

Empirical Assessment and Application of SERVQUAL Evidence from UAE Banks

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Abstract

The current research aims at identifying the causality relationships between SERVQUAL dimensions i.e. tangibility, reliability, responsiveness, assurance, and empathy and demographics i.e. gender, age, income, education, and occupation. The reliability and validity of Parasuraman's instrument were tested in a developing nation i.e. UAE. Moreover, quality of banking services will be assessed in UAE. The experiences of 537 customers were utilized to achieve these objectives. Throughout Multiple Regression in SPSS package, significant relationships between each SERVQUAL dimension and demographics were supported. However, the explanation powers of these models are still weak. Throughout WSRT, banking services' quality still lags behind the expectations of UAE inhabitants.

Keywords: Research paper, SERVQUAL, service quality, expectations, perceptions, and UAE

1. Introduction

Literally, every service provider is keen in offering excellent services to stay in business; however the meaning of excellence remained a debated issue in the literature till recently. Bearing in mind that service quality (SQ) is viewed as the major strategic variable (i.e. a key strategic competitive weapon as perceived by Berry, (1994); Kelley, (1993, and 1992) for instance) in the battle for a decent market share and excellent service is the critical corporate priority (Ghobadian et al., 1994). Moreover, quality jargon is considered a slippery concept that is easy to be visualized and difficult to be defined (Garvin, 1988). In fact, quality could be viewed from different angles and approaches; it is the conformance to specifications as seen by production-oriented scholars (Kasper et al., 1999; Oliver, 1997), and it is the subjective customer perception as seen by customer-oriented scholars (e. g. Rust and Oliver, 1994). All in all, customer's eye is the main determinant of quality (Gummesson, 1991). Here is the focal point which loaded quality upon customer perception. In contrary, poor service has been identified as the primary reason why customers switch to competitors (Philip & Hazlett, 1997). The emergence of SERVQUAL scale determines, in a practical way, the meaning of quality in the eyes of customers. The fact of the matter, SERVQUAL is a useful starting point, not the final answer, for assessing and improving service quality (Parasuraman et al., 1991, p. 445).

2. Previous Work

Parasuraman et al. (1991; 1988; 1985) introduced the first iteration of SERVQUAL scale for measuring service quality. As originally proposed, SERVQUAL consists of two sections: a 22-item section to measure customers' service expectations of companies within a specific sector and a corresponding 22-item section to measure customers' perceptions of a particular company in that sector (Parasuraman et al., 1991, p. 421). This 22-item scale measures five constructs: tangibles (4 items), reliability (5 items), responsiveness (4 items), assurance (4 items), and empathy (5 items). However, they were 10 constructs on the first iteration suggested at 1985. The essence of this scale is based on measuring the quality of offered services by determining the gap between customer expectations and perceptions (P-E). This gap approach will determine the level of satisfaction and loyalty afterward (Davidow & Uttal, 1989), as good service quality means that the customers' perceptions of service performance meet or exceed their expectations (Zhao et al., 2002). More specifically, the higher the perception-minus-expectation (P-E) score is, the higher the level of perceived service quality will be (Lam & Woo, 1997, p. 382).

Once suggested, the literatures of SERVQUAL scale have been centered in two streams. Firstly, using SERVQUAL, in its original iteration, as a tool to measure service quality and testing its validity and reliability e.g. Stodnick and Pamela (2008); Klaus and Stan, (2007); Ugboma et al. (2007); Yavas (2006); Fatma and Harwood (2005); Wisniewski (2001); Mcatarsney (1999); Pariseau and McDaniel (1997); and Reeves and Bednar (1994). Secondly, suggesting minor and major amendments on the original iteration of SERVQUAL e.g. Aga and Okan (2007); Hughey et al., (2003); Zhao et al., (2002); Oldfield and Baron (2000); Donnelly and Shiu (1999); Philip and Hazlett (1997); Cuthbert (1996); and Mittal and Lassar (1996).

Firstly, in education context, Stodnick et al. (2008) deployed SERVQUAL scale (five dimensions with 22 items) to measure student perceptions of service quality and their findings supported SERVQUAL reliably and validity, especially convergent and divergent validity. In shipping context, Ugboma et al. (2007) used the SERVQUAL scale to assess the offered services in two Nigerian ports. Yavas (2006) used the 22-item SERVQUAL scale to measure the customer perception of banking services in Turkey. However, Yavas's study did not approve the same five constructs as the factor analysis revealed. In their study in healthcare context, Fatma and Harwood (2005) found that SERVQUAL model is useful in figuring out the differences between patients' expectations and actual performance. In computer labs context, Hughey et al. (2003) found SERVQUAL scale (22 items) have been loaded onto three factors: staff, services, and professionalism. Also, Oldfield and Baron (2000) found SERVQUAL items centered around three dimensions: requisite, (essential items enables students fulfill their study obligations); acceptable, (items that are preferable rather than essential to student development), and functional (items outside the control of the instructor but are driven from university rules). Wisniewski (2001) used the gap approach (P-E) to evaluate the performance of seven Scottish councils: catering service, building control, development control, grounds maintenance, housing repairs, leisure services, and library services. With regards to library services for instance, the gap was positive with three SERVQUAL dimensions (i.e. responsiveness, assurance, and empathy), as the perception exceeded the expectation with these service dimensions. And negative gap were found with tangibles and reliability dimensions. However, all service managers in Wisniewski's study found the service quality gap and SERVQUAL dimensions were conceptually attractive and operationally useful.

Moreover, Mcatarsney (1999) used, also, the gap approach to assess the quality levels in hospitality, leisure, and entertainment industry in a UK-based small and medium enterprise (case study). Unlike the previous studies, Lam and Woo (1997) have used test-retest reliability to evaluate the long and short-term stability of SERVQUAL scale. The results indicated that the SERVQUAL scale was not stable over time as revealed by the insignificant correlation between the test scores and retest scores. On the same line of literature, Pariseau and McDaniel (1997) found that SERVQUAL scale was useful as an instrument for benchmarking performance to improve service quality in schools of business. Finally, Reeves and Bednar (1994) considered the strengths and weaknesses of the original iteration of SERVQUAL. Having said that, culture environment affect on customer perception of quality, which might be an obstacle on generalizability of SERVQUAL scale (Zhao et al., 2002; Mattila, 1999; Donthu & Yoo, 1998; Babakus & Boller, 1992).

Secondly, in professional accounting context, Aga and Okan (2007) found SERVQUAL scale with its 19 items, and five dimensions, provides good measurement of service quality. Zhao *et al.*, (2002) did not approve the same five constructs as the findings from the Chinese market (i.e. Mainland Chinese Department Store) indicated and suggested further research in this area. Donnelly and Shiu (1999) added three more items, as suggested by a focus group, to the original 22-item SERVQUAL scale suggested by Parasuraman et al. (1990). In that study and after conducting the factor analysis (FA), the data collected did not support the five constructs previously suggested by Parasuraman et al. (1990). However, the presentation of FA was misleading, as factors with eigenvalues less than unity should not be considered in determining the number of factors as suggested by statisticians e. g. Bryman and Cramer (2001); and Hair et al. (1998). Philip and Hazlett (1997) shifted the direction of SQ studies to another direction by suggesting what so-called P-C-P model that has three hierarchical levels: pivotal (outputs), core and peripheral that jointly representing inputs (i.e. personnel and processes which means the organizational structure). Consequently, it is believed that P-C-P model differ from SERVQUAL in the following aspects: the deliverables, the measurement scale, and the importance each dimension has. More specifically, SERVQUAL makes no distinction between the "deliverables" and "personnel and organizational hierarchies" involved in the provision of that service. The P-C-P attribute model does not rely on the separate measurement of customer expectations and perceptions, as does the SERVQUAL scale. Finally, the P-C-P model proposes to assign different weights to each of its three levels of attribute groupings, but the original SERVQUAL scale makes no distinction in the level of importance it attaches to each of its five dimensions. In the P-C-P model, more weight is given to the achievement of the pivotal attributes, followed in turn by the core

and peripheral attributes respectively.

Annex, Mittal and Lassar (1996) focused on the personalization process (i.e. the nature of interpersonal interaction) in service delivery. They differentiated amongst personalization, customization and responsiveness, as the latter two jargons might be offered with complete personalization. They added personalization as the fourth SERVQUAL dimension (i.e. tangibles, reliability, responsiveness, and personalization). The modified 16-item termed “*SERVQUAL-P*”. In their study, personalization as a significant predictor in service quality is proved. However, the subjective way used in determining the components of personalization dimension (i.e. three colleagues in the discipline have been used as judges and were asked to sort out those most reflective of personalization according to the definition provided) could be one of their study’s minuses that need further corroboration of its findings. Cuthbert (1996) after conducting a factor analysis test, reached to a SERVQUAL scale with seven dimensions. In that study and due to low magnitude of Cronbach alpha that ranged between 0.01 and 0.52, the author concluded that using the SERVQUAL scale to measure university service quality seems inappropriate.

Consequently, the current study adopted the first stream of literature that uses SERVQUAL scale in its original iteration to refine and assess the banking services in UAE. Therefore, assessing reliability and validity, using SERVQUAL to assess banking services, and modeling the variables that affect both service perception and expectation represent the current study’s aims.

3. Study Objectives

The current study is oriented to achieve the followings:

1. Modeling the variables that affect the expectations and perceptions of banking services through segment customers into perceived and expected quality categories on the basis of their individual SERVQUAL scores and these segments can then be analyzed in conjunction with demographics as suggested by Lewis (1996) and Lewis and Mitchell (1990) and conducted by Mittal and Lassar (1996);
2. Using SERVQUAL scale to evaluate the offered services’ quality by UAE banks; and
3. To empirically assess the reliability and validity of SERVQUAL scale in a developing country i.e. UAE.

4. Research Hypotheses

The above objectives will be achieved throughout the underneath hypotheses. Hypotheses (**H1E**), (**H2E**), (**H3E**), (**H4E**), (**H5E**), (**H1P**), (**H2P**), (**H3P**), (**H4P**), and (**H5P**) help serve the first objective. And for the second objective, hypothesis (**H6**) is designed. Scale reliability and validity will be tested throughout Cronbach alpha coefficient and factor analysis respectively.

H1E: “There is a significant relationship between the expected service **tangibility** and UAE customer’s gender, age, income, occupation, and education”.

H1Ea: “There is a significant relationship between the expected service **tangibility** and customer’s **gender**”;

H1Eb: “There is a significant relationship between the expected service **tangibility** and customer’s, **age**”;

H1Ec: “There is a significant relationship between the expected service **tangibility** and customer’s **income**”;

H1Ed: “There is a significant relationship between the expected service **tangibility** and customer’s **occupation**”;
and

H1Ee: “There is a significant relationship between the expected service **tangibility** and customer’s **education**”.

H2E: “There is a significant relationship between the expected service **reliability** and UAE customer’s gender, age, income, occupation, and education”.

H2Ea: “There is a significant relationship between the expected service **reliability** and customer’s **gender**”;

H2Eb: “There is a significant relationship between the expected service **reliability** and customer’s **age**”;

H2Ec: “There is a significant relationship between the expected service **reliability** and customer’s **income**”;

H2Ed: “There is a significant relationship between the expected service **reliability** and customer’s **occupation**”;
and

H2Ee: “There is a significant relationship between the expected service **reliability** and customer’s **education**”.

H3E: “There is a significant relationship between the expected service **responsiveness** and UAE customer’s gender, age, income, occupation, and education”.

H3Ea: “There is a significant relationship between the expected service **responsiveness** and customer’s **gender**”;

H3Eb: “There is a significant relationship between the expected service **responsiveness** and customer’s **age**”;

H3Ec: “There is a significant relationship between the expected service **responsiveness** and customer’s **income**”;

H3Ed: “There is a significant relationship between the expected service **responsiveness** and customer’s **occupation**”; and

H3Ee: “There is a significant relationship between the expected service **responsiveness** and customer’s **education**”.

H4E: “There is a significant relationship between the expected service **assurance** and UAE customer’s gender, age, income, occupation, and education”.

H4Ea: “There is a significant relationship between the expected service **assurance** and customer’s **gender**”;

H4Eb: “There is a significant relationship between the expected service **assurance** and customer’s **age**”;

H4Ec: “There is a significant relationship between the expected service **assurance** and customer’s **income**”;

H4Ed: “There is a significant relationship between the expected service **assurance** and customer’s **occupation**”; and

H4Ee: “There is a significant relationship between the expected service **assurance** and customer’s **education**”.

H5E: “There is a significant relationship between the expected service **empathy** and UAE customer’s gender, age, income, occupation, and education”.

H5Ea: “There is a significant relationship between the expected service **empathy** and customer’s **gender**”;

H5Eb: “There is a significant relationship between the expected service **empathy** and customer’s **age**”;

H5Ec: “There is a significant relationship between the expected service **empathy** and customer’s **income**”;

H5Ed: “There is a significant relationship between the expected service **empathy** and customer’s **occupation**”; and

H5Ee: “There is a significant relationship between the expected service **empathy** and customer’s **education**”.

H1P: “There is a significant relationship between the perception of service **tangibility** and UAE customer’s gender, age, income, occupation, and education”.

H1Pa: “There is a significant relationship between the perception of service **tangibility** and customer’s **gender**”;

H1Pb: “There is a significant relationship between the perception of service **tangibility** and customer’s **age**”;

H1Pc: “There is a significant relationship between the perception of service **tangibility** and customer’s **income**”;

H1Pd: “There is a significant relationship between the perception of service **tangibility** and customer’s **occupation**”; and

H1Pe: “There is a significant relationship between the perception of service **tangibility** and customer’s **education**”.

H2P: “There is a significant relationship between the perception of service **reliability** and UAE customer’s gender, age, income, occupation, and education”.

H2Pa: “There is a significant relationship between the perception of service **reliability** and customer’s **gender**”;

H2Pb: “There is a significant relationship between the perception of service **reliability** and customer’s **age**”;

H2Pc: “There is a significant relationship between the perception of service **reliability** and customer’s **income**”;

H2Pd: “There is a significant relationship between the perception of service **reliability** and customer’s **occupation**”; and

H2e: “There is a significant relationship between the perception of service **reliability** and customer’s **education**”.

H3P: “There is a significant relationship between the perception of service **responsiveness** and UAE customer’s gender, age, income, occupation, and education”.

H3Pa: “There is a significant relationship between the perception of service **responsiveness** and customer’s **gender**”;

H3Pb: “There is a significant relationship between the perception of service **responsiveness** and customer’s **age**”;

H3Pc: “There is a significant relationship between the perception of service **responsiveness** and customer’s **income**”;

H3Pd: “There is a significant relationship between the perception of service **responsiveness** and customer’s **occupation**”; and

H3Pe: “There is a significant relationship between the perception of service **responsiveness** and customer’s **education**”.

H4P: “There is a significant relationship between the perception of service **assurance** and UAE customer’s gender, age, income, occupation, and education”.

H4Pa: “There is a significant relationship between the perception of service **assurance** and customer’s **gender**”;

H4Pb: “There is a significant relationship between the perception of service **assurance** and customer’s **age**”;

H4Pc: “There is a significant relationship between the perception of service **assurance** and customer’s **income**”;

H4Pd: “There is a significant relationship between the perception of service **assurance** and customer’s **occupation**”; and

H4Pe: “There is a significant relationship between the perception of service **assurance** and customer’s **education**”.

H5P: “There is a significant relationship between the perception of service **empathy** and UAE customer’s gender, age, income, occupation, and education”.

H5Pa: “There is a significant relationship between the perception of service **empathy** and customer’s **gender**”;

H5Pb: “There is a significant relationship between the perception of service **empathy** and customer’s **age**”;

H5Pc: “There is a significant relationship between the perception of service **empathy** and customer’s **income**”;

H5Pd: “There is a significant relationship between the perception of service **empathy** and customer’s **occupation**”; and

H5Pe: “There is a significant relationship between the perception of service **empathy** and customer’s **education**”.

H6: “The expected banking services (i.e. tangibility, reliability, responsiveness, assurance, and empathy) exceed the perceived level of services i.e. tangibility, reliability, responsiveness, assurance, and empathy in UAE”.

H6₁: “The expected **tangibility** dimension in banking services exceed the perceived level of tangibility in UAE”;

H6₂: “The expected **reliability** dimension in banking services exceed the perceived level of reliability in UAE”;

H6₃: “The expected **responsiveness** dimension in banking services exceed the perceived level of responsiveness in UAE”;

H6₄: “The expected **assurance** dimension in banking services exceed the perceived level of assurance in UAE”; and

H6₅: “The expected **empathy** dimension in banking services exceed the perceived level of empathy in UAE”.

5. Study methodology

This part includes the followings: (1) determining the deployed research paradigm (2) the population from which a representative sample was selected; (3) data collection method; (4) statistical packages and statistical techniques deployed in the current study. **Firstly**, for research paradigm, positivistic approach throughout using a structured questionnaire was adopted. In the same time, a phenomenological approach through using “discussion groups” of bank executives and colleagues were used to find out explanations and clarifications of both study results and questionnaire’s validity. Both paradigms were deployed in a cross sectional study of the UAE banking sector. Interestingly, Zhao et al., (2002) adopted the same approach in investigating the quality performance of a Chinese department store. **Secondly**, a convenience sample of 600 banks’ customers in UAE has been utilized in the current study. **Thirdly**, the 22-item SERVQUAL scale suggested by Parasuraman et al. (1985) and modified in (1991) was used. On which a seven-point Likert scale was deployed. Response bases were asked to indicate their expectations and perceptions for each of the 22 items in the questionnaire with ‘1’

indicating 'strongly disagree' and '7' indicating 'strongly agree' for each one of the 22 statements. The questionnaire is divided into three main parts: (1) demographics; (2) expectation; and (3) perception. Demographic variables are gender, age, income, occupation, and education. The 22-item SERVQUAL scale is divided into five concepts i.e. tangibility (from X1 to X4 in expectation side and from Y1 to Y4 in perception side), reliability (from X6 to X10 in expectation side and from Y6 to Y10 in perception side), responsiveness (from X12 to X15 in expectation side and from Y12 to Y15 in perception side), assurance (from X17 to X20 in expectation side and from Y17 to Y20 in perception side), and empathy (from X22 to X26 in expectation side and from Y22 to Y26 in perception side). For the sake of accurate and meaningful analysis, artificial variables have been created. These created variables are X5 ($\frac{x1+x2+x3+x4}{4}$) for expected tangibility and Y5 ($\frac{y1+y2+y3+y4}{4}$) for perceived tangibility, X11 ($\frac{x6+x7+x8+x9+x10}{5}$) for expected reliability and Y11 ($\frac{y6+y7+y8+y9+y10}{5}$) for perceived reliability, X16 ($\frac{x12+x13+x14+x15}{4}$) for expected responsiveness and Y16 ($\frac{y12+y13+y14+y15}{4}$) for perceived responsiveness, X21 ($\frac{x17+x18+x19+x20}{4}$) for expected assurance Y21 ($\frac{y17+y18+y19+y20}{4}$) for perceived assurance, X27 ($\frac{x22+x23+x24+x25+x26}{5}$) for expected empathy Y27 ($\frac{y22+y23+y24+y25+y26}{5}$) for perceived empathy.

The questionnaire was pilot-tested among 25 bank's executives and respondents, consequently some questions paraphrasing were added to avoid confusion. The questionnaires coupled with the covering letter were handled to every response base. The response rate was 89.5 percent, as the completed and returned questionnaires were 537 out of 600 questionnaires. **Finally**, SPSS release ten was used as a data analysis package. a parametric statistical technique such as multiple regression and a nonparametric statistical technique such as Wilcoxon Signed Ranks Test (WSRT) were deployed. Also, multivariate, bivariate, and univariate analysis were utilized in the current study.

6. The Study Findings

In this part of the study, sample normality, regressors multi-collinearity, scale validity, reliability, hypotheses testing, conclusion, recommendations, and limitations will be discussed.

6.1 Normality, Multi-Collinearity, Validity, and Reliability

Data distribution's shape is considered normal when the sample size is bigger than 30 cases (Ortuzar & Willumsen, 1994). Consequently, normality dimension is assumed, as sample's size is 537 cases in the current study. Statistically, instrument and concepts are considered reliable when the value of Cronbach alpha coefficient is bigger than 60 percent (Foster, 2001, p. 228; Teo & King, 1996; Malhotra, 1993, p. 308).

Table 1. Reliability of Instrument (Scale) and concepts

Instrument (Scales)	N	N of Items	Alpha
The whole questionnaire (excluding the demographics)	537	59	0.982
Tangibility Concept	537	8	0.937
Reliability Concept	537	10	0.927
Responsiveness Concept	537	8	0.914
Assurance Concept	537	8	0.92.9
Empathy Concept	537	10	0.928

As shown in Table 1, Cronbach alpha coefficients are 98.2, 93.7, 92.7, 91.4, 92.9, and 92.8 percent for the whole instrument's items, tangibility, reliability, responsiveness, assurance, and empathy concepts respectively. Therefore, reliability dimension in the current study is supported. Multi-collinearity amongst study's regressors

i.e. gender, age, income, education, and occupation is supported, as all correlations' coefficients show values less than unity, as shown in Table 2.

Table 2. Multi-collinearity Matrix of the Independent Variables (Regressors)

Independent Variables	Independent Variables				
	Gender	Age	Income	Occupation	Education
Gender	--				
Age	.042	--			
Income	.010	.175	--		
Occupation	.002	.125	.009	--	
Education	.006	.227	.168	.112	--

Note: -Number of matrix's cells = $n(n-1) / 2$, where n = Number of independent variables { $5(5-1) / 2 = 10$ } Variables.

For instrument's validity, the current research used a ready-made questionnaire that was designed by Parasuraman et al., (1991) to assess banking service quality. However, grouped discussions, with bankers customers and colleagues, suggest some minor paraphrasing and typo amendments. Literally, validity refers to the extent to which a test measures the concept(s) that it intends or claims to measure [Bryman and Cramer, (1999); Rust and Golomok, (1999); Kline, (1997); and Nunnally, (1978)]. Unlike reliability, there is no single figure which indicates test validity (Kline, 1997). Stodnick et al., (2008); Saravanan et al., (2007); Lotayif, (2003; Lotayif, 2004a and; Lotayif 2004b); Lotayif and El-Ragal, (2004), Keil *et al.*, (2000), Ravichandran and Rai, (2000); Bryman and Cramer, (1999); Rust and Golomok, (1999); Chan *et al.*, (1998); Kline, (1997); Wonnacott and Wonnacott, (1990); Ghiselli *et al.*, (1981); and Nunnally, (1978) distinguish between types of validity. These types are face, contents, predictive (criterion-related validity), construct, concurrent, convergent, divergent, and discriminant validities.

Table 3. Number of Dimensions within the Expectation Side of SERVQUAL Scale

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	15.324	69.654	69.654
2	1.104	5.019	74.673

Notes: -

Extraction Method: Principal Component Analysis in which: -

- Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.978;
- Bartlett's Test of Sphericity = 13252.440, $p = 0.000$;
- Rotation Method: Varimax procedure, which gives an orthogonal solution (i.e. Variance Maximized) with Kaiser Normalization;
- Factor loadings below 0.40 omitted for all the 22 items; and
- Internal consistency reliability (ICR) measured by Alpha coefficient = 0.980

Face validity refers to the appearance of the instrument. Therefore, it includes everything related to collect the required data for the intended purposes, from questions design and order, to number of questions and so on. Face validity is measured by judgmental methods e.g. careful definition of the topic, items to be scaled, scale to be used and so on (El-Ragal, 2001). Content validity refers to the extent to which the instrument provides adequate coverage of the topic being researched (Rust & Golomok, 1999). To ensure these two kinds of validity, the SERVQUAL scale was piloted on fellow academics for consultation as well as industry participants, and amended in the light of comments and recommendations made. Construct validity refers to identify the underlying construct(s) being measured and determine how well the test represents them. It is usually measured by factor analysis (Bryman & Cramer, 1999). In the current study, construct validity testing revealed that SEVQUAL scale is loaded upon two dimensions, as shown in Tables (3, 4, and 5). These two dimensions are "responsiveness-assurance-empathy" and "tangibles-reliability" as revealed in expectation side of the SERVQUAL scale in Table 4.

Table 4. Number of Dimensions in SERVQUAL Scale

SERVQUAL Dimensions (Expectation)			SERVQUAL Dimensions (Perception)		
Five-dimension SERVQUAL items)	Responsiveness Scale (22-Assurance -Empathy	Tangibles- Reliability	Five-dimension SERVQUAL items)	Assurance- Scale (22Empathy	Tangibles-Reliability- Responsiveness
Tangibles X1		.795	Y1		.811
X2		.812	Y2		.788
X3		.816	Y3		.814
X4		.804	Y4		.803
Reliability X6		.658	Y6		.741
X7		.645	Y7		.654
X8		.645	Y8		.682
X9		.647	Y9		.665
X10		.630	Y10		.700
Responsiveness X12	.626		Y12		.604
X13	.611		Y13		.648
X14	.674		Y14		.642
X15	.661		Y15		.595
Assurance X17	.761		Y17	.653	
X18	.789		Y18	.640	
X19	.780		Y19	.757	
X20	.751		Y20	.718	
Empathy X22	.779		Y22	.788	
X23	.735		Y23	.811	
X24	.800		Y24	.814	
X25	.809		Y25	.784	
X26	.809		Y26	.795	

Note:-
➤ X1 to X26 represent the 22 items in SERVQUAL scale.

In the perception side of SERVQUAL scale, the two dimensions are “*tangibles-reliability*” and “*responsiveness-assurance-empathy*”, as shown in Tables (4, and 5). Consequently, the current study is not ensuring the five dimensions of SERVQUAL scale suggested by Parasuraman *et al.*, (1991). However, its reliability is ensured, as Cronbach alpha coefficients are 0.980, and 0.920 for the expected and perceived side of SERVQUAL scale respectively, as shown in Tables (3 and 4).

Table 5. Number of Dimensions within the Perception Side of SERVQUAL Scale

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	14.723	66.924	66.924
2	1.240	5.637	72.560

Notes: -

Extraction Method: Principal Component Analysis in which: -

- Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.974;
- Bartlett's Test of Sphericity = 12311.833, $p = 0.000$;
- Rotation Method: Varimax procedure, which gives an orthogonal solution (i.e. Variance Maximized) with Kaiser Normalization;
- Factor loadings below 0.40 omitted for all the 22 items; and
- Internal consistency reliability (ICR) measured by Alpha coefficient = 0.920

Predictive validity/Criterion-related validity refers to ability of a test to predict some relevant outcome (Saravanan *et al.*, 2007). To assess this kind of validity, criterion to be compared with should be available. However, it is difficult to set up a good criterion to upon which to base predictions. Therefore, predictive validity

is of little use (Bryman and Cramer, 1999). To test criterion-related validity, Kuo (2003) proposed correlating SERVQUAL scale with overall service quality, loyalty, and overall customer satisfaction. The current study did not address that topic, as its main concern is the assessment of banking services. Therefore, other scholars are invited to conduct that in a Middle East context. However, other scholars e. g. Saravanan *et al.*, (2007) have tackled that issue in a developing nation context (Indian automobile service sector). Concurrent validity refers to correlating a test with another test of the same variable (Rust and Golomok, 1999). Satisfactory concurrent validity requires a correlation of at least 0.7 between the two tests (El-Ragal, 2001). Scales differences impose restrictions on conducting this kind of validity. Discriminant validity refers to the strength of correspondence between a measure and other measures which are supposed to represent other concepts (Bryman and Cramer, 1999). Ghiselli *et al.*, (1981) stated that correlation coefficient greater than 0.80 represent extreme cases. Finally, convergent validity refers to the attempt to demonstrate that each measure harmonizes with another measure (El-Ragal, 2001; Bryman & Cramer, 1999; Chan 1996). Using observations in addition to the questionnaire could guarantee this kind of validity a procedure not followed here (El-Ragal, 2001).

6.2 Hypotheses Testing

As shown in Table (6) and based on Multiple Regression (MR) results, there are significant relationships between every expected SERVQUAL dimension (i.e. tangibility, reliability, responsiveness, assurance, and empathy) and UAE customers' demographics (i.e. gender, age, income, occupation, and education), as $p < 0.05$. Consequently, the alternative hypotheses (**H1E**), (**H2E**), (**H3E**), (**H4E**), and (**H5E**) are supported. The most remarkable things are:

- Customers' expectations of service quality (measured by the SERVQUAL dimensions) are affected by their demographics.
- Data entry order process did not affect on its analysis, as Durbin-Watson test reported values > 1.4 for all dependent variables, as shown in Table 6.
- The explanation powers of these models are weak, as "R square" and "adjusted R" values indicate. More specifically, these five IV's are responsible only for 0.043, 0.037, 0.054, 0.056 and 0.053 of the behaviours of tangibility, reliability, responsiveness, assurance, and empathy respectively. However, if the adjusted R square has been taken into consideration, the magnitude of IVs shrink to small proportions, as shown in Table 6.

Statistically, if the MR model is significant it does not mean that all the independent variables within the regression equation have significant relationships with the dependent variable, but it does mean that only (at least) one significant relationship exist (Ashour, 1993). Therefore it is necessary to determine the effect that each independent variable has in the MR equation. More specifically, occupation is the only independent variable that has significant relationship with all expected SERVQUAL dimensions, as $p = 0.000 < 0.05$. Consequently, the following alternative hypotheses **H1Ed**, **H2Ed**, **H3Ed**, **H4Ed**, and **H5Ed** are supported. Only gender and occupation regressors report significant relationships in the expected assurance and empathy equations, as $p = 0.031, 0.00, 0.00, \text{ and } 0.006 < 0.05$ respectively, as shown in Table (7). Therefore, the alternative hypotheses **H5Ea** and **H4Ea** {**H5Ed**, and **H4Ed** were added before} could be added to the supported hypotheses list. On the other hand, **H1Ea**, **H1Eb**, **H1Ec**, **H1Ee**, (for tangibility) **H2Ea**, **H2Eb**, **H2Ec**, **H2Ee**, (for reliability) **H3Ea**, **H3Eb**, **H3Ec**, **H3Ee**, (for responsiveness) **H4Eb**, **H4Ec**, **H4Ee** (for assurance), **H5Eb**, **H5Ec**, and **H5Ee** (for empathy) are not supported, as $p > 0.05$ with all these variables, as shown in Table (7). To sum up the expected side of SERVQUAL scale, no significant relationships exist between tangibility and gender, age, income, and education. Also, no significant relationships exist between reliability and gender, age, income, and education. No significant relationships exist between responsiveness and gender, age, income, and education. No significant relationships exist between assurance and age, income, and education. Finally, no significant relationships exist between empathy and age, income, and education.

Table 6. Multiple Regressions between the demographics and SERVQUAL dimensions

Customers' Expectation	F	P-value	R	R Square	Adjusted R Square	R	Durbin-Watson
▪ Tangibility	4.814	0.000***	0.208	0.043	0.034		1.491
▪ Reliability	4.087	0.001***	0.193	0.037	0.028		1.423
▪ Responsiveness	6.054	0.000***	0.232	0.054	0.045		1.461
▪ Assurance	6.323	0.000***	0.237	0.056	0.047		1.517
▪ Empathy	5.940	0.000***	0.230	0.053	0.044		1.529
Customers' Perception							
▪ Tangibility	2.380	0.038***	0.148	0.022	0.013		1.469
▪ Reliability	2.134	0.060	0.140	0.020	0.010		1.418
▪ Responsiveness	2.637	0.023***	0.156	0.024	0.015		1.466
▪ Assurance	2.700	0.020***	0.157	0.025	0.016		1.496
▪ Empathy	3.428	0.005***	0.177	0.031	0.022		1.441

Notes:-

- (***) There is a significant relationship between at least one of the independent variables and model dependent variable as $p < 0.05$. Therefore, the model variables' coefficients should be explained in a bivariate analysis (i.e. correlations amongst these variables);
- **R Square** = indicates the effects the independent variables have on the dependent one in the sample;
- **Adjusted R Square** = reflects the model goodness of fit for the population; and
- **Durbin-Watson** is a test to indicate the effect of data entry order on the analysis, therefore if it is > 1.4 , it means the order has no effect on the analysis, and if it is less than 1.4, it means the order has affected the analysis (Stat graphics 2000). Durbin-Watson values range from zero to four. Whilst a value close to zero indicates strong positive correlation, a value of four indicates strong negative correlation. But values between 1.5 and 2.5 indicate acceptable level of independency amongst variables (Durbin and Watson, 1971).

In the perception side of the SERVQUAL scale, the alternative hypotheses (**H1P**), (**H3P**), (**H4P**), and (**H5P**) are supported, as $p = 0.038, 0.023, 0.020, \text{ and } 0.005 < 0.05$ respectively, as Table (6) indicates. Having said that, significant relationships exist between customers' demographics and perceived SERVQUAL dimensions e.g. tangibility, responsiveness, assurance, and empathy. However, the alternative hypothesis (**H2P**) is rejected, as $p = 0.060 > 0.05$ which means there is no significant relationship existed between customer perception of reliability dimension and demographics. Two remarkable things could be noticed here:

- The explanation powers of these models are weak, as "R square" and "adjusted R" values indicate. More specifically, these five IVs are responsible only for 0.022, 0.024, 0.025, and 0.031 of the behaviours of tangibility, responsiveness, assurance, and empathy respectively.
- However, if the adjusted R Square has been taken into consideration, the effect of the independent variables shrink to small proportions, as shown in Table 6.

Table 7. Explaining the weighted effect of each regressor on the dependent variables

DVs	Independent Variables										Constant
	Gender		Age		Income		Occupation		Education		
	B	P-Value	B	P-Value	B	P-Value	B	P-Value	B	P-Value	
X5	-0.239	0.064	0.000	0.554	-3.398	0.771	0.084	.000	0.132	0.150	4.841
X11	-0.102	0.428	-7.743	0.882	2.390	0.837	0.087	.000	0.090	0.320	4.833
X16	-0.176	0.174	-0.000	0.778	1.528	0.191	0.105	.000	0.047	0.601	4.629
X21	-0.362	0.006	6.387	0.904	6.266	0.597	0.096	.000	0.102	0.272	4.909
X27	-0.270	0.031	-6.311	0.901	9.123	0.420	0.095	.000	0.073	0.406	4.823
Y5	0.649	0.649	0.000	0.606	1.255	0.287	0.028	0.184	0.221	0.017	4.293
Y11	-0.008	0.950	-0.000	0.642	6.662	0.572	0.014	0.507	0.264	0.004	4.290
Y16	0.059	0.661	-0.000	0.807	2.643	0.031	0.018	0.416	0.209	0.029	4.002
Y21	-0.154	0.246	6.022	0.911	2.729	0.023	0.025	0.252	0.157	0.093	4.321
Y27	0.056	0.678	-0.000	0.705	3.106	0.011	0.020	0.364	0.233	0.015	3.926

Notes: -

➤ **X5** = Expected Tangibility, **X11**= Expected Reliability, **X16**= Expected Responsiveness, **X21**= Expected Assurance, and **X27** = Expected Empathy;

Y5 = Perceived Tangibility, **Y11**= Perceived Reliability, **Y16**= Perceived Responsiveness, **Y21**= Perceived Assurance, **Y27** = Perceived Empathy; and

➤ $y = \infty + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_n x_n + \epsilon$ (Cooper and Emory, 1995, p. 499).

Where: -

y = The dependent variable (SERVQUAL 10 dimensions i.e. 5 expected and 5 perceived);

∞ = The value of y if all X's equal zero (constant value);

β = The general liner model slopes of X_i , or the response. β represent the regression coefficient associated with each X_i ;

X_i = The independent variables (e.g. 10 dimensions, 5 expected dimensions and 5 perceived dimensions); and

ϵ = Model' error, ϵ is assumed to be zero.

It is necessary to determine the effect that each independent variable has in the MR equation. In tangibility model, no significant relations exist with gender ($p = 0.649 > 0.05$), age ($p = 0.606 > 0.05$), income ($p = 0.287 > 0.05$), and occupation ($p = 0.184 > 0.05$). Therefore, the alternative hypotheses **H1Pa**, **H1Pb**, **H1Pc**, and **H1Pd** are not supported. In reliability model, no significant relationships exist with gender ($p = 0.950 > 0.05$), age ($p = 0.642 > 0.05$), income ($p = 0.572 > 0.05$), and occupation ($p = 0.507 > 0.05$). Therefore, the alternative hypotheses **H2Pa**, **H2Pb**, **H2Pc**, and **H2Pd** are not supported. In responsiveness model, no significant relationships exist with gender ($p = 0.661 > 0.05$), age ($p = 0.807 > 0.05$), and occupation ($p = 0.416 > 0.05$). Therefore, the alternative hypotheses **H3Pa**, **H3Pb**, and **H3Pd** are not supported. In assurance model, no significant relationships exist with gender ($p = 0.246 > 0.05$), age ($p = 0.911 > 0.05$), occupation ($p = 0.252 > 0.05$), and education ($p = 0.093 > 0.05$). Therefore, the alternative hypotheses **H4Pa**, **H4Pb**, **H4Pd**, and **H4Pe** are not supported. In empathy model, no significant relationships exist with gender ($p = 0.678 > 0.05$), age ($p = 0.705 > 0.05$), and occupation ($p = 0.364 > 0.05$). Therefore, the alternative hypotheses **H5Pa**, **H5Pb**, and **H5Pd**, are not supported.

For the third objective of the current study and based on Wilcoxon Test, the alternative hypotheses **H6**, **H6₁**, **H6₂**, **H6₃**, **H6₄**, and **H6₅** are supported, as $P = 0.000 \leq 0.05$, as shown in Table (8). More specifically, $P = 0.000 \leq 0.05$ is an inductive that the difference between every expected and perceived item is not zero (i.e. could be plus or minus). The univariate analysis (represented by median, mean, and summation) confirmed that the expected level of banking services exceed the perceived level with all SERVQUAL dimensions. More specifically, all differences between perception and expectation (P-E) show negative values range from - 0.750 to - 1.00 and from - 0.451 to - 0.639 for median and mean respectively, as shown in Table (8). To bridge these gaps, too much work is needed to enhance the performance of UAE banks. SERVQUAL dimensions represent the pillars to be proposed for that enhancing. For tangibility dimension, the following items could be used in developing banking services:

- Banks' equipments to be more modern looking;
- Physical facilities to be more attractive;
- Banks employees to be more smart; and
- Pamphlets and statements to be more attractive.

For reliability dimension, the followings could be used in enhancing the banking services:

- To be up to your promises (i.e. to serve at certain time, with certain quality and so on) ;
- To show a sincere interest in solving customer problems;
- To minimize banks' mistakes, in serving customers;
- To do the follow up services that have been promised before; and
- To insist on error-free records.

For responsiveness dimension, the followings could be the remedy:

- Banks' employees have to tell their customers the exact time needed to accomplish every single service from the beginning;
- To offer prompt banking services whenever asked;
- Employees have to show genuinewillingness to help customers; and
- Employees never excuse by their busyness to respond to customers' requests.

Table 8. Wilcoxon signed ranks test (WSRT)

SERVQUAL Dimension	Bivariate Analysis		Univariate Analysis							
	Wilcoxon Test		Median			Mean			Sum	
	Z value	P-Value	E	P	(P-E)	E	P	(P-E)	E	P
Tangibility	-8.844	.000 R	6.000	5.250	-0.750	5.484	5.033	-0.451	2945.0	2702.8
Reliability	-9.217	.000 R	6.000	5.200	-0.800	5.560	4.951	-0.609	2985.8	2659.0
Responsiveness	-9.195	.000 R	6.000	5.000	-1.000	5.507	4.880	-0.627	2957.2	2621.0
Assurance	-9.783	.000 R	6.000	5.250	-0.750	5.615	5.036	-0.579	3015.5	2704.7
Empathy	-9.406	.000 R	6.000	5.200	-0.800	5.555	4.916	-0.639	2983.4	2640.4

Note: -

- **R**= Rejecting the null hypothesis that; “the median of the population difference ($X_i, Y_i = D$) is zero”, as $p \leq 0.05$;
- **E** represents customer’s expectation, and **P** represents customer’s perception;
- **Median** is the score in the centre of the sample;
- **Mean** means adding up all the values and divide by the number of values; and
- **Sum** is the total score of that variable within the sample.

For assurance dimension, the followings could be the remedy:

- The behaviour of employees have to instil confidence in customers;
- Make your customer feel safe in there transactions with your bank;
- Banks’ employees are consistently courteous and polite with customers; and
- Sufficient knowledge and authority to be given to employees to enable them to answer customers’ questions.

For empathy dimension, the followings could be the remedy:

- Give personal attention to every individual customer;
- Operating hours to be convenient to all customers;
- Try to customize banks’ services to better satisfy customers;
- Let customers feel that theirbest interests been taken at heart; and
- To invest in marketing research to better understand customers’ needs.

7. Conclusion

Face and content validities of SERVQUAL scale are supported. However, construct validity is not supported, as the 22-item scale is loaded upon two main factors: “*responsiveness-assurance-empathy*” and “*tangibles-reliability*” for service expectation and “*tangibles-reliability*” and “*responsiveness-assurance-empathy*” for service perception. The expectations of banking services in UAE are affected by customer’s demographics. Therefore, few models are existed:

- (1) Tangibility dimension and demographics i.e. gender, age, income, occupation, and education;
- (2) Reliability dimension and demographics i.e. gender, age, income, occupation, and education;
- (3) Responsiveness dimension and demographics i.e. gender, age, income, occupation, and education;
- (4) Assurance dimension and demographics i.e. gender, age, income, occupation, and education; and
- (5) Empathy dimension and demographics i.e. gender, age, income, occupation, and education.

Also, the perceptions of banking services in UAE are affected by customer’s demographics. Therefore, few models are existed:

- (1) Tangibility dimension and demographics i.e. gender, age, income, occupation, and education;
- (2) Responsiveness dimension and demographics i.e. gender, age, income, occupation, and education;
- (3) Assurance dimension and demographics i.e. gender, age, income, occupation, and education; and
- (4) Empathy dimension and demographics i.e. gender, age, income, occupation, and education.

The baking services in UAE lagging behind customers expectations, therefore banks are invited to rethink in their adopted strategies. SERVQUAL dimensions help guide that restructuring process.

7.1 Limitations and Recommendations

- As current study depended mainly on SERVQUAL iteration proposed by Parasuraman *et al.*, (1991), criterion-related validity was not conducted. Therefore, other researchers are invited to correlate some other variables such as overall service quality, loyalty, and overall customer satisfaction with SERVQUAL as proposed by Kuo, (2003) and others e.g. Saravanan *et al.*, (2007).
- As only structured questionnaire (not coupled with observation) was used as a data collection tool, convergent validity was out of reach. Other scholars are invited to add concurrent, discriminant, and convergent validities in a Middle east context.
- As the explanation powers of multiple regression models are weak, other regressors rather than those used in the current study are recommended to be added. Consequently, other scholars are invited to explore other variables.

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