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Service quality, customer satisfaction and loyalty in the Yemeni mobile service market

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Abstract: The purpose of this research is to reveal the service quality dimensions (SERVQUAL) from the customers' perspectives, and to examine their effect on customer satisfaction and loyalty in Yemen's mobile service market. Using a structured questionnaire, 1400 questionnaires were delivered to customers from which 999 were valid and useable for data analysis. Utilising structural equation modelling, we found that SERVQUAL is a four-dimensional construct consisting of reliability, empathy and assurance, tangibles and responsiveness in opposing to five as proposed by the original hypothesised model. Reliability, empathy and assurance, tangibles positively and significantly affected customer satisfaction. Also, customer satisfaction positively and significantly affected customer loyalty. The results provide managers and CEOs of the Yemeni mobile service operators with significant managerial implications regarding the service quality dimensions and the vital role they play to ensure customer satisfaction and loyalty alike.

Keywords: service quality; SERVQUAL; customer satisfaction; customer loyalty; mobile service operators; Yemen; emerging markets.

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1 Introduction

During the past decades, service industries have played an important role in world's economies. The strategic significance of service industries is indicated by increasing the ratios of employment in services, a sharp growth in the share of the service industries in almost all the developing and developed economies, especially in business, health, and personal services, increasing productivity growth and its competitive performance of the overall economy as well as greater contribution of the services industries to gross domestic product for many economies. As service companies continue to seek unique sources of sustainable competitive advantage, service quality has been discussed conceptually as a potential alternative to traditional skills and resources (Bharadwaj et al., 1993), as well as empirically tested as a potential driver of improving performance (Rapert and Wren, 1998; Newman, 2001; Kang and James, 2004).

The rapid development of service industries, as a major driver of economic development, has shaped the strategic importance of service quality on the macro and micro levels (i.e. organisations) alike. The unique characteristics of services – intangibility, heterogeneity, inseparability, labour intensive – are well documented in the services marketing literature which must be acknowledged to understand service quality (Parasuraman et al., 1985). Since the service industry is complex and intangible in nature, this intangibility poses great problems to service organisations in communicating to the consumer exactly what is on offer, resulting in the consumer's inability to really evaluate a service until it has been consumed (Redman and Mathews, 1998, p.59). Service quality has become a major area of attention to practitioners, managers and researchers owing to its strong impact on business performance, lowering costs, increasing customer satisfaction, customer loyalty and profitability (Cronin and Taylor, 1992; Seth et al., 2005; Akroush et al., 2011).

Service quality is considered critical success element in modern service businesses and a prerequisite for achieving sustainable competitive advantage (Rapert and Wren, 1998). Therefore it enhances service ability to differentiate itself from competitors and gain competitive advantage (Cronin and Taylor, 1992; Chang and Chen, 1998; Lasser et al., 2000; Newman, 2001; Sureshchander et al., 2002; Seth et al., 2005; Akroush, 2008; Dahiyat et al., 2011). Recent research has invested much effort on the conceptualisation and measurement of service quality and its relationship with business performance (e.g., Chumpitaz and Paparoidamis, 2005; Dahiyat et al., 2011). Further, customer loyalty is a function of customer satisfaction (Fecikova, 2004) and customer loyalty highly contributes to company profitability via repeating purchase and recommendation to other customers which means spending more on a company products and services (Bowen and Chen, 2001; Fecikova, 2004). Therefore, recent studies have been built upon customer commitment as a key mediator of the relationship between the customer's evaluations of a firm's performance and the customer's intentions regarding the future relationship with the firm (Fullerton, 2005). To survive, organisations need to

produce products and services of high quality that yields highly satisfied and loyal customers (Fecikova, 2004). In addition, customer satisfaction and loyalty are a function of quality products and services that provide customers value for money which are also seen as essential driver for businesses long-term success and survival.

The important role of the service sector and services organisations in modern economies have emphasised on the efforts of academic researchers and service managers to understand the quality of service perceived by customers and how it effects customer satisfaction and behavioural intentions (Olorunniwo et al., 2006; Pollack, 2009). Berry et al. (1994) argued that excellent service is a profit strategy because it results in more new customers, more business with existing customers, fewer lost customers, more insulation from price competition, and fewer mistakes requiring the re-performance of services.

In emerging markets such as Yemen, understanding the service quality measurements and dimensions has become a very vital issue to satisfy customers and create customer loyalty as well as acquiring new profitable customers. This research aims to examine the service quality dimensions as well as examining their effect on customers' satisfaction and loyalty in Yemen's mobile telecommunications industry. In the growing global communications industry, service quality has become increasingly important, as telecommunication firms strive to protect their subscribers' bases (Lai et al., 2005). In 2001, two private companies won 15 year licence to provide mobile phone services in Yemen. Also, other two operators in 2005 and 2006 were allowed to operate in Yemen's mobile service market. Therefore, there are four major mobile telecommunication operators in Yemen (SabaFon, Yemen Mobile, Y Telecom and MTN Yemen) which offer a full range of mobile communication and other basic services. This new licensing has intensified competition in the market. Although the mobile communications industry is one of the most important service markets in Yemen, it has been neglected by most previous studies. To enhance their competitive position, mobile communication companies in Yemen should improve service quality to differentiate their services from those of their competitors.

As a consequence of recent calls to conduct more research in developing countries and emerging markets, there is a need to fill gaps in service quality literature which should enable researchers, CEOs and managers to shed more lights and knowledge on service quality measures, dimensions and conceptualisations in emerging markets such as the Yemeni mobile services market. Furthermore, the vast majority of service quality models and measurements are investigated and developed in developed countries; meanwhile the service quality measurements and applications have almost a limited amount of research in emerging markets. For instance, service quality research has been conducted in emerging economies, including banking, tourism, accounting consultancy, medical services, among others (Wang et al., 2003; Angur et al., 1999; Sureshchander et al., 2002; Lam et al., 1997; Oldfield and Baron, 2000; Akroush, 2008; Ho and Lin, 2010) as well as other telecommunication industries such as China (Lai et al., 2007), Ethiopia (Negi, 2009) and Jordan (Akroush et al., 2011).

The Yemeni mobile service operators focus on acquiring new customers instead of enhancing on the quality of service provided to satisfy the current ones. Since they only focus on acquiring new customers, they do not recognise that the costs of acquiring new ones are much higher than sustaining the previous customers. Therefore, mobile service operators in Yemen are in a desperate need of studies such as this one to enhance their

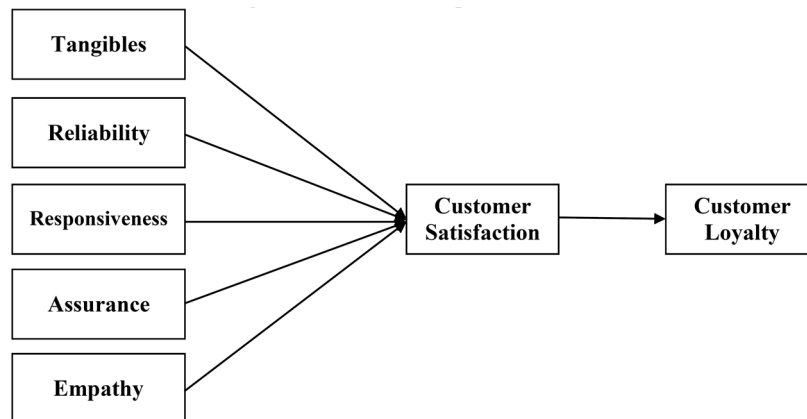
competitive position and differentiate service quality as well as sustaining customer satisfaction to build customer loyalty. Therefore, the purpose of this study is to provide these operators with a guidance and ability to make effective improvements in perceived service quality by customers that should lead them to have satisfied and loyal customers.

Based on relevant literature review of service quality, the research objectives are:

- 1 To reveal the service quality dimensions in Yemen's mobile service market.
- 2 To examine the effect of the service quality dimensions on customer satisfaction Yemen's mobile service market.
- 3 To examine the effect of customer satisfaction and loyalty Yemen's mobile service market.
- 4 To provide Yemen's mobile service operators' managers with strategic insights and empirical findings regarding the service quality dimensions and their effects on customer satisfaction and loyalty from customers' perspectives.

This paper is organised in as follows: next section includes the literature review and research model and hypotheses. Further section includes the detailed research methodology and hypotheses testing, and the analysis and findings parts. Next section includes the research results discussion and implications on theory and practice. Finally, conclusions, limitations, and future research avenues are outlined.

Figure 1 Proposed research model



2 Service quality and customer satisfaction

Service quality has been given increased attention in recent years due to its specific contribution to business competitiveness. Service quality is the customer's overall perceived assessment of service performance. It is an elusive construct due to the unique characteristics of services, and it is hard to measure without measuring the dimensions that affect the quality of the service (Parasuraman et al., 1988). Literature indicates that many measurements have been taken to improve service quality and these measurements

represent problems for researchers in order to define the construct of the quality in services (Parasuraman et al., 1985, 1988; Carman, 1990). An intensive debate of the service quality measurements that its measurements depend on the type of service setting, situation, time, need and other factors because of customer's expectation toward particular services is changing according to (Seth et al., 2005). There are many service quality models that have been presented and tested in different service settings. Seth et al (2005) have conducted an intensive literature review on service quality models and found that 19 models of service quality been tested by various authors of service quality.

Parasuraman et al. (1985, 1988) introduced the SERVQUAL instrument which consisted of five dimensions with 22-items that capture facets of service quality. SERVQUAL measuring instruments is used for assessing customers' perceptions and expectations of the firm's service quality. SERVQUAL (perception minus customer's expectations) is a measure instrument, based on the original identification consist of ten dimensions namely tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, assurance, empathy (Parasuraman et al., 1988). Many studies modified service quality measurements using SERVQUAL instrument (five dimensions) namely: "tangibles", "reliability", "responsiveness", "assurance", and "empathy" in different mobile service industries (e.g. China, Greece, Jordan). The discussed literature review indicates that SERVQUAL is the most reputable service quality model and measurement and has been extensively used in developed and developing countries research endeavours.

Service quality drives customer satisfaction and business performance. A key term in the interrelationships among service quality, customer satisfaction, and loyalty, is 'behavioural intentions', which mainly refers to positive impressions generated in the customers' perspective, as a result of being satisfied from high service quality, and the manifestation of these impressions into favourable behavioural intentions that take the form of repurchase intentions, word of mouth, loyalty, recommending the business, trust, and price insensitivity (Zeithaml et al., 1996; Akroush et al., 2011). Customer satisfaction is the customer fulfilment response. It's a judgement that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption related fulfilment including levels under or over fulfilment (Oliver, 1997). In the mobile telecommunication industry, mobile operators compete through two of the most important weapons to gain competitive advantage, service quality and customer satisfaction. Parasuraman et al. (1988), defined service quality and customer satisfaction as service quality is a global judgment, or attitude, relating to the superiority of the service, whereas satisfaction is related to a specific transaction. The vast majority of discussed literature indicates that service quality is a major driver of customer satisfaction. Consequently, service quality has a direct effect on customer satisfaction. Thus, it can be hypothesised that:

H₁: Service quality has a positive significant effect on customer satisfaction.

3 Customer satisfaction and customer loyalty

The relationship between service quality and customer satisfaction has been investigated and an increase in one is likely to lead to an increase in the other (Sureshchander et al., 2002). Several researchers found that there is a positive relationship between service

quality and customer satisfaction (Lai et al., 2008; Akroush et al., 2011). This, in turn, may lead to either positive or negative behavioural intentions depending on the degree of service quality perceived and degree of satisfaction (Cronin and Taylor, 1992; Brady and Robertson, 2001). Many studies have also confirmed that there is a significant relationship between customer satisfaction and customer loyalty and attempted to understand the nature of customer loyalty and the antecedents that might affect it in the mobile telecommunications industry (e.g., Aydin et al., 2005; Aydin and Özer, 2005; Akroush et al., 2011).

The concept of customer loyalty has many different definitions. In the past, customer loyalty has been debated by academics in terms of dimensionality and measurements. Customer loyalty is a complex multi-dimensional construct (Dick and Basu, 1994; Mellens et al., 1996; Javalgi and Moberg, 1997). Gremler and Brown (1996) defined customer loyalty as the degree to which a customer exhibits repeat purchasing behaviour from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for this service exists. Loyalty thus defined as the relationship between individual's attitudinal predisposition toward and object and the repeat patronage to that object. Oliver (1997) defined customer loyalty as "a deeply held commitment to rebuy or re-patronise a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour". Therefore, loyalty is a valuable tool for developing an effective marketing strategy. Literature indicates that two basic approaches are used to understand customer loyalty; stochastic and deterministic loyalty (Odin et al., 2001). The stochastic approach views customer loyalty as behaviour. On the other hand, the stochastic approach views customer loyalty as attitudinal (Aydin and Özer, 2005) or could be combination of both behavioural and attitudinal to gain appreciation of the loyalty make-up firm's customer base, therefore knowing the proportion of each type of loyalty is important to understand the customer reaction in order to direct the marketing efforts to enhance understanding and predictability of customer loyalty.

Customers' loyalty does not always reflect their attitudes. This is consistent with Oliver's (1997) deterministic definition of customer loyalty who describes it as "a deeply held commitment to re-buy or re-patronise a preferred product consistently in the future situational influences". The benefits of customer loyalty when a company consistently delivers superior value to customers, the revenues and market share increases while the costs of retaining the existing customers is less than acquiring new customer (Reichheld, 1993, p.64). However, it is beneficial from both the company and the customers. Further, many researchers have advocated the importance of customer loyalty to the future stability and growth of the organisation (e.g., Parvez, 2005; McMullan and Gilmore, 2008; Lim and Kumar, 2008). Consequently, customer loyalty in mobile telecommunications can be affected by several factors including service quality (Aydin and Özer, 2005), and customer satisfaction (Ranaweera and Prabhu, 2003; Aydin et al., 2005; Aydin and Özer, 2006).

Customer loyalty literature reveals two main types of loyalty; behavioural Loyalty and attitudinal Loyalty. Behaviour loyalty focuses on the long term choice probability for a brand, for example, repeat purchase probability. Attitudinal loyalty focuses on brand recommendations, resistance to superior products, repurchase intention etc. (Rizka and Widji, 2013). The behavioural perspective, "purchase loyalty", strictly looks at repeat purchase behaviour and is based on the customer's purchase history. Here, the emphasis

is on past-rather than on-future actions. Moreover, no other loyal behavioural actions such as price tolerance, word of mouth, or complaint behaviour can be interpreted (Zins, 2001). Concentrating on the behavioural aspect of loyalty could overestimate true loyalty (Zins, 2001). The attitudinal perspective, in contrast, allows gain in supplemental understanding of loyal behaviour (Zins, 2001). Here, customer loyalty is approached as an attitudinal construct. Attitude denotes the degree to which a consumer's disposition towards a service is favourably inclined. In the context of the Yemeni mobile telecommunication, there is a lack of research studies underlining the joint effects of service quality and customer satisfaction over Yemeni customers' loyalty. Thus, it can be hypothesised that:

H₂: Customer satisfaction has a positive significant effect on customer loyalty.

4 Constructs operationalisation

4.1 Service quality

Parasuraman et al.'s (1988) SERVQUAL instrument was chosen to measure service quality in this study, since it is well-established as well as it has been extensively used in other telecommunication industries in emerging markets (i.e., China) (Lai et al., 2007), which are similar to Jordan's mobile service industry (Dahiyat et al., 2011). In the SERVQUAL scale, Parasuraman et al. (1988) identified five determinants of 'tangibles', 'reliability', 'responsiveness', 'assurance' and 'empathy' as part of the 22-item SERVQUAL scale for measuring service quality. Furthermore, this instrument has been widely used in research and its psychometric properties have been examined by a number of previous empirical studies. In this research, we measured service quality based on a modified version of Parasuraman et al.'s (1988) 22-item SERVQUAL questionnaire. We made minor modifications to this instrument to tailor it to Yemen's mobile service industry setting in which 21-item SERVQUAL was employed to measure service quality (Appendix A). Modification of the instrument for different service settings is encouraged by the original developers of the instrument (Parasuraman et al., 1994) and is recommended by other researchers (e.g., Carman, 1990; Cronin and Taylor, 1992; Lee et al., 2000; Kang and James, 2004; Lai et al., 2007; Akroush, 2008; Dahiyat et al., 2011).

4.2 Customer satisfaction

Customer satisfaction is a cumulative construct that is a function of service expectations and performance perceptions in any given period. Performance here refers to the customers' perceived level of service quality relative to the price they pay as well as other elements such as area coverage. This approach seems relatively to have stable reliability and validity and does not suffer from many methodological problems. In addition, this approach has been used in leading studies of customers satisfaction (e.g., Cronin and Taylor, 1992; Gilbert et al., 2004; Bennett and Rundle-Thiele, 2004; Keiningham et al., 2005; Dahiyat et al., 2011). Hence, customer satisfaction was measured by five Likert scale items (Appendix A) and included customer satisfaction in relation to overall satisfaction with expectation, satisfaction with price, service quality, pre-purchased expectations and coverage area.

4.3 *Customer loyalty*

Customer loyalty is defined as a deeply held commitment to re-buy or re-patronise a preferred product consistently in the future despite situational influences (Oliver, 1997). Customer loyalty is a combination of customers' favourable attitude and the behaviour or repurchases (Kim et al., 2004). It focuses primarily on brand recommendations (Boulding et al., 1993), resistance to superior products (Narayandas, 1996), willingness to pay a price premium (Zeithaml et al., 1996) and repurchase intention (Cronin and Taylor, 1992; Anderson and Sullivan, 1993). This construct included repurchase intention; resistance to switching to competitor's product or service that is superior to the preferred vendor's product or service and willingness to recommend the preferred vendor's product or service to friends and associates. In our research, customer loyalty was measured by four items based on primarily work of Narayandas (1996) and others' work (e.g., Dahiyat et al., 2011).

5 **Research methodology**

5.1 *Population and sample*

The research population is all mobile service subscribers who had valid subscription in Yemen during 2012. According to Yemen's mobile service industry latest statistics, there are 13,893,255 subscribers in the country. Since the research population is huge, obtaining a representative sample of the population based on the traditional statistical techniques was difficult. Further, the researchers attempted to have access to Yemen's four mobile operators (MNT, Yemen Mobile, Sabafon, and Y-GSM) customers' databases for sampling purposes. The four mobile operators declined the researchers' request to provide access their customers' databases since they were highly classified and confidential due to competitive and privacy reasons. To draw a representative sample, a convenience sample was chosen from the Capital of Yemen, Sana'a, which represents the heaviest subscribers; greater than 50% of the mobile service subscribers. Therefore, a convenience sample was chosen from Sana'a subscribers which consisted of 1400 subscribers. This sample was representative and adequate to conduct multivariate data analysis to achieve the research objectives. Further, Sana'a represents the vast majority of Yemen's mobile service market and diversity.

5.2 *Research instruments and data collection*

The research instrument was developed based on measures and operationalisations which were all adapted from relevant literature of service quality (SERVQUAL), customer satisfaction and loyalty. The instrument was piloted using personal interviews with customers and key managers in Yemen's mobile service industry to reveal ability of customers (respondents) to understand it and to test its appropriateness for the research purposes. This pilot study led the researchers to make minor alterations. Consequently, through a team of 10 of research assistants and two of the researchers, the instrument was delivered to all the participated customers where the research objectives were explained to the contacted respondents during April–September, 2014. The primary data collection process was carried out using a highly structured questionnaire to achieve the research objectives. The SERVQUAL items were measured on 5-point Likert-type scales ranging

from 1 (strongly agree) to 5 (strongly disagree). The customer satisfaction items were measured on 5-point Likert-type scales ranging from 1 (highly satisfied) to 5 (highly dissatisfied), and attitudinal customer loyalty items were measured on 5-point Likert-type scales ranging from 1 (strongly agree) to 5 (strongly disagree). In the main survey and using the mall interception method, 1400 questionnaires were delivered mobile service subscribers in Sana'a from which 1024 were returned; the response rate was 73.1%. The valid and useable questionnaires for data analysis were 999; 97.6% from the returned questionnaires. The response rate was relatively high due to the primary data collection approach, personal delivery, which usually yields high response rate.

6 Data analysis

6.1 Exploratory factor analysis

The analysis started by examining the structure and unidimensionality of the study constructs using exploratory factor analysis (EFA) and reliability analysis for the research sample. After examining the pattern matrix of the EFA, all items had loadings greater than 0.4 and communalities greater than 0.5. As shown in Table 2, the factor structure revealed four factors explained 53% of the variance: the first factor includes all the items measuring service assurance and empathy, the second factor includes the items measuring service reliability, the third factor includes the items measuring service tangibility, and the fourth factor includes the items measuring service responsiveness. Cronbach's alpha for the eight-item assurance and empathy was 0.87, for the five-item reliability was 0.78, for the four-item tangibility variable was 0.69, and for the three-item responsiveness variable was 0.64, respectively. Similarly, for the customer satisfaction and loyalty constructs, as shown in Table 3, the factor structure revealed two factors explained 52% of the variance: the first factor includes all the items measuring customer satisfaction, the second factor includes the items measuring customer loyalty. Cronbach's alpha for the five-item customer satisfaction was 0.77, for the four-item customer loyalty was 0.71, respectively.

Table 1 Service quality models comparison

	χ^2 , df	CFI	RMSEA	Model AIC
Five-Factor Model	450.53, 190	0.93	0.052	185.53
Four-Factor Model	385.64, 146	0.95	0.044	157.56
Models' Comparison	64.89, 44	Accept the Four-Factor Model		

6.2 Confirmatory factory analysis

In this stage of the analysis, we tested the theoretical five-factor model with a four-factor model (with items assignment to factors as found in EFA). The two models are evaluated by comparing their performances according to the value of χ^2 , df, CFI, RMSEA and Model AIC for the research sample. As can be seen from Table 1, the χ^2 difference for the four-factor model is well above the critical value at $p < 0.05$. This significant difference favours the more model with the less df, which is in this case the four-factor model, which is used for the subsequent analyses.

Table 2 Exploratory and confirmatory factor analyses for the SERVQUAL dimensions

Code	EFA Factors and Loadings				CFA Factors and Loadings				CR	AVE
	Assurance-Empathy	Reliability	Tangibles	Responsiveness	Assurance-Empathy	Reliability	Tangibles	Responsiveness		
ASS1	0.72				0.70				0.89	0.55
ASS2	0.63				0.68					
ASS3	0.69				0.610					
ASS4	0.59				0.60					
EMP1	0.70				0.72					
EMP2	0.71				0.66					
EMP3	0.63				0.69					
EMP4	0.58				0.62					
REL1		0.65				0.65			0.82	0.53
REL2		0.56				0.72				
REL3		0.78				0.62				
REL4		0.67				0.66				
REL5		0.58				0.62				
TAN1			0.55				0.62		0.84	0.51
TAN2			0.72				0.61			
TAN3			0.68				0.64			
TAN4			0.75				0.61			
RES1				0.78				0.62	0.82	0.62
RES2				0.80				0.81		
RES3				0.65				0.64		

Consequently, the data obtained from the EFA was subjected to Confirmatory Factor Analysis (CFA). As shown in Table 1, the measurement model was estimated using EQS 6.1. The model has adequate fit indexes ($\chi^2 = 385.64$, $df = 146$, CFI = 0.950, RMSEA = 0.044, GFI = 0.963, AGFI = 0.950, and model AIC = 157.56). The fit indices revealed that the model provides excellent fit to the data (Hu and Bentler, 1999). Similar procedures were adopted when performing CFA for the customer satisfaction and loyalty constructs. The model has excellent fit indexes ($\chi^2 = 152.278$, $df = 19$, CFI = 0.939, RMSEA = 0.077, GFI = 0.969, AGFI = 0.938, and model AIC = 108.26), as shown in Table 3.

Table 3 Exploratory and confirmatory factor analyses for customer satisfaction and loyalty

Code	EFA Factors and Loadings		CFA Factors and Loadings		CR	AVE
	Customer Satisfaction	Customer Loyalty	Customer Satisfaction	Customer Loyalty		
CS1	0.69		0.65		0.89	0.55
CS2	0.71		0.67			
CS3	0.69		0.64			
CS4	0.70		0.70			
CS5	0.53		0.61			
CL1		0.60		0.60	0.82	0.53
CL2		0.59		0.63		
CL3		0.70		0.71		
CL4		0.65		0.68		

7 Unidimensionality and construct validity

The scales we adopted are example of direct reflective model for two reasons: (1) items in the scales are interchangeable and have similar meaning themes, and (2) items possess internal consistency as indicated by high level composite reliability, as discussed in the next section (Gerbing and Anderson, 1988). Additional evidence provided by the CFA suggests that the resulting measures are reliable and valid. What follows is a discussion on the different types of validity (Fornell and Larcker, 1981; Gerbing and Anderson, 1988). *Convergent validity*, to establish the convergent validity, the items of specific construct should share a high proportion of variances in common. As can be seen in Table 2, the convergent validity is indicated by: (1) significant factor loadings, (2) the average variances extracted (AVE) values are within the cut-off point of higher than 50%, and (3) Composite reliability is higher than 0.70%, providing evidence in support of the measures' reliability. Thus, the correlation between the indicators of any construct is high, which is an evidence of internal consistency, and hence, constructs unidimensionality (Gerbing and Anderson, 1988). *Discriminant validity*, it is important to establish that the construct is truly distinct from other constructs and capture some phenomena other measures do not. In our research, the discriminant validity is established by first, the absence of significant cross loadings that are not represented by the measurement model (i.e. congeneric measures). The absence of significant cross loading is also an evidence of constructs unidimensionality (Gerbing and Anderson,

1988); and second, to establish the evidence for the discriminant validity among the constructs, we compared the shared variance among the constructs with AVE from each construct. The discriminant validity is established between two constructs if the AVE of each one is higher than the shared variance. Comparing the shared variance and AVE values showed in Table 4; where the diagonal values are the AVEs, our results indicated a support for the discriminant validity among the latent variables in our model.

Table 4 Discriminant validity: average variance extracted and squared correlations among the research variables*

<i>Research Constructs</i>	<i>Assurance-Empathy</i>	<i>Reliability</i>	<i>Tangibles</i>	<i>Responsiveness</i>	<i>Customer Satisfaction</i>	<i>Customer Loyalty</i>
Assurance-Empathy	0.55					
Reliability	0.36	0.53				
Tangibility	0.23	0.18	0.51			
Responsiveness	0.03	0.03	0.02	0.62		
Customer Satisfaction	0.34	0.33	0.26	0.02	0.52	
Customer Loyalty	0.21	0.21	0.16	0.01	0.36	0.53

Note: *For the purpose of discriminant validity, the Average Variance Extracted (AVE) for each variable is calculated and reported. Also, the squared Pearson correlations were calculated between each pair of variables and then the shared variances among the variables and AVEs were compared to examine discriminant validity. As shown in Table 4, since all the squared variables correlations and shared variance between each pair of variables are less than the variables AVEs, there is empirical support for the discriminant validity among the research variables.

8 Structural equation modelling: hypotheses testing

A structural analysis using EQS 6.1 aimed at testing the hypothesised relationships between the constructs in one structural model. The Structural Equation Model (SEM) results show that the data showed excellent model fit ($\chi^2 = 41$, NFI = 0.98, NNFI = 0.94, CFI = 0.98, GFI = 0.99, AGFI = 0.94, RMSEA = 0.07). As can be seen in Figure 2, results showed that the overall model explained 60% of the variance in the endogenous variable; customer satisfaction. More specifically, as can be seen in Figure 2 and Table 5, assurance-empathy ($\beta = 0.28$, $t = 9.36$), reliability ($\beta = 0.32$, $t = 10.20$), and tangibility ($\beta = 0.25$, $t = 9.19$) have a significant positive effect on customer satisfaction, respectively, thus, supporting H_1 . Responsiveness ($\beta = 0.01$, $t = 0.03$) has a non-significant but maintained a weak positive effect on customer satisfaction. Also, the structural results show that customer satisfaction has a significant positive effect ($\beta = 0.60$, $t = 23.80$) on customer loyalty, thus, supporting H_2 . Furthermore, as shown in Figure 1 and Table 5, reliability has exerted the strongest effect (β , 0.32) on customer satisfaction. Also, R^2 result of 0.49 indicates that 49% of variation in customer

satisfaction was caused by the four dimensions of service quality paths. Finally, R^2 result of 0.36 indicates that 36% of variation in customer loyalty was caused by customer satisfaction path.

Figure 2 Research empirical model

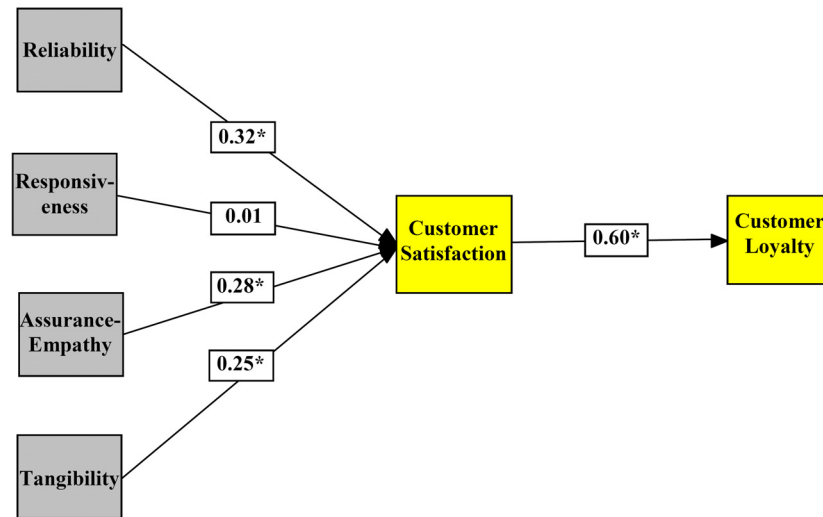


Table 5 Path analysis model for parameter estimates in the research sample

Hypothesised relationships	Parameters estimates	
	Standardised β	T Value
Assurance-Empathy → Customer Satisfaction	0.28*	9.36
Reliability → Customer Satisfaction	0.32*	10.20
Tangibility → Customer Satisfaction	0.25*	9.19
Responsiveness → Customer Satisfaction	0.01	0.03
Customer Satisfaction → Customer Loyalty	0.60*	23.80

9 Results discussion

The first objective of this research was to examine the service quality dimensions-SERVQUAL-from Yemen's mobile service subscribers' perspectives. The results from the exploratory and confirmatory factor analyses showed that SERVQUAL is in fact a four-dimensional construct in oppose to five as proposed by the original hypothesised model. The results from the confirmatory analysis confirmed the connotation that the four factor model has better fit indexes than the original five factor model. This finding is consistent with the extant literature on the topic that found SERVQUAL to be three or four dimensional constructs rather than a five dimensional one (Al-Tamimi and Al-Amiri, 2003; Arasli et al., 2005; Dahiyat et al., 2011). Furthermore, the four-dimensional model we have found is consistent with the SERVQUAL literature that found that the five dimensions are different across service industries and countries. Therefore,

SERVQUAL consists of four facets: assurance-empathy, reliability, tangibles and responsiveness in the Yemeni mobile service market. This finding is consistent also with the marketing lens model (Licata et al., 1995) which assert that service quality is perceived with different lenses (in that case patients and physicians) lead to different rating of service delivered. Further, this finding is consistent with the literature review discussed which indicates that the SERVQUAL dimensions are unstable and vary across countries and industries.

The second objective of this research was to examine the effect of SERVQUAL dimensions on customer satisfaction. The structural findings supported the current literature (i.e. Bloemer et al., 1998; Lai et al., 2008; Dahiyat et al., 2011) that found service quality as essential to improve the probability of customer satisfaction. Further, service quality affects customer satisfaction directly and customer loyalty indirectly. Hence, the assurance-empathy, reliability and tangibles dimensions of service quality have positively and significantly influenced customer satisfaction providing general support for H_1 , meanwhile responsiveness did not influence customers' satisfaction. The findings also indicate that service reliability exerted the strongest influence on customer satisfaction which provides a strong support to the original model of SERVQUAL and other empirical studies. This finding provides a strong support to the original contention of SERVQUAL as a generic skeleton of service quality rather than a specific measure of it. The third objective of this research was to examine the effect of customer satisfaction on loyalty in Yemen's mobile service market. The findings of this study indicate that responsiveness has almost no influence over customer satisfaction in the Yemeni mobile service market. This result contradicts previous literature which indicates that responsiveness is an important factor which necessitates friendly attitudes and prompt services. If customers' expectation is met, their impression of the services may increase the satisfaction. In addition, prompt services are also essential that may streamline the services and then increase the level of customers' satisfaction (Wang et al., 2014). However, this result is potentially related to the Yemeni mobile service market; specific service industry context. In other words, Yemeni mobile service subscribers' focus on reliability and other dimensions of service quality since the mobile service operators in Yemen may not be responsive sufficiently to customers' needs.

The structural findings provide strong empirical evidence that show that customer satisfaction has positively and significantly influenced customer loyalty providing a strong support for H_2 , which is very consistent with the discussed literature of customer satisfaction and loyalty. The findings indicate that customer satisfaction is function of proper service quality and a prerequisite to achieve customer loyalty as a strategic driver of business performance. Consequently, satisfying customers is the best way to create customer loyalty and both of them drive the financial performance of mobile service operators in Yemen better than relying on acquiring new customers and competing against each other using the price element of marketing. Finally, the structural findings indicate that 49% of variation in Yemeni customers' satisfaction is driven by three dimensions of service quality; assurance-empathy, reliability and tangibles which confirm the strategic importance of service quality to achieve customer satisfaction. Moreover, 36% of customer loyalty in Yemen's mobile service market is determined by customer satisfaction which supports the connotation that customer loyalty is a function of customer satisfaction and the later is a function of successful service quality delivery.

10 Managerial implications

The empirical findings of this research hold strategic implications for managers and decision makers in the Yemeni mobile service market. SERVQUAL is perceived to be a four-dimensional construct and that the dimensions and items' loadings were different from the original hypothesised model and indicates that the perception of service quality dimensions amongst Yemeni customers are different from other parts of the world. For example, Yemeni mobile service subscribers see assurance and empathy as one dimension, and service reliability and tangibles as two different sets of attributes they use to evaluate service quality, whereas they do not perceive responsiveness as crucial service quality element. It seems that Yemeni customers place higher emphasise on service reliability, assurance-empathy, and tangibles, respectively, whereas customers do not perceive responsiveness as an important one. Therefore, it is crucial that managers correct their service quality lens to match how Yemeni customers perceive service quality dimensions. Service quality has been described as a great differentiator between companies that is linked to customer satisfaction and loyalty. This study found that service quality dimensions have a positive and significant effect on Yemeni customers' satisfaction, and the later exerts a positive and significant effect on customer loyalty. Having identified the significance of these relationships, it is essential to explore the management implications. First, service reliability seems to be the most important factor influencing customer satisfaction. Hence, customers pay more attention to the functionality of service encounter in term of delivering the required service as promised and at the right time and less emphasise is paid to the assurance-empathy and physical appearance of the service facility as a determinant of their satisfaction. Further, Yemeni customers pay less attention to the responsiveness determinant of service quality which means that Yemeni mobile service operators should pay great attention to this vital element of service quality. Therefore, within the context of Yemeni mobile service operators, managers should invest their effort in developing the service delivery process and become more responsive to customers' requests rather than focusing on acquiring new customers continuously. Second, customer satisfaction is found to be a strong driver of customer loyalty in Yemeni mobile service market. Hence, managers should direct their effort towards building a culture that encourages professionalism at the work place to improve the service encounter in order to ensure a better customer satisfaction and loyalty and then business performance.

