

## How Perceived Service Quality and Customer Loyalty Can Affect Customer Lifetime Value?

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**Abstract:** The primary aim of this study is to examine the relationship between perceived service quality, customer loyalty and the firm's financial performance at the customer level in Iran's mobile telecommunication industry. "Mobile monthly budget" was considered as a moderating variable in perceived service quality-loyalty and loyalty-CLV relationships. In addition, some potentially mediating variables between perceived service quality and loyalty including customer satisfaction, perceived value, trust, affective commitment, calculative commitment and corporate image were considered in the proposed model. Data was obtained from 271 subscribers of a mobile operator in Iran via questionnaire. The results of this study demonstrate that CLV is influenced by perceived service quality and customer loyalty when mobile monthly budget is considered as a moderating factor. The results of the analysis support the impact of perceived service quality on all the mediating factors and also show that all seven antecedents have positive and significant effects on customer loyalty. The research was conducted in an Asian country where the mobile telecommunication industry is emerging and the findings may not be generalizable to other locations or to other markets. This study provides managers with insight as to how they can improve financial performance through enhancement of service quality and customer loyalty in mobile telecommunication industry. It also supports that strategic consideration of customer segmentation can help mobile operators optimize resource allocation in service design and marketing planning. This study links unobservable constructs of perceived service quality and customer loyalty to CLV as the firms' financial performance in the mobile telecommunication industry which is important for management decision making and resource allocation.

**Key words:** Loyalty, service quality, customer lifetime value, telecommunications, mobile monthly budget

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### INTRODUCTION

Today's customer churn has emerged as a major issue in customer relationship management in mobile telecommunication services around the world and factors such as saturation of markets, intense competition and development of information technology have led companies to focus more on a long-term customer relationships. According to former studies, customer loyalty is important for the firms as loyal customers tend to pay more money are willing to buy more and are less sensitive to price increases (Reichheld, 1996). Therefore, firms develop retention strategies and design different marketing activities in order to influence customers over their lifetime and increase loyalty which might result in higher profitability.

In recent decades, achieving and maintaining customer-perceived service quality has been regarded as a critical antecedent of overall customer satisfaction and loyalty (Reichheld and Sasser, 1990; Taylor and Baker, 1994). Hence, service managers and also researchers are

directing their efforts to understand how customers perceive the quality of services and how these perceptions affect customers' satisfaction, loyalty and eventually firms' profitability.

However, since customers are not equally profitable it is necessary for companies to evaluate marketing decisions, strategies and resource allocation efforts by linking marketing activities to their financial returns. According to Gupta and Lehmann many firms spend huge amounts of money to increase customer loyalty with little gains. Thus, more in-dept analysis is required to relate investments in loyalty improvement directly to profitability metrics.

Despite a plethora of research supporting the effects of service quality and customer loyalty on firms' profitability to the knowledge of the present authors, few studies have examined the potential impacts of unobservable constructs such as perceived service quality and loyalty on the financial performance of firms, specifically in the telecommunication industry. We believe that understanding how customer metrics link to

profitability and firm value in different industry contexts can help firms better allocate marketing resources and set wiser targets. Thus, the primary aim of this study is to examine the relationship between perceived service quality, customer loyalty and the firm's financial performance at the customer level in Iran's mobile telecommunication industry. Since, CLV captures the potential value or profits a customer provides to the firm, it can be used as a metric for measuring firms profitability. In Iran, new users are not tied to contracts during which the subscriber has to maintain the service and pay a pre-agreed fixed fee. Thus, long-term relationships and good perception of service quality may not be sufficient prerequisites for higher CLV. Therefore, we consider "mobile monthly budget" as a moderating variable in perceived service quality-loyalty and loyalty-CLV relationships.

In order to develop a thorough investigation of direct and indirect impacts of perceived service quality on customer loyalty, some potentially mediating variables between the two constructs have been considered as well. Empirical research on telecommunication industry over the last decade suggests that customer satisfaction, service quality, perceived value, trust and corporate image are among these factors (Aydin and Ozer, 2005; Aydin *et al.*, 2005; Edward *et al.*, 2010; Gerpott *et al.*, 2001; Gronholdt *et al.*, 2000; Kim *et al.*, 2004; Lai *et al.*, 2009; Seo *et al.*, 2008; Turkylmaz and Ozkan, 2007; Wang and Lo, 2002; Wang *et al.*, 2004). But in order to provide a more pragmatic view of the underlying relationships this research investigates the effects of all antecedents simultaneously in a more collective model.

The study is structured as follows: the following section presents an overview of the Iranian mobile telecommunication services market. In the third section, an overview of all of the relationships will be presented. Then, the conceptual model and the hypotheses are proposed. Fifth section introduces the research methodology and finally we provide the empirical results, discuss the main managerial implications and note some suggestions for future research.

### An overview of the Iranian mobile telecommunication services market:

Telecommunication Company of Iran (TCI) offered Iran's first mobile telecommunication service in 1994. The provision of mobile telecommunication services was considered a public monopoly in Iran until the mid 2000s when the government began the process of liberalization. After becoming privatized, the sole mobile service operator in the country was renamed to Mobile Communication Company of Iran (MCI) in 2004. Until 2006, the market's monopoly led to high subscription fees. The entry of MTN Irancell in 2006 put an end to the monopoly of MCI by changing the landscape of the industry and the competition became more intense when the third mobile operator, rightel, entered the market in 2011. Competition between operators reduced subscription fees and led to struggles for customer acquisition.

The annual growth rate of mobile subscribers in Iran has slowed substantially in recent years as the mobile market approached saturation (Table 1). Currently, MCI still controls the largest market share. Nevertheless, intense competition across the market coupled with the declining growth in the GSM subscriber base in Iran has made mobile operators realize the importance of a customer retention as a part of strategic marketing planning to sustain their competitive position and grow their market share.

### Theoretical background

**Loyalty:** In marketing literature, customer loyalty has been conceptualized as a multidimensional construct involving both behavioral and attitudinal aspects (Oliver, 1999; Zeithaml, 2000). In attitudinal view, customer loyalty is defined as a specific desire to maintain a relationship with a service provider (Kim *et al.*, 2004; Oliver, 1999). In behavioral perspective on the other hand, loyalty is demonstrated by repeat patronage behavior (Bass, 1974; Tranberg and Hansen, 1986) and can be evaluated by behavioral measures such as proportion of purchase, purchase sequence and probability of purchase (Dick and Basu, 1994). In loyalty literature the composite measures

Table 1: Trends in the Iranian mobile telecommunication market

Years	Operators' market share			Operators' penetration rate			Subscribers growth rate (%)
	MCI	MTN Iran cell	Rightel	MCI	MTN Iran cell	Rightel	
2005	100.00	0.00	0.00	9.57	0.00	0.00	82.94
2006	99.72	0.28	0.00	14.71	0.06	0.00	54.57
2007	96.10	3.91	0.00	25.18	4.44	0.00	67.08
2008	87.13	12.87	0.00	36.37	17.10	0.00	37.72
2009	80.35	19.66	0.00	44.37	27.62	0.00	19.44
2010	74.21	25.79	0.00	51.87	37.06	0.00	13.40
2011	70.08	29.92	0.00	59.63	43.84	0.00	10.98
2012	65.46	34.13	0.41	68.41	50.62	0.52	12.02
2013	63.91	34.91	1.19	72.13	53.57	1.55	3.08
2014	64.19	34.02	1.79	76.55	55.17	2.48	5.10

(Reconstructed from <https://gsmintelligence.com>)

are supported as better predictors of customer's loyalty since they consider both behavioral and attitudinal dimensions by considering customer's favorable attitudes, intentions and repeat purchasing as measures of true loyalty (Chaudhuri and Holbrook, 2001; Ganesh *et al.*, 2000; Rauyren and Miller, 2007). Hence, in line with various researchers, this study adopts the composite approach to loyalty by defining the behavioral loyalty as the readiness of customers to continue a relationship with the firm and less price sensitivity and evaluating attitudinal loyalty as the level of customer's psychological attachments and willingness to recommend the service provider to others.

**Loyalty and CLV:** Customer lifetime value is generally defined as the present value of future profits of a customer over his or her life of the relationship with a firm/brand (Jain and Singh, 2002; Reinartz and Kumar, 2000). It is identified as an indicator of the customer equity and firm value (Gupta *et al.*, 2004). Some studies argue that long-term customer value can yield substantial changes in profitability from implementing customer retention strategies (McDougall, 2001; Weinstein, 2002). A positive linkage between customer loyalty and firm profitability has been demonstrated by many researches (Agustin and Singh, 2005; Gupta and Lehmann, 2003; Hallowell, 1996; Roig *et al.*, 2006). Nevertheless, some other studies have argued that long-term customers are not necessarily profitable customers, believing that the dynamics of costs and revenues depends on the nature of the customer relationship (Reinartz and Kumar, 2000, 2003).

In this study, we suggest that customer loyalty positively affects CLV in the context of telecommunication industry, believing that mobile monthly budget moderates this relationship. Mobile monthly budget is the amount that customer spends during a given period.

**Service quality and CLV:** In general, service quality is regarded as an important antecedent of profitability and a firm's success since it has been identified as a critical means for service differentiation and competitive advantage that attracts new customers and contributes to customer acquisition and market share. Nevertheless, there are limited studies investigating the relationship between customer perceived service quality and action measures such as long-term customer relationship profitability because of the difficulty of service quality assessment. It is due to some service characteristics such as incorporating subjective elements, intangibility, large variability in service delivery, perishability and heterogeneity (Parasuraman *et al.*, 1985).

Despite the limitations discussed above, some studies have investigated the impact of service quality on CLV. Iyengar *et al.* (2007) for example, examined the effect

of permanent and temporary changes in service quality on CLV in the context of wireless services industry in order to provide a measure of the maximum investment that should be done for improving quality. They found that on average, a 1% increase in quality results in a \$2 increase in CLV and there by an overall improvement in firm profitability (Nam *et al.*, 2010). Empirical research in a video-on-demand type service found that on average, a 10% improvement in service quality results in a 2.3% increase in CLV, noting that due to significant heterogeneity in usage and termination behaviors, the most valuable customers may not be the most responsive customers to service quality improvement.

In this study we suggest that service quality positively affects the CLV, considering the mobile monthly budget as a moderator.

#### **Other relationships of the model**

**Service quality and loyalty:** Service quality is conceptualized as the consumer's assessment of the overall excellence or superiority of certain service providers' performance (Cronin Jr. and Taylor, 1992; Teas, 1993; Zeithaml, 1988). It is also recognized as a critical factor for customer retention and building high value relationships (Cronin Jr. and Taylor, 1992; Venetis and Ghauri, 2004). Through good service quality, firms can improve customer intentions to buy again, buy more, be less sensitive to price increases and recommend services to others which are all loyalty behaviors (Jones *et al.*, 2002).

The link between service quality and loyalty has been also supported by Aydin and Ozer (2005) in the Turkish telecommunications industry and by Wang and Lo (2002) and Wang *et al.* (2004) in Chinese mobile telecommunication industry.

**Service quality and satisfaction:** There is extensive research literature supporting the positive impact of service quality on customer satisfaction (Cronin *et al.*, 2000; Shin and Kim, 2008). Many researchers, believing that service quality is antecedent of satisfaction, posit that since service quality is a cognitive evaluation, a positive perception of service quality can result in satisfaction which may in turn positively affect customer behavioral intentions (Brady and Robertson, 2001). Pollack (2008) proposes a linear link between service quality and satisfaction, demonstrating that higher levels of service quality lead to higher levels of satisfaction. Among factors establishing service quality, call quality, value-added services and customer care have been pointed out to have a significant impact on customer satisfaction (Kim *et al.*, 2004).

The significant impact of high-quality services on customer satisfaction has been also demonstrated in Malaysia's telecommunication market (McDougall and Levesque, 2000).

**Satisfaction and loyalty:** In marketing literature customer satisfaction is recognized as a critical antecedent of customer loyalty in the service industry (Eshghi *et al.*, 2007; Lam *et al.*, 2004; Mittal and Lassar, 1998). Studies have produced consistent evidence that customer satisfaction affects key loyalty indicators (Lin and Wang, 2006; Mittal and Kamakura, 2001). For instance, Lam *et al.* (2004) argue that a satisfied customers' attitude toward a service provider could contribute to repeat purchases and likelihood of recommending service provider to others. The impact of customer satisfaction on loyalty has been suggested by many empirical studies in different mobile telecommunication industries such as Turkey (Aydin *et al.*, 2005; Turkyilmaz and Ozkan, 2007), China (Lai *et al.*, 2009; Wang *et al.*, 2004), India (Edward *et al.*, 2010), Korea (Kim *et al.*, 2004), Germany (Gerpott *et al.*, 2001) and France (Lee *et al.*, 2001).

**Service quality and perceived value:** Describing customer perceived value as what customers want from the product or service, many researchers believe that the product or service quality and the benefits it offers can drive customer perceived value (Zeithaml, 1988). The association between service quality and perceived value has been supported by many previous studies (Andreassen and Lindestad, 1998; Hellier *et al.*, 2003). Several empirical studies examining the telecommunication industry have also demonstrated that service quality positively affects perceived value (Lai *et al.*, 2009; Turel and Serenko, 2006; Wang *et al.*, 2004).

**Perceived value and loyalty:** Perceived value is defined as "the benefit received by customers for the price of the service exchanged or the overall utility of a product based on the perceptions of what is received and what is exchanged" (Zeithaml *et al.*, 1988).

