



# THE EFFECTS OF QUALITY FACTORS OF WEB-BASED INFORMATION SYSTEM ON THE EMPLOYEE CONTEXTUAL PERFORMANCE

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## ABSTRACT

Assessing the effectiveness of Web-based Information System (WBIS) is increasingly needed as it has a significant contribution to organizations, particularly on the employee performance. This study is one of the fewest in the field of WBIS assessment in which the effectiveness of WBIS is assessed in terms of contextual performance. It aims at evaluating the impact of quality factors of WBIS: system quality, information quality and service quality on the employee's contextual performance. The study is conducted in Palestine, Gaza. The data of the pilot study is collected from 51 of WBIS users. Concerning the statistical inferential and analytical tests, correlation and regression analysis are used to analyze the data and obtain the results. The findings indicate that there are strong correlations between study factors. However, it is found that system quality is not significantly related to contextual performance. Also, the findings indicate there are significant relationships between information quality, service quality and contextual performance at significance level less than 0.05. Consequently, the proposed model would contribute to literature gap and empirical studies in the field of IS effectiveness assessment.

**Keywords:** *Web-based Information System (WBIS), IS Effectiveness, Information quality, Service quality, System quality.*

## 1. INTRODUCTION

Recently, Web-Based Information System WBIS as a type of Information Systems (IS) has widely spread and becomes one of the most important resources in providing the key organizational functions such as automation and decision making process [1], where it is obviously clear that such system has a significant effects on the organization effectiveness at different levels such as individuals [2,3 and 4]. The deployment of WBIS within institutions is considered as a critical issue for every firm as it has a considerable impact on the organization effectiveness and its reputation, which in turn positively affect the employee performance [5, 6]. Based on review, little is known about the conceptualization and IS evaluation in terms of employee contextual performance, i.e. interpersonal performance [7, 8 and 3]. Therefore, this study seeks to assess the impact of quality factors: system quality, information quality and service quality on the WBIS effectiveness, whereas; the effectiveness

will be assessed in terms of employee contextual performance. The proposed theoretical model is developed based on Delone & McLean's model 2003 [9], which is considered as the most broadly used model in assessing such information system [10, 3 and 9]. Regarding the dependent variable in the proposed model, the contextual performance is conceptualized to be the dependent variable because of its effects on the innovation, loyalty and the development process inside the organization as a whole.

To validate the proposed theoretical model, the correlation and regression analysis are employed.

## 2. RELATED WORK

This section provides explanation regarding what has been written about the effectiveness of information system and its related factors: system quality, service quality, and information quality. This review is considered as an important step to proceed towards the



conceptualization of the factors of the proposed model.

**2.1 Effectiveness**

Despite the IS research are not agreed regarding a singular standard definition for IS effectiveness [11, 12 and 13], Hamilton and Chervany [11] defined the IS effectiveness as the degree to which the information system actually add value towards achieving organizational goals. Also, in this context [14] defines the effective system as a value-added system which influences the user behavior positively (i.e. it improves user productivity, communication, flexibility, and information management). In efforts to conceptualize the IS effectiveness, it is highly important to mention that many researchers (e.g. [15]) highlighted that employee portals as a type of WBIS have a positive impacts on the organizations in numerous fields such as employee productivity and communication. Thus, within the context of this research, the IS effectiveness is conceptualized as contextual or interpersonal performance.

**2.2 System Quality**

The system quality is mainly concerned with the performance properties of the system. Generally, IS studies such as [16, 17, 18 and 19] did not consider the conceptual definition of system quality; they primarily focused on the measures of system quality. However, some studies such as [20, 21 and 22] just mentioned that system quality is one of the IS effectiveness / success dimensions. Other research mentioned that the system quality is typically focused on technical success or system performance characteristics [9, 10]. Within the context of the research, the system quality definition in [9] is considered.

**2.3 Service quality**

There is interchangeability in using the terms e-service quality and web service quality [23]. In addition, [9] mentioned that information system quality consists of service quality as a third critical dimension affecting the effectiveness of e-commerce system which is working via internet environment. Service quality, as defined by [9], is the overall support that is provided by service provider including IS department, a new organization unit or outsourcing services providers. While [10] defined the service quality as the quality of the support provided by IS department and IT support personnel to the users of the system.

Therefore the definition of the service quality in [10] is considered because it is consistent with the research context. Regarding the conceptualization of the study factors, Table 1 reveals the summary of the concepts of the study factors towards the development of theoretical model.

**2.4 Information quality**

The authors [9, 12, 24] mentioned that information quality is one of the significant measures for assessing the overall IS success. Further, [10 and 22] highlighted that information quality Primarily Focuses on the system outputs. In this context, [25] defined the information quality as a well-known success factor which is essential to be used when evaluating the overall success, especially in the context of web based systems. Within the context of this study, the definition of Delone and McLean [9] is suggested for adaptation as the most appropriate definition.

Table 1: The definitions of study factors

Study variable	Author	Definition
System Quality (SQ)	[9]	System quality is defined as a well-known factor of effectiveness used to assess the effectiveness of WBMS through focusing on technical system properties
Service Quality (SERQ)	[10]	Service quality is defined as a well-known quality factor which is concerned with the support provided by from IT support personnel and IS department to the users of system.
Information Quality (IQ)	[9]	Information quality is one of the significant factors of effectiveness used to assess the effectiveness of WBMS through focusing on the characteristics of information output.
WBIS Effectiveness	[14]	WBIS effectiveness is defined as the extent to which WBMS contributes to the

organization at  
individual level  
towards the  
development of  
employee contextual  
performance

departments in this international agency. The quantitative method is adopted in the data collection process. Consequently, there was a necessity for building and developing questionnaire as a data collection tool. The responses of 51 questionnaires are considered in the data analysis as the multiple regression should applied on at least 50 subjects [23].

### 3. THEORETICAL MODEL

#### 3.1 Proposed Model

In the light of literature review and conceptualization of the four study factors, the following conceptual model is proposed in order to represent the relationships among the factors. Figure 1 explains the proposed model which represents the basic step towards the formulation of study hypotheses.

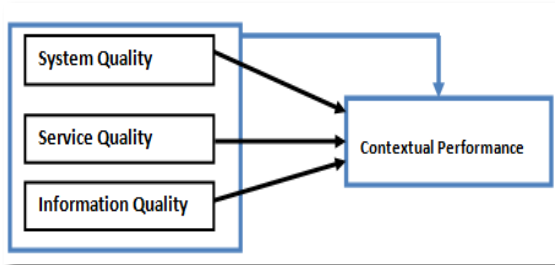


Figure 1: The Theoretical Model

Based on figure 1, the independent variables include system quality, information quality, and service quality while the dependent variable is the contextual performance.

#### 3.2 Hypotheses

Due to the associations included within the proposed model, the following hypotheses should be tested:

**H<sub>1</sub>:** System quality of WBIS has a significant impact on contextual performance.

**H<sub>2</sub>:** Service quality of WBIS has a significant impact on contextual performance.

**H<sub>3</sub>:** Information quality of WBIS has a significant impact on contextual performance.

### 4. METHODOLOGY

This section primarily focuses on the topics including sample, instrument or scale, data analysis and validity.

#### 4.1 Sample and Instrument

Since the population includes UNRWA employees at Palestine-Gaza, the pilot study consists of 51 employees working at different

To proceed towards the validation of the relationships of the proposed model, a questionnaire of four dimensions is designed where the dimensions cover the study factors: system quality, information quality, service quality and WBIS effectiveness. In order to properly assess the three dimensions, the measures of the questionnaire are adapted from standard scales.

#### 4.2 Validity and Reliability

The questionnaire is handed to group of academics in order to ensure the content validity. Also, Statistical Package for Social Sciences (SPSS 15.0) is employed to make a reliability analysis where the scales show a reasonable level of reliability ( $\geq 0.7$ ) [24].

#### 4.3 Data Analysis

The data collected from the pilot sample was analyzed using the Statistical Package for Social Science (SPSS 15.0). The descriptive statistics are used to show the detailed information of the sample characteristics. Concerning the inferential statistical tests, the correlation and regression analysis are adopted for testing the significance of the associations among the model's factors.

### 5. FINDINGS & Discussion

In this section, SPSS is used to obtain a detailed data analysis and findings regarding the correlation and regression analysis. Further, this section provides a discussion for the obtained results in order to decide regarding the hypotheses testing.

#### 5.1 Descriptive Statistics

Regarding the results, the collected data is analyzed in order to check the validity of theoretical framework. To do so, first, the descriptive statistics are used to show the specifications of the sample. Table 2 explains the demographics of the respondents which result from the descriptive analysis.

Table2: Descriptive Statistics

attribute	Description	Qty	%
Sex	Male	26	51
	Female	25	49
Education	Diploma and below	14	27.5
	Bachelor	22	43.1
	Post Graduate	15	29.4
Experience	1 - 5 Years	6	11.8
	5 - 10 Years	14	27.5
	11- 15Years	28	54.8
	>=16	3	5.9
Grade	Low Management	27	52.9
	Middle Management	15	29.4
	Top Management	9	17.7

The descriptive analysis of the questionnaires indicated that on the concern of sex, the male percentage is 51% while the female percentage is 49%. Concerning the respondents' experience, the respondents with experience from 11 to 15 show the largest percentage at 54.8%, followed by 27.5% of who experience from 5 to 10. The respondents of experience (1-5) are the third percentage at 11.8% while the respondents of experience 16 or above have the smallest percentage at 5.9%. Regarding the academic level, the majority of respondents have bachelor degree at a percentage of 43.1%. In the context of Grade characteristic, the respondents of grades (1-11) have the largest percentage at 52.9%.

5.2 Pearson Correlation & Regression Analysis

The Pearson correlation coefficient is used to assess the association among study factors: information quality, system quality, service quality and WBIS effectiveness, i.e. contextual performance. Figure 2 explains Person correlation coefficient for the study factors.

		SQ_Mean	IQ_Mean	SERQ_Mean	CP_Mean
SQ_Mean	Pearson Correlation	1	.390**	.368**	.369**
	Sig. (2-tailed)		.005	.008	.008
	N	51	51	51	51
IQ_Mean	Pearson Correlation	.390**	1	.728**	.756**
	Sig. (2-tailed)	.005		.000	.000
	N	51	51	51	51
SERQ_Mean	Pearson Correlation	.368**	.728**	1	.701**
	Sig. (2-tailed)	.008	.000		.000
	N	51	51	51	51
CP_Mean	Pearson Correlation	.369**	.756**	.701**	1
	Sig. (2-tailed)	.008	.000	.000	
	N	51	51	51	51

\*\* Correlation is significant at the 0.01 level (2-tailed).

Fig 2: The Pearson correlation among study factors.

To summarize the correlations among the study factors, both correlations of factors and significance level are drawn inside table 3.

Table 3: Pearson Correlations

Variable	Contextual Performance (CP)	
	R-value	Sig
System quality	0.369	0.008
Service quality	0.701	0.000
Inform. quality	0.756	0.000
CP	...	...

Based on correlation analysis in table 3, it is clear that there is strong correlation among model's factors. The significance of correlation (i.e. P-value) is less than 0.05 for all associations. Also, the correlation is relatively high for information quality and service quality as the correlation coefficients values 0.756 and 0.701, respectively. In addition the least correlation is obtained between system quality and contextual performance(R= 0.369 and sig. = 0.008). Considering the information quality, it is the most correlated variables with the contextual performance. The regression analysis is used in order to validate the relationships and analyze the effects of independent variables on performance. Figures 3, 4, and 5 represent the regression analysis of the linear relationships between independent variable (i.e. system quality, service quality, and information quality) and the dependent variable (contextual performance).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.369 <sup>a</sup>	.136	.119	1.04913

a. Predictors: (Constant), SQ\_Mean

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.339	1.240		.273	.786
	SQ_Mean	.638	.229	.369	2.779	.008

a. Dependent Variable: CP\_Mean

Fig. 3: The regression analysis of the relationship between SQ and CP

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.701 <sup>a</sup>	.491	.480	.80544

a. Predictors: (Constant), SERQ\_Mean

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.311	.515		.605	.548
	SERQ_Mean	.819	.119	.701	6.873	.000

a. Dependent Variable: CP\_Mean

Fig. 4: The regression analysis of the relationship between SERQ and CP

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.756 <sup>a</sup>	.572	.563	.73848

a. Predictors: (Constant), IQ\_Mean

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.880	.371		2.372	.022
	IQ_Mean	.676	.084	.756	8.092	.000

a. Dependent Variable: CP\_Mean

Fig. 5: The regression analysis of the relationship between IQ and CP

According to Hair et al.[24], there is an essentiality for multiple regression in order to check the regression analysis of dependent variable on two or more independent variables. Consequently, a multiple regression is conducted to ensure and find the contribution of independent variables (system quality and service quality) to dependent variables (Contextual performance). Although the linear regression between system quality and performance is significant, it is found insignificant in case of multiple regressions. The result of multiple regressions is considered because the existed statistics is a multivariate statistics, and the result of linear regression is just an indicator for the existence of correlation [24]. Figure 6 explains the multiple regressions analysis in which the correlations and the contributions of independent variables to contextual performance (CP) are shown.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789 <sup>a</sup>	.623	.598	.70813

a. Predictors: (Constant), SERQ\_Mean, SQ\_Mean, IQ\_Mean

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.225	.857		-.262	.794
	SQ_Mean	.099	.170	.056	.575	.580
	IQ_Mean	.455	.119	.509	3.823	.000
	SERQ_Mean	.361	.154	.309	2.344	.023

a. Dependent Variable: CP\_Mean

Figure 6: The multiple regression analysis

Based on Figure 6, it is obvious that system quality, information quality and service quality predict (R square = 62.3 %) of variance change in contextual performance. R shows high correlations between the independent variables and the dependent variable.

For clarity, Table 4 is drawn in order to reveal summary of the results of the regression analysis in which the independent variables are regressed on the dependent variable.

Table 4: Regression results

The association between system quality and performance (Beta)	0.056
<b>P-Value</b>	0.568
The association between service quality and Performance(Beta)	0.309
<b>P-Value*</b>	0.023
The association between information quality and Performance(Beta)	0.509
<b>P-Value*</b>	0.000

\*Significance level < 0.05

respectively). However the system quality has insignificant relationship with contextual performance at P-value = 0.568 which is greater than 0.05, as well as the regression coefficient of system quality is considerably week (Beta = 0.056). The independent variables including service quality and information quality have a significant correlation with contextual performance, where Beta values (0.309 and 0.509, respectively). Based on figure 6, the independent variables are highly correlated with the dependent variable inside the model (R =0.789). Regarding the strength of correlation (R<sup>2</sup>), system quality, information quality and service quality are strongly correlated with contextual performance where R<sup>2</sup> is 0.623. Accordingly, the three quality factors predict 62.3% of the variance in contextual performance. Thus the findings of the pilot study reveal that the quality factors: service quality and information quality have significant relationships with employees' contextual performance at significance level less than 0.05. In contrast, system quality does not have a significant relationship with contextual performance. Hence, two out of three assumed hypotheses are supported (see table 6).



Table 5: The summary of Hypotheses testing

Hypothesis	Sig	Status
H <sub>1</sub> : SQ → CP	0.568	Not Supported
H <sub>2</sub> : SERQ → CP	0.023	Supported
H <sub>3</sub> : IQ → CP	0.000	Supported

\* The sign → indicates the relationship between variables.

To sum up, Table 6 indicates that 2 out of 3 hypotheses are supported. However, the system quality is not significantly related to contextual performance. Therefore, increase in system quality is not necessarily leads to improvement in the contextual performance. On the other side the increase in information quality and service quality lead to positive improvement on the contextual performance. Also the reliability analysis pointed out that the instrument has an enough level of validity and reliability to be used for assessing study variables. Further, the relationships between quality factors and contextual performance are significant. Therefore, more quality levels leads to positive change in the contextual employee performance.

## 6. IMPLICATIONS

As this article aims at examining the effects of quality factors (system quality, information quality, and service quality) on the contextual performance, this study could contribute to the following parties: (1) it assists in evaluating the effectiveness of IT investment in terms of employee contextual performance which in turn considerably influence the organization productivity and effectiveness as a whole, (2) it contribute to the decision making process as it helps decision makers to decide regarding the improvement of the employee performance, (3) this study focuses on the interpersonal side of the performance, and therefore, it will help organizations in enhancing the loyalty, creativity, and the decision making skills of the employees, and (4) this study might draw on the development of the IT quality based on the assessment of the quality factors.

## 7. CONCLUSION

This study is one of the fewest as it investigates the impacts of quality factors on the employees' contextual performance inside UNRWA, Palestine. This paper primarily focuses on three points to proceed toward the development of this theoretical model. First, this research draws on Web-based Information system (WBIS)

literature in an attempt to broadly understand and explore the concept of effectiveness for WBIS, and how it is measured. Second, it contributes to the theoretical literature through the conceptualization and determination of the quality factors that influence the effectiveness of WBIS. Third, this study checks the validity of the proposed model through using the statistical inferential tests: correlation and regression analysis. Based on data analysis, it is found there are strong correlations among model's factors: system quality, information quality, service quality and contextual performance. However, the system quality is not significantly related to the contextual performance. Therefore, the level of contextual performance will significantly increase if the level of information and service quality are increased. It is expected that this study would contribute to the IS empirical research.

In future research, we suggest to investigate other quality factors that might affect the performance such as user interface quality.

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