11 Limitations and future research

Some limitations exist in this research due to theoretical and methodological trade-offs. First, the research was carried out in a single service industry, Yemen's mobile service, which indicates that our findings are limited to this industry. However, this argument is still consistent with recent calls within services marketing literature that argued for building contextual marketing knowledge in single service industries due to certain industry characteristics. Therefore, a potential area of future research is to extend the research instrument into other service industries inside and outside Yemen in order to shed more lights on SERVQUAL in developing countries and even in the Third World Countries; conducting comparative and cross-cultural studies on service quality. Second, this research has used SERVQUAL to measure service quality from Yemeni customers'

perspectives and found that SERVQUAL dimensions and items are different but was able to predict customer satisfaction and loyalty. A very fruitful area of future research is to investigate why and how SERVQUAL dimensions and items are different from Yemeni customers' perspectives. This investigation could utilise qualitative and/or quantitative research design and methodologies to find out the causes of such differences amongst them. Unexpectedly, the responsiveness dimension of service quality is found to have almost no effect on Yemeni customers' satisfaction in oppose to the majority of the previous discussed literature review. Therefore, future research should investigate why responsiveness has no effect on Yemeni customers' satisfaction using qualitative and quantitative methodologies. Finally, this study examined service quality dimensions effect on two marketing performance dimensions only; customer satisfaction and loyalty from Yemeni customers' perspectives. A potential area of research is to examine antecedents and consequences of service quality (SERVQUAL) from customers, managers and employees perspectives alike.

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Appendix A: Research constructs operationalisations

<i>Service Quality: A Modified Version of SERVQUAL Scale</i>		<i>References</i>
<i>Reliability</i>		Parasuraman et al., 1988; 1994
Rel1	When your mobile phone operator promises to do something by certain time, it does so	
Rel2	When you have a problem, my mobile operator shows a sincere interest in solving it	
Rel3	The mobile operator performs the service right the first time	
Rel4	The mobile operator provides its service at the time it promises to do so	
Rel5	The mobile phone operator keeps its customers informed about when services be performed	
<i>Responsiveness</i>		
Res1	Employees in your mobile phone operator give you prompt service	
Res2	Employees in your mobile phone operator are willing to help you	
Res3	Employees in your mobile phone operator never too busy to respond to your requests	
<i>Assurance</i>		
Ass1	The behaviour of employees in your mobile phone operator instils confidence in you	
Ass2	You feel safe in your transactions with your mobile phone operator	
Ass3	Employees in your mobile phone operator are consistently courteous with you	
Ass4	Employees in your mobile phone operator have the knowledge to answer your questions	
<i>Empathy</i>		
Emp1	Your mobile phone operator gives you individual attention	
Emp2	Your mobile phone operator has employees who give you individual attention	
Emp3	Your mobile phone operator has your best interests at heart	
Emp4	Employees of your mobile phone operator understand your specific needs	
<i>Tangibles</i>		
Tan1	Your mobile phone operator has modern-looking equipment	
Tan2	Your mobile phone operator physical facilities are visually appealing	
Tan3	Your mobile phone operator employees appear neat	
Tan4	Materials associated with the service (such as pamphlets or statements) are visually appealing at your mobile phone operator	

Appendix A: Research constructs operationalisations (continued)

<i>Service Quality: A Modified Version of SERVQUAL Scale</i>		<i>References</i>
<i>Customer Satisfaction</i>		
CS1	My mobile phone operator completely meets expectations from any other operator	Cronin and Taylor, 1992; Gilbert et al., 2004; Bennett and Rundle-Thiele, 2004; Keiningham et al., 2005; Dahiyat et al., 2011
CS2	I am satisfied with my mobile phone operator's service quality	
CS3	I am satisfied with my mobile phone operator's prices	
CS4	My mobile phone operator meets my pre-purchase expectations	
CS5	I am satisfied with my mobile phone operator's coverage area	
<i>Customer Loyalty</i>		
CL1	My mobile phone operator completely meets expectations from any other operator	Cronin and Taylor, 1992; Oliver, 1997; Narayandas, 1996; Kim et al, 2004; Dahiyat et al., 2011
CL2	I am satisfied with my mobile phone operator's service quality	
CL3	I am satisfied with my mobile phone operator's prices	
CL4	My mobile phone operator meets my pre-purchase expectations	