Based on the goal and action identity theories, super-ordinate goals regulate subordinate goals. Sirdeshmukh *et al.* (2002) believe that perceived value is a super-ordinate goal and customer loyalty is a subordinate goal since it is a behavioral intention. Perceived value regulates customer loyalty toward a particular service provider as long as such exchanges provide superior value (Aydin and Ozer, 2005; Yang and Peterson, 2004). Oliver (1999) argued that value forms customer expectations and comparison standards for evaluating satisfaction levels and customer loyalty is

determined by the customer's satisfaction level. The positive effect of perceived value on customer loyalty has been suggested by numerous empirical studies of the mobile telecommunications industry (Bolton and Drew, 1991; Lai *et al.*, 2009; Lin and Wang, 2006; Wang and Lo, 2002; Wang *et al.*, 2004).

**Service quality and trust:** Evidence from the literature shows that there is a positive relationship between service quality and customer trust. According to Anderson and Narus (1990), trust happens when one party thinks it is likely that the actions of the other party leads to good outcomes for itself. Consequently, positive perception of service quality can be seen as a prerequisite for building customer trust. Doney and Cannon (1997) argue that trust development involves a calculative process based on the ability of a party to continuously meet its obligations and on an estimation of the costs and benefits of maintaining the relationship. Thus, positive customer perception towards quality of the firm's current and future services can improve customer trust in the firm. The positive effect of service quality on trust has been also supported by many other studies (Beatson *et al.*, 2008; Brodie *et al.*, 2003; Sharma and Patterson, 1999).

**Trust and loyalty:** Trust has been identified as an important factor in building long-term relationships and customer loyalty (Gundlach and Murphy, 1993; Lau and Lee, 1999; Singh and Sirdeshmukh, 2000). Trust is linked to credibility and credibility reduces the expectations of opportunistic behaviors by the firm and this in turn, affects customer's long-term orientation toward the relationship (Erdem *et al.*, 2002; Ganesan, 1994).

According to Chaudhuri and Holbrook (2001), trust helps customers feel less vulnerable in environments characterized by uncertainty since they know that they can rely on the trusted brand. The impact of customer trust on loyalty has been suggested by many empirical studies in mobile telecommunication industry (Aydin and Ozer, 2005; Aydin *et al.*, 2005).

**Service quality and affective commitment:** The literature suggests that service quality is related to customer affective commitment. Service quality has been regarded as a multidimensional construct subsuming the constructs of reliability and responsiveness (Brady and Cronin, 2001). These variables are conceptually quite similar to relational constructs such as trust and shared values which were recognized as primary antecedents of commitment by Morgan and Hunt (1994). These cognitive assessments of performance over time can form emotional

attachment if the customers get benefits from the relationship. Therefore, service quality can be directly related to affective commitment in service relationships. This relationship has received some empirical support in the services marketing literature (Gruen *et al.*, 2000; Wetzels *et al.*, 1998).

**Service quality and calculative commitment:** Some studies have investigated the effect of service quality on calculative commitment (Mathieu and Zajac, 1990; Wetzels *et al.*, 1998). Calculative commitment stems from a cognitive evaluation of the instrumental worth of maintaining the relationship with the organization (Bansal *et al.*, 2004). According to Kaur and Soch (2013), improving the unique aspects of service can help firms reduce the customer's perceived available alternative services and consequently build customer calculative commitment. In the context of telecommunication industry by providing superior service quality in different aspects such as network coverage and value added services, operators can differentiate their services from the competition and this differentiation may lead to customer commitment to the firm (Amine, 1998; Anderson and Weitz, 1992). Thus, we posit that service quality can have a positive impact on calculative commitment.

**Affective commitment and loyalty:** Affective commitment includes "a desire to develop and strengthen a relationship with another person or group because of familiarity, friendship and personal confidence built through interpersonal interaction over time" (Sharma *et al.*, 2006).

A positive relationship between commitment and future purchase intentions has been supported by empirical studies. According to Marshall (2010), affective commitment is expected to affect purchase behavior and consumer patronage since the emotional attachment can lead to continuity of relationship and forsaking of alternative options. The impact of affective commitment on advocacy intention is suggested by Fullerton (2011) in study of three service settings (banking, hairstyling, auto-repair service). The positive effect of affective commitment on loyalty indicators including cross-selling and positive word-of-mouth is also supported by Hur *et al.* (2010) in study of Korea's telecommunication industry.

**Calculative commitment and loyalty:** Calculative commitment relates to a rational and economic assessment of the costs and benefits of maintaining or leaving the relationship (Gilliland and Bello, 2002). According to Sharma *et al.* (2006), customers may want to remain in the

relationship due to the rational calculation of benefits arising from continuing the relationship (value-based commitment) or because of a perceived lack of alternative suppliers or perceived switching costs (locked-in commitment). Hence, it is expected that calculative commitment may be positively related to loyalty. The positive effect of calculative commitment on the maintenance of long-term relationships has also been supported by many other studies (Fournier, 1998; Gustafsson *et al.*, 2005; Lee *et al.*, 2004).

**Service quality and image:** Some researchers have suggested that perceived service quality precedes corporate image (Gronroos, 1984; Nguyen and Leblanc, 2001). According to Aydin and Ozer (2005), corporate image derives from all of a consumer's consumption experiences and service quality is a function of these consumption experiences. Therefore, the researcher suggest that customer perception about service quality has a direct effect on the customers' perception of corporate image.

The positive effect of perceived service quality on the formation of customers' perceptions of corporate image has been demonstrated in many empirical studies (Bloemer *et al.*, 1998; Nguyen and LeBlanc, 1998). In addition, similar results were found in studies conducted in the context of mobile telecommunication industries such as China (Lai *et al.*, 2009), South Korea (Kang and James, 2004) and Turkey (Aydin and Ozer, 2005).

**Image and loyalty:** Corporate image is defined as perceptions of an organization reflected in the associations held in consumer memory (Keller, 1993). In service industry, corporate image plays an important role in affecting consumer's evaluation of satisfaction with the service and customer loyalty (Andreassen and Lindestad, 1998; Gronroos, 1984; Nguyen and Leblanc, 2001). According, to Keller (1993), a desirable corporate image enhances the likelihood of brand choice, besides building greater consumer loyalty and decreasing vulnerability to competitive marketing actions. The relationship between corporate image and customer loyalty has been also demonstrated by empirical findings. Groholdt *et al.* (2000) recognized corporate image as an important factor affecting customer satisfaction and loyalty in the industries of soft drinks, banking and telecommunications. Nguyen and Leblanc (2001) showed the positive relationship between corporate image and customer loyalty in telecommunication, retailing and education sectors. Similar results were also demonstrated in telecommunication markets such as china Taiwan and Turkey (Turkyilmaz and Ozkan, 2007).

## MATERIALS AND METHODS

**Conceptual model:** Based on the results of earlier studies discussed in the previous section we developed a conceptual model for this study. The proposed model examines the direct and indirect influence of customers' perceived service quality on customer loyalty. It also investigates the correlation of customer's perceived service quality and customer loyalty with CLV along with the moderating influence of customer's mobile monthly budget. Figure 1 presents the model, representing all the hypotheses. Continuous arrows indicate direct influence and dotted arrows indicate moderating influence:

- H<sub>1</sub>: there is a positive relationship between perceived service quality and customer loyalty
- H<sub>2</sub>: there is a positive relationship between perceived service quality and customer satisfaction
- H<sub>3</sub>: there is a positive relationship between customer satisfaction and customer loyalty
- H<sub>4</sub>: there is a positive relationship between perceived service quality and perceived value
- H<sub>5</sub>: there is a positive relationship between perceived value and customer loyalty
- H<sub>6</sub>: there is a positive relationship between perceived service quality and corporate image
- H<sub>7</sub>: there is a positive relationship between corporate image and customer loyalty
- H<sub>8</sub>: there is a positive relationship between perceived service quality and affective commitment
- H<sub>9</sub>: there is a positive relationship between affective commitment and customer loyalty
- H<sub>10</sub>: there is a positive relationship between perceived service quality and calculative commitment
- H<sub>11</sub>: there is a positive relationship between calculative commitment and customer loyalty
- H<sub>12</sub>: there is a positive relationship between perceived service quality and trust in the operator
- H<sub>13</sub>: there is a positive relationship between trust in the operator and customer loyalty
- H<sub>14</sub>: mobile monthly budget moderates the relationship between customer loyalty and CLV such that high mobile budget enhances loyalty-CLV relationship
- H<sub>15</sub>: mobile monthly budget moderates the relationship between perceived SQ and CLV such that high mobile budget enhances perceived SQ-CLV relationship

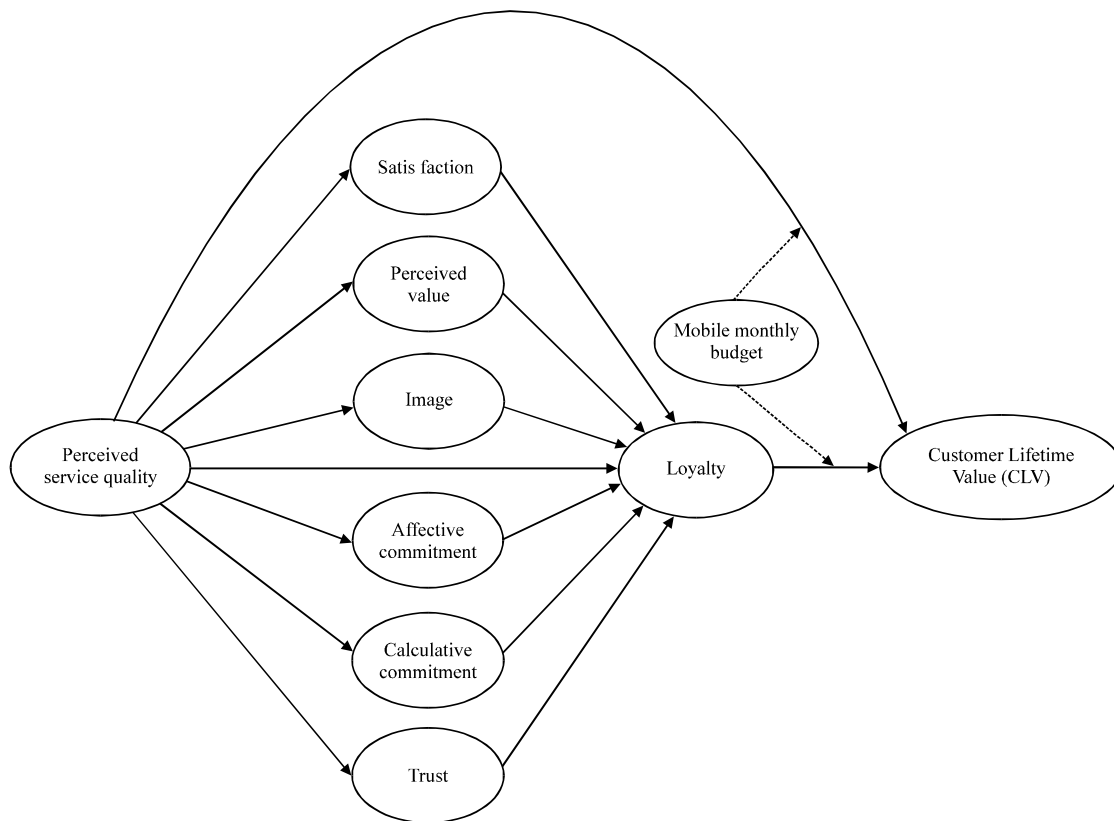


Fig. 1: Proposed conceptual model of the study

Sample and data collection: Data have been collected from 296 subscribes of MCI and the response rate was 92% (Table 2).

Subscribers were selected based on different age groups, gender and educational levels. Characteristics of the sample are shown in Table 3.

**Measures:** All of the constructs in the model-except CLV-were measured using a multiple-item measurement scale. To measure the constructs, scales were adapted from existing literature. All measures used a 5-point Likert-type response format with “strongly disagree” and “strongly agree” as the anchors.

Customer loyalty was operationalized on the basis of four items adopted from a scale developed by Narayandas. Customer satisfaction was tapped with a three items adapted from Cronin *et al.* (2000). Following Cronin Jr. and Taylor (1992) and Teas (1993), in this study we adopted the servperf (performance-only) approach to measure service quality instead of the servqual (performance perceptions minus expectations) perspective. Hence, perceived service quality was measured using the scale developed by Kim *et al.* (2004). The four-item perceived value measure was adapted from the work of Lai and trust was captured by adapting the scale developed by Aydin and Ozer (2005). To measure affective and calculative commitment, the scales developed by Bansal *et al.* (2004) and Gustafsson *et al.* (2005) were adapted to the telecommunication industry of Iran. Finally, Corporate image was measured by the five-item scale used by Aydin and Ozer (2005).

Table 2: Respondents' response rate

Description	No. of respondents
Sample size	324
Return questionnaires	296
Total useable questionnaires	271
Incomplete or unusable questionnaires	25
Response rate (%)	92

Table 3: Sample characteristics

Variables	Criteria	No.	Percentage
Genders	Male	127	47
	Female	144	53
Age	Under 30	166	61
	31-40	74	27
	41-50	15	6
	51-60	14	5
	Above 60	2	1
Educational degree	Below bachelor	18	7
	Bachelor	135	50
	Master	96	35
	PhD and above	22	8
Mobile monthly budget (Rls)	Below 60000	21	8
	60000-120000	104	38
	120000-250000	108	40
	250000-400000	25	9
	Above 400000	13	5

There are several ways to calculate CLV. An overview of various CLV Models such as the RFM Model, econometric models, probability models, persistence models and diffusion/growth models are given by Gupta *et al.* (2006). Hwang *et al.* (2004) proposed a CLV Model which includes customer's past profit, potential benefits and churn probability. Also Blattberg and Deighton (1996) measured customer value by considering customer retention and acquisition costs. In this study customer profitability is measured at an individual level. Derived CLV numbers for the respondents of the study were got from MCI marketing department.

Mobile monthly budget was measured by asking the respondents the cost of their average monthly mobile phone bill on the following 5-point scale:

- Below 60000 Rls
- 60000-120000 Rls
- 120000-250000 Rls
- 250000-400000 Rls
- Above 400000 Rls

## RESULTS

To estimate the proposed model and test the hypotheses generated we used the Partial Least Squares (PLS) approach. PLS works well with structural equation models that contain latent variables and a series of cause and effect relationships. The PLS analysis pursued a two-stage approach by first assessing the measurement model (validity and reliability) and then assessing the structural model by an estimate of the paths between the latent variables in the model and its predictive power. The PLSPM add-on module of XLSTAT 2013.2.01 Software was used to perform the necessary analyses.

To determine the overall prediction power of the model, Goodness of Fit (GoF) index was used as a measure of overall model fit. As shown in Table 4, The GoF indices recommend that the measurement model demonstrates satisfactory fit to the data and the results of all fit indices were achieved as good fit. The bootstrapping method (100 resamples) was used to determine the significance levels for loadings, weights and path coefficients (Chin, 1998a).

Table 4: Goodness of fit index

Variables	GoF	SE	Critical Ratio (CR)	Lower bound (95%)	Upper bound (95%)
Absolute	0.450	0.026	17.339	0.388	0.507
Relative	0.934	0.025	37.991	0.847	0.948
Outer model	0.998	0.017	58.850	0.957	1.000
Inner model	0.936	0.016	58.030	0.865	0.937

**Measurement model:** We used the two-step approach by first assessing convergent validity and reliability as shown in Table AI and AII (see Appendix) and Table 5 and then the discriminant validity (Table 6). Convergent validity of the construct can be determined by calculating individual item reliability (standardized loadings), Cronbach's alpha, Composite reliability and Average Variance Extracted (AVE) as suggested by Aibinu *et al.* (2011). As shown in Table AI and AII Appendix, all of the item loadings are greater than 0.5 (Chin, 1998b) and the entire critical ratio (t-value) is significantly greater than 2.58 at the 0.01 level which was recommended by Anderson and Gerbing (1982). Results of reliability analysis are indicated in Table 5. The composite reliability coefficients (Dillon-Goldstein's rho) are all above the suggested level of 0.7 (Gefen *et al.*, 2000), indicating acceptable internal consistency. Moreover, all Cronbach's alpha values satisfy the reliability analysis as all exceed the 0.7 threshold generally considered satisfactory (Churchill, 1991). As shown in Table 6, AVE values for all of the constructs are higher than the suggested level of 0.5 (Chin, 1998a, b). Hence, we conclude that sssconvergent validity and reliability are given.

The model constructs were assessed for unidimensionality as well. Unidimensionality is referred to as the existence of one construct underlying a set of items. The first and the second eigenvalues for each of the variables are presented in Table 5. It can be seen that only the first eigenvalue is greater than 1 for all of the constructs and this provides support for unidimensionality.

Discriminant validity is examined using the Fornell and Lacker (1981) criterion whereby the average variance shared between each construct and its measures should be greater than the variance shared between the construct and other constructs. As shown in Table 6, the AVE of each of the constructs is larger than the squared correlations between any two constructs in the model. We

also tested for the discriminant validity using the cross loadings of the items (Chin, 1998a, b). All indicators show higher loadings on their respective constructs than on the other constructs, demonstrating that an acceptable amount of construct validity is given (Table AI and AII).

**Findings of the structural model:** The overall quality of the structural model is evaluated using the coefficient of determination ( $R^2$ ). The fit indices of individual  $R^2$  greater than 0.10 is necessary for predictive relevance of the model. The  $R^2$  values of the endogenous constructs are presented in Table 7. It can be seen that the proposed model shows a high explanatory power for customer loyalty (0.560), since the group of relations proposed between seven antecedent variables and customer loyalty explains 56% of its variability. Similarly, about 40% of the variance of customer CLV is explained by its predictor variables: service quality, loyalty and interaction variables of budget. SQ and Budget loyalty. The determination coefficients regarding the explanation of customer satisfaction, affective commitment, calculative commitment, trust, perceived value and image are lower (between 0.143 and 0.355).

Particularly for our focal constructs, loyalty and CLV, results show a good explanatory power and therefore, provide support for the nomological validity of the

Table 5: Reliability and eigenvalues

Construct	Dimensions	Reliability		Eigenvalues	
		Cronbach's alpha	CR (D.G. rho)	F1	F2
Service quality	5	0.783	0.853	2.686	0.804
Satisfaction	3	0.843	0.906	2.294	0.546
Affective commitment	2	0.741	0.885	1.588	0.412
Calculative commitment	2	0.711	0.874	1.551	0.449
Trust	3	0.726	0.845	1.938	0.553
Perceived value	4	0.907	0.935	3.125	0.391
Image	5	0.789	0.856	2.718	0.825
Loyalty	4	0.853	0.901	2.781	0.503
Budget loyalty	4	0.943	0.959	3.419	0.256
Budget SQ	5	0.960	0.969	4.312	0.241

Table 6: Squared correlations, convergent and discriminant validity

Variables	Discriminant validity (squared correlations < AVE)								Convergent validity (AVE > 0.5)	
	Service quality	Affective satisfaction	Calculative commitment	Perceived commitment	Value	Image	Trust	Loyalty	Budget loyalty	Budget SQ
Servicequality	1									
Satisfaction	0.355	1								
Affective commitment	0.143	0.196	1							
Calculative commitment	0.188	0.208	0.093	1						
Trust	0.193	0.299	0.175	0.098	1					
Perceived value	0.234	0.273	0.122	0.064	0.296	1				
Image	0.196	0.366	0.131	0.150	0.271	0.362	1			
Loyalty	0.210	0.377	0.198	0.237	0.256	0.354	0.434	1		
Budget loyalty	0.155	0.195	0.093	0.136	0.060	0.117	0.168	0.412	1	
Budget SQ	0.339	0.140	0.040	0.080	0.016	0.048	0.059	0.076	0.693	1
AVE	0.536	0.763	0.794	0.773	0.645	0.781	0.542	0.695	0.855	0.862



Table 7: Structural model results

Independent	Dependent	Regression coefficient	Critical ratio	Equation R <sup>2</sup>	Construct R <sup>2</sup>	Q <sup>2</sup>	VIP
SQ	SA	0.596	14.902	0.355	0.355	0.271	
SQ	AFF	0.378	8.429	0.143	0.143	0.113	
SQ	CAL	0.434	9.306	0.188	0.188	0.146	
SQ	TRU	0.439	9.142	0.193	0.193	0.124	
SQ	PV	0.484	10.646	0.234	0.234	0.183	
SQ	IM	0.443	7.891	0.196	0.196	0.106	
SQ	LO	0.124	11.588		0.057		0.844
SA	LO	0.167	17.320		0.102		1.131
AFF	LO	0.121	12.009		0.054		0.819
CAL	LO	0.132	12.293	0.560	0.064	0.547	0.897
TRU	LO	0.137	13.194		0.069		0.931
PV	LO	0.161	15.910		0.096		1.095
IM	LO	0.179	20.843		0.118		1.213
SQ	CLV	0.138	10.495		0.048		0.697
LO	CLV	0.133	8.522	0.398	0.045	0.386	0.671
B.LO	CLV	0.248	13.105		0.157		1.255
B.SQ	CLV	0.241	11.699		0.148		1.220

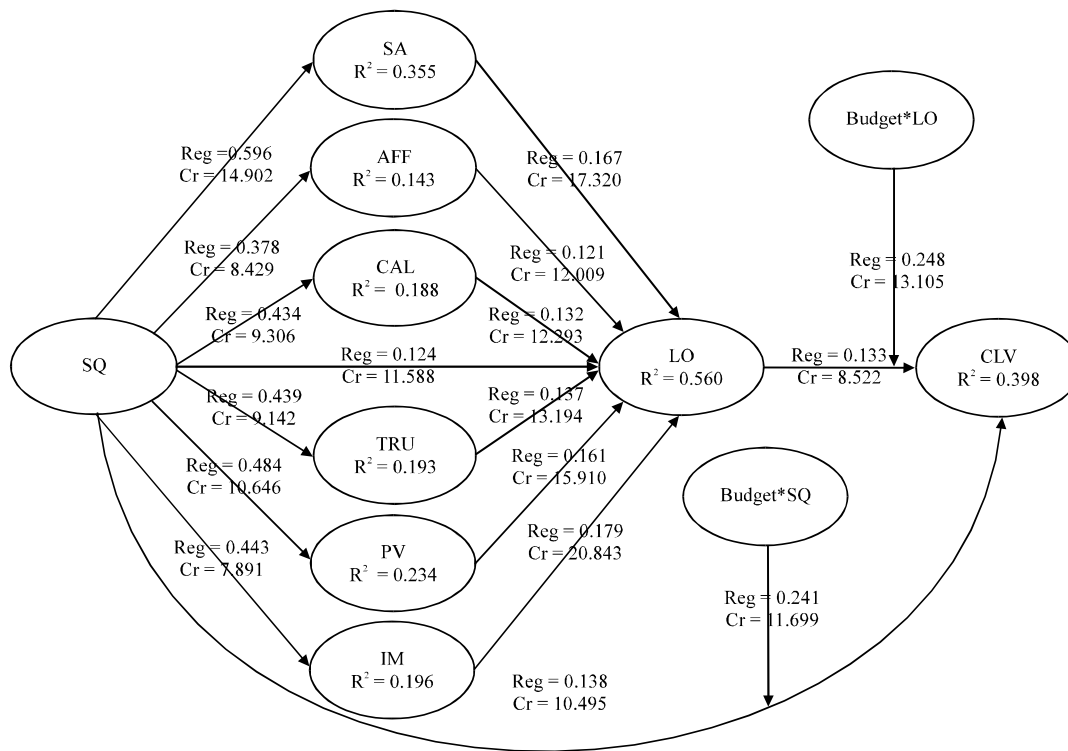


Fig. 2: Model's path coefficients and critical ratios

proposed model. Moreover for the structural model Stone-Geisser Q<sup>2</sup> was calculated using cross-validated redundancies (Chin, 1998a, b). As the values exceed the minimum threshold of 0.00, predictive validity is given (Table 7).

For summarizing the contribution that each variable makes to the model Variable Importance for Projection (VIP) was calculated which represents the value of each predictor in fitting the PLS Model for both predictors and response. Variable with VIP values of <0.8 should be

considered small contributors. VIP values for all seven predictor variables of loyalty are greater than 0.8, providing evidence of high importance of each variable in predicting loyalty. Among the variables predicting customer CLV, VIP values for interaction variables of Budget. Loyalty and Budget. SQ are 1.255 and 1.220 which indicate their high contribution in predicting CLV. On the other hand, VIP values of service quality and loyalty are lower than 0.8, providing evidence that they could be considered as less important variables in predicting

Table 8: Direct, indirect and total effects of service quality on customer loyalty and CLV

Effects	Customer	SQ
Direct	LO	0.124
Indirect		0.419
Total		0.544
Direct	CLV	0.138
Indirect		0.072
Total		0.210

loyalty on their own while their contribution is reinforced in their interaction with the mobile monthly budget as a moderator variable.

The significance of the paths of the inner model can be measured by path coefficients (Reg.) and critical ratios which is acceptable at a level of greater than 2.58,  $p < 0.01$ . Figure 2 depicts the path coefficients and critical ratios for each hypothesized relationship.

All the hypothesized relationships were supported by the data analysis. The results of model analysis are summarized in Table 7.

As shown in the conceptual model, perceived service quality has indirect effect through the mediating variables, as well as direct effect on customer loyalty and CLV. Thus, in addition to coefficients presented in the model, indirect effects should be evaluated. Evaluation of these direct and indirect effects indicated that perceived service quality has an indirect effect of 0.419 in addition to a direct effect of 0.124 on customer loyalty. Coefficients of direct, indirect and total effects of perceived service quality on customer CLV are 0.138, 0.072 and 0.210, respectively. Table 8 shows the direct, indirect and total effects of perceived service quality on customer loyalty and CLV.

## DISCUSSION

The model developed in this study links the unobservable constructs of perceived service quality and customer loyalty to financial performance of firms. This is an important step because of the relation between service management and relationship marketing. Since, successful relationship marketing depends on the firms' capability to add value, through different kinds of services to the solutions offered to their customers, without knowledge of managing the quality of services on a long-term dynamic basis, the firms can not fully utilize the competitive advantage opportunities suggested by relationship marketing strategies (Gronroos, 1994). The model also ties service management and its notion of perceived service quality to relationship marketing in Iran's mobile telecommunication industry by exploring the direct effect of service quality on loyalty and customer profitability and also its indirect effects through mediating role of customer satisfaction, perceived value, trust, affective and calculative commitment and corporate image.

The results of this study demonstrate that CLV is influenced by perceived service quality and customer loyalty and mobile monthly budget moderates this relationship. This indicates that improvements in perceived service quality and customer loyalty lead to enhanced changes in CLV for high usage subscribers who budget higher amounts for their mobile monthly spending compared with low usage subscribers who have less spending power or tendency.

The findings show that perceived service quality positively affects all the mediating factors, including satisfaction, perceived value, trust, affective commitment, calculative commitment and image. These results are consistent with the findings of previous researches that indicated the significant effect of perceived service quality on customer satisfaction (McDougall and Levesque, 2000), perceived value (Lai *et al.*, 2009; Turel and Serenko, 2006; Wang *et al.*, 2004), trust (Roberts *et al.*, 2003; Sharma and Patterson, 1999), affective commitment (Gruen *et al.*, 2000; Wetzels *et al.*, 1998), calculative commitment (Amine, 1998; Anderson and Weitz, 1992) and image (Aydin and Ozer, 2005; Kang and James, 2004; Lai *et al.*, 2009) in the context of telecommunication or other services industries. The findings reveal that among the mediator variables, service quality has the strongest relationships with customer satisfaction (Reg. = 0.596, CR = 14.902), strengthening the argument that customers determine satisfaction level of any purchased mobile service by the perceptions of quality received.

The results of the analysis show that all seven antecedents have positive and significant effects on customer loyalty. Of these seven, service quality has the strongest impact due to its direct and indirect effects and affective commitment has the lowest impact on customer loyalty. The results of this study support the findings of previous studies in various telecommunication markets that demonstrated the significant effects of service quality (Aydin and Ozer, 2005; Wang *et al.*, 2004), satisfaction (Gerpott *et al.*, 2001; Lai *et al.*, 2009; Lee *et al.*, 2001), perceived value (Lai *et al.*, 2009; Lin and Wang, 2006; Wang *et al.*, 2004), trust (Aydin and Ozer, 2005; Aydin *et al.*, 2005), affective commitment (Hur *et al.*, 2010) and image (Grohldt *et al.*, 2000; Nguyen and Leblanc, 2001) on customer loyalty.

## CONCLUSION

According to the findings, the impact of calculative commitment on customer loyalty was stronger than affective commitment. It is not consistent with some previous studies that have shown that calculative commitment at best has a weaker effect than affective commitment on customer loyalty (Fullerton, 2003). Such

inconsistency could be due to special condition of Iran's mobile market. The fact that Mobile Number Portability (MNP) technology has not been adopted in Iran causes switching costs for subscribers who want to move among mobile operators. The loss of phone number which has become a unique identifier of people (Buehler *et al.*, 2006) and having to inform contacts of a number change (Dick and Basu, 1994) are among these switching costs. This may temporarily lead to greater impact of calculative commitment on customer loyalty.

### **LIMITATIONS**

As with most empirical studies, our study is not without limitations. One of the limitations of the current study derives from the sampling context and procedures employed to collect the data. Data were collected only from the subscribers of one telecommunication operator; so the results might not hold true for other operators. Furthermore, data collection was limited to the subscribers of that telecommunication operator who live in Tehran and Arak metropolitan areas; so, a more systematic probabilistic sampling procedure that would entail larger nation-wide samples is needed in order to affirm the present results. Second, our study was performed in one particular industry, limiting the generalizability of the findings. We believe, however, that the results can be replicated to other service sectors operating in other diverse environments, or a combination of industries to determine the variance per industry.

Third, future research could examine other moderation effects on the association between loyalty and CLV. The effect of relationship characteristics such as duration, strength and intensity of the relationship and demographic factors may also provide interesting results.

Finally, customer loyalty could be conceptualized as the strength of the relationship between customers' relative attitude towards a firm and their behavior. Therefore, even if customers may be "attitude loyal" due to factors such as high perceived service quality, satisfaction, perceived value, corporate image and trust, they may not be behaviorally loyal due to superior alternatives or despite not being attitude loyal, they may be behaviorally loyal due to lack of attractive alternatives or high switching costs. Knowing the underlying causes of customer loyalty is important as they affect the customer's responses to marketing activities. Hence, future studies may consider the effects of other possible factors such as attractiveness of alternatives, switching cost and market inertia on the relationships between mediator variables and customer loyalty.

### **IMPLICATIONS**

Understanding the suggested relationships among the studied variables might help mobile operators to take appropriate course of action to boost customer loyalty and profitability. The finding that service quality is the most influential factor in predicting customer loyalty calls for improving quality of the services to retain customers. In this study, value added services, coverage, undisturbed voice, customer care and ease of using services were considered as ingredients of service quality. Hence, Improving each of these aspects is imperative to improve perceived service quality and in turn, customer loyalty. Since, competition in mobile industry is shifting from price and core services to value-added services, Iranian mobile operators should realign business models around value-added services. It should be considered that differentiating services by setting superior quality standards can not only increase customer satisfaction, perceived value, trust, commitment and form a positive corporate image in customers' minds but also enable them to develop customer loyalty which can lead to firms increased profitability. Findings analysis show that mobile monthly budget has a moderating role in the service quality-CLV and loyalty-CLV relationships. It implies that segmenting customers according to their current mobile budget could help operators develop rich customer insight and formulate more accurate marketing strategies for different segments. Indeed, this enables marketing managers to motivate changes in customers' mobile budget by developing more targeted campaigns and changing usage patterns in each segment. Also, this implies that marketing managers should balance the time and budget invested in improving service quality aspects and loyalty programs with the expected firm's value achieved. In addition, this kind of segmentation helps operators to preserve Average Revenue Per User (ARPU) among high-usage subscribers besides increasing ARPU among low-usage customers. The findings indicate that perceived value is the second most important antecedent of loyalty. According to a classified report conducted by MCI (As an employee of MCI, the authors had limited access to the result of the report but not the whole information) to examine Iranian mobile subscribers' usage patterns, most Iranian subscribers tend to use pay-as-you-go tariff rather than using bundles because of their lack of awareness and unfamiliarity with such offerings. It seems that it is difficult for subscribers to determine whether they are receiving good value for the bundled services for which they pay. Since, perceived value is a question of service features and cost, more focus on creating awareness of bundles and using more informative campaigns could help operators clarify the advantages of bundled services and plans which in turn could improve customer loyalty to the firm.

## APPENDIX

Table AI: Measurement items for each construct

Construct	Scale items
Customer Loyalty	I will continue using service of this mobile operator If I buy a new mobile connection, I would prefer this mobile operator I recommend this mobile operator to others
Perceived service quality	Even if the other operators' billing is cheaper, I would go on using service of this mobile operator My mobile operator provides sufficient geographical coverage I get clear and undisturbed voice My mobile operator provides a variety of value-added services The staff of my mobile operator treats me friendly when I report a complaint It is easy to subscribe or change a service
Customer satisfaction	My choice to subscribe this mobile operator is a wise one I think I did the right thing when I subscribed to this mobile operator Overall, I am satisfied with services of this mobile operator
Perceived value	By using services of this mobile operator at this price, I am getting my money's worth I feel I am getting good mobile phone service for a reasonable price I feel that subscribing to this mobile operator meets both my high quality and low price requirements I would value this mobile operator as it meets my needs for a reasonable price
Corporate image	My mobile operator is stable and firmly established My mobile operator is innovative and forward-looking My mobile operator has a social contribution for society My mobile operator is a leading firm in the mobile phone industry of Iran My mobile operator has a positive image
Affective commitment	I feel committed to my mobile operator I am emotionally attached to this mobile operator
Calculative commitment	I feel somewhat trapped into using this mobile operator Right now staying with my current service provider is more a matter of necessity than of choice
Trust	I feel that I can rely on this mobile operator to serve me well I trust the billing system of this mobile operator I believe that this mobile operator will not try to cheat me My mobile operator is reliable because it is mainly concerned with customer's interests

Table AII: Results of measurement model

Model construct	Measurement item	SQ	SA	AFF	CAL	TRU	PV	IM	LO	Budget loyalty	Budget SQ	Loading	Critical ratio
Service quality	SQ1	0.761	0.457	0.271	0.312	0.250	0.374	0.339	0.389	0.336	0.476	0.761	26.41
	SQ2	0.766	0.448	0.193	0.321	0.294	0.302	0.309	0.335	0.250	0.420	0.766	22.71
	SQ3	0.746	0.476	0.353	0.358	0.396	0.345	0.326	0.321	0.250	0.383	0.746	21.60
	SQ4	0.698	0.422	0.249	0.325	0.336	0.374	0.309	0.361	0.371	0.475	0.698	22.84
	SQ5	0.688	0.373	0.306	0.268	0.327	0.375	0.338	0.267	0.230	0.375	0.688	18.06
Satisfaction	SAT1	0.503	0.905	0.390	0.426	0.430	0.440	0.533	0.528	0.392	0.328	0.905	68.73
	SAT2	0.484	0.906	0.362	0.413	0.452	0.467	0.576	0.550	0.449	0.378	0.906	63.83
	SAT3	0.568	0.805	0.402	0.355	0.543	0.457	0.474	0.528	0.315	0.275	0.805	35.85
Affective commitment	AC1	0.359	0.403	0.893	0.242	0.389	0.312	0.365	0.381	0.215	0.139	0.893	54.79
	AC2	0.314	0.386	0.889	0.303	0.357	0.310	0.279	0.411	0.330	0.218	0.889	52.35
Calculative commitment	CC1	0.309	0.350	0.271	0.845	0.200	0.167	0.263	0.385	0.332	0.252	0.845	33.97
	CC2	0.440	0.443	0.268	0.912	0.336	0.266	0.402	0.465	0.322	0.248	0.912	69.37
Trust	TRUST1	0.360	0.465	0.301	0.285	0.804	0.338	0.335	0.393	0.195	0.118	0.804	25.12
	TRUST2	0.371	0.452	0.374	0.241	0.809	0.543	0.447	0.433	0.207	0.105	0.809	32.34
	TRUST3	0.324	0.399	0.331	0.230	0.797	0.422	0.474	0.390	0.190	0.084	0.797	28.39
Perceived value	PV1	0.366	0.359	0.222	0.221	0.466	0.860	0.461	0.455	0.231	0.130	0.860	47.81
	PV2	0.447	0.507	0.305	0.266	0.465	0.908	0.537	0.565	0.345	0.225	0.908	78.26
	PV3	0.425	0.473	0.313	0.206	0.500	0.875	0.532	0.515	0.292	0.193	0.875	60.26
	PV4	0.463	0.490	0.379	0.199	0.492	0.890	0.587	0.556	0.328	0.217	0.890	52.79
Image	IMAGE1	0.395	0.493	0.203	0.299	0.357	0.449	0.773	0.494	0.362	0.268	0.773	21.10
	IMAGE2	0.276	0.439	0.243	0.331	0.503	0.373	0.724	0.471	0.265	0.117	0.724	17.58
	IMAGE3	0.270	0.341	0.270	0.186	0.337	0.338	0.630	0.320	0.179	0.130	0.630	12.68
	IMAGE4	0.322	0.425	0.256	0.338	0.310	0.413	0.745	0.469	0.237	0.118	0.745	21.90
	IMAGE5	0.351	0.504	0.359	0.263	0.418	0.597	0.798	0.620	0.415	0.229	0.798	34.98
Loyalty	LOYAL1	0.472	0.553	0.356	0.382	0.448	0.543	0.592	0.827	0.525	0.277	0.827	36.70
	LOYAL2	0.364	0.474	0.386	0.418	0.440	0.415	0.506	0.842	0.523	0.197	0.842	37.83
	LOYAL3	0.435	0.581	0.379	0.419	0.462	0.568	0.602	0.878	0.569	0.265	0.878	67.29
	LOYAL4	0.230	0.423	0.365	0.409	0.323	0.442	0.484	0.784	0.524	0.167	0.784	25.20
Budget loyalty	BUDGET.L1	0.387	0.381	0.239	0.283	0.182	0.287	0.339	0.495	0.932	0.867	0.932	95.98
	BUDGET.L2	0.377	0.413	0.307	0.365	0.263	0.286	0.375	0.635	0.919	0.738	0.919	56.25
	BUDGET.L3	0.391	0.434	0.271	0.330	0.243	0.343	0.396	0.599	0.946	0.804	0.946	127.55
	BUDGET.L4	0.300	0.403	0.312	0.389	0.220	0.348	0.408	0.645	0.901	0.668	0.901	68.41

Table AII: Continue

Model construct	Measurement item	SQ	SA	AFF	CAL	TRU	PV	IM	LO	Budget loyalty	Budget SQ	Loading	Critical ratio
Budget SQ	BUDGET.SQ1	0.544	0.343	0.169	0.251	0.082	0.203	0.233	0.267	0.787	0.945	0.945	121.17
	BUDGET.SQ2	0.546	0.346	0.138	0.262	0.095	0.161	0.205	0.241	0.768	0.944	0.944	110.83
	BUDGET.SQ3	0.597	0.409	0.248	0.310	0.191	0.238	0.247	0.281	0.763	0.921	0.921	71.78
	BUDGET.SQ4	0.499	0.324	0.172	0.255	0.109	0.211	0.210	0.265	0.799	0.928	0.928	81.94
	BUDGET.SQ5	0.515	0.316	0.203	0.235	0.120	0.207	0.229	0.224	0.749	0.905	0.905	53.92

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