to utilize E-banking services within the Palestinian banking sector. Therefore, this study has major contributions to the understanding and knowledge of information quality's dimensions and how they are related to a customer's intention to use. This aspect was mostly omitted in prior studies, especially in the Palestinian context.

A multiple regression analysis was utilized by the researcher to assess the first four hypotheses. These four hypotheses proposed a relationship between customer satisfaction and the dimensions of information quality. Afterwards, a simple test was conducted to examine the relationship between the intention to use E-banking services and customer satisfaction. The findings revealed and confirmed that there was a significant and positive relationship among the dimensions of information quality, namely timeliness, completeness, accuracy and relevance and customer satisfaction. A subsequent analysis established a positive and significant relationship between the intention to use E-banking services and customer satisfaction towards E-banking services.

The study sample was made up of customers who were patrons of three Palestinian banks. Thus, further research has to be conducted in order to determine if the findings were consistent with findings from studies conducted in other countries. Specifically, the study's predictions need to be examined using cross-cultural studies that involve a larger sample size. Moreover, the results can be compared to the results of other research that had large and diversified samples in order to ensure optimum accuracy. Furthermore, given the fact that this study examined a limited number of information quality dimensions, further studies can look into incorporating additional dimensions like ease of understanding or up-to-date information. These other dimensions may have a potential impact on customer satisfaction about E-banking services not only in Palestine, but in other contexts as well. Lastly, future studies can also examine the effect of other dimensions on the satisfaction of customers with E-banking services and how that affects their intention to use the services. This allows for a more generalizable result and might provide a more in-depth understanding of the phenomenon being investigated.

## Ethics

The author confirms that there have been no ethical issues committed and that this manuscript has not been published anywhere else.

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