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## **Thai Information Technology Customer Loyalty Perceptions: A Structural Equation Model**

Surachet Pongcharnchavalit and Wannoo Fongsuwan

Administration and Management College, King Mongkut's Institute of Technology, Ladkrabang, Thailand

*Corresponding Author: Surachet Pongcharnchavalit, King Mongkut's Institute of Technology Ladkrabang, Administration and Management College, Chalongkrung Soi 1, Ladkrabang Sub-district, Ladkrabang District, Bangkok, 10520, Thailand*

### **ABSTRACT**

Customer loyalty is composed of many factors including customer expectations, perceived quality, perceived value, corporate image, customer satisfaction, customer trust/confidence, customer commitment and customer complaints. This study strove to investigate the influence of loyalty factors and the relationship with the Thai information technology product and service sector. Thai ICT investments were expected to grow 7.2% in 2014 over 2013 with 105,000 Wi-Fi hotspots being installed around the country. Study after study stresses the importance of ICT to a nation's prosperity, well-being and growth so the study's researchers undertook data analysis using both qualitative and quantitative research methods to examine how perceived product/service quality, customer perceived value and customer trust affect customer loyalty. The results of the study showed that the customer perception of information technology product service/quality had an indirect but positive effect on both customer trust and the perceived value of the product or service. They, in turn, had a direct effect on customer loyalty. The findings from this study found that information technology customers using product and/or services, regardless of the price focused on purchasing technology products with service after the sale. So, the perception of quality and the recognition of the value are necessary to provide customers with trust in the brand itself with leads to longer customer retention.

**Key words:** Customer loyalty, trust, perceived value, perceived product, service quality

### **INTRODUCTION**

In the globalization era, Information and Communication Technology (ICT) is used as an extended synonym for IT but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless), intelligent building management systems and audio-visual systems in modern information technology (Agbetuyi and Oluwatayo, 2012).

In an increasingly connected world, ICT today is a transformation driver of change across entire industries which powers new value chains. Studies have shown that every 10% increase in broadband penetration boosts GDP by an average of 1.3% and every 10% increase in mobile teledensity results in a 0.7% increase in GDP (ASEAN ICT Masterplan, 2015). Convergence has created a new digital lifestyle never imagined a decade ago. In this regard, ICT provides limitless opportunities for users to experience different ideas and cultures and enables them to build a sense of awareness beyond their immediate surroundings.

IDC Research Thailand stated that ICT investments were expected to grow 7.2% in 2014 over the previous year 2013. This, however, reflects a moderation in previous growth due to ongoing political and economic issues with Thai companies taking a wait and see approach. Limited growth is also due to the delay or cancellation of government IT related projects such as One Tablet per Child, Free Wi-Fi and Smart Cities. This, however, might be offset going forward with Thailand becoming a hub for the ASEAN Economic Community (AEC, which is gaining momentum along with bringing new sources of growth to the Thai ICT market in general (IDC, 2013).

In 2014, according to Thailand's Ministry of Information and Communication Technology (ICT), the ICT has been in the process of installing a total of 105,000 Wi-Fi hotspots around the country in order to provide free internet usage for the country. The ministry has been given a budget of 950 million baht for the project by the National Broadcasting and Telecommunication Commission (NBTC) with 77 Wi-Fi projects underway (one for each province). The project is anticipated to take 3 years to complete with every hotspot being able to offer a 4-5 megabit/second download speed (NNT, 2014).

Beyond just the physical medium of land lines and 3G/4G towers and phones, content development has been a driving force for Internet use in Thailand, with field software service and digital content both now regarded as new branches for both the business sector and domestic consumption. Information Technology (IT) marketing now consists of 3 components including the computer hardware market, data communication equipment market and software service. It was also found that these technology markets in 2011 had an overall value of 155.549 billion baht and grew in 2012 by 18.7% reaching a value of 182.327 billion baht. In 2011, research showed that the computer hardware market share in the technology market had a 61% hold followed by communications and software/software services with 19.9 and 19.1%, respectively (NECTC, 2012).

Computer hardware has a very high market share with much higher values due to smaller growth and share of competing technologies such as data communications transmission systems, wired (wireline/landline) and delivery systems and wireless. Much of this growth is within the SME sector as any visit to large IT malls around Thailand will show.

Another study on technology households in 2011 surveyed a total population of approximately 62.4 million users. Of this survey population, 19.9 million (32%) used computers and 14.8 million or 23.7% used the internet. In towns and cities, computer users were 9.5 million (44.3%) and Internet users 7.7 million (36%).

From the data mentioned above, it can be extrapolated that as the technology companies will continue to grow steadily but at a more moderate rate. IT SMEs (Small Medium Enterprises) will need to be highly competitive in order to wrest an advantage and seize market share and play close attention to the needs of their existing customers which will hopefully lead to the expansion, growth and profitability of these enterprises, both small and large.

## **CONCEPTUAL DEVELOPMENT**

**Customer loyalty:** Marketing to existing customers tends to be 6-7 times more profitable than prospecting with word-of-mouth being 2-20 times more influential than advertising (Kimmel, 2013). Usually, we find that what people mean when they talk about loyalty is really customer retention rate-whether the customer sticks around and buys again. Understanding the difference between loyalty and retention is important because of the implied assumption that they correlate with business success (more revenue or profits or both). If the correlation exists, then managing for improvement in customer retention or customer loyalty equates to managing for business success.

Numerous studies have shown satisfaction and trust are the crucial antecedents of loyalty. However, the relationship between satisfaction, trust and cross-buying is not as simple as expected with studies on the effects of satisfaction and trust on cross-buying show mixed results Liu and Wu (2008). Caruana (1999) defines service loyalty as the degree to which a customer exhibits repeat purchasing behavior from a service provider and stated that service loyalty is one of the most important structures in service marketing, due to its final effect on customers' repeated purchases and in fact, those loyal customers who purchase repeatedly are considered as the base of any business.

Raimondo *et al.* (2008) investigated the influences on attitudinal loyalty and behavioral loyalty. The study determined that relational equity is recognized as a significant determinant of customer loyalty over and above satisfaction and trust effects and its influence increases along with relationship age. From a managerial point of view, results suggest that loyalty programs should be tailored according to the age of the relationship. Moreover, particular care should be devoted to monitoring perceived relational equity, especially in longer-term relationships.

Additionally, a positive attitude will work in favor of the business and affects customer loyalty, customer satisfaction (Oliver, 1997; Chaudhuri and Holbrook, 2001; Aldas-Manzano *et al.*, 2011; Sirdeshmukh *et al.*, 2002; Lam *et al.*, 2004), trust (Morgan and Hunt, 1994) and affects the relationship with customer loyalty.

The expected positive impact on customer satisfaction and the trust and loyalty of customers or consumers is a result from the evaluation after the consumption of goods or services. This can be explained by the concepts of consumer behavior which are the individual acts associated with the decision to purchase the goods or services to meet their needs (Solomon, 2009).

The elements of psychological behavior include two types of external behavior or overt behavior, which is an action that others can observe and measure while covert behavior are actions that occur within the individual such as feelings, attitudes, beliefs, perceptions, etc. (Sundel and Sundel, 2004). This is consistent with the study by Songsom and Trichun (2013) which found that customer trust factor was the highest direct effect on customer loyalty while customer satisfaction was the highest indirect effect.

**Customer trust:** Building trust with an organization is paramount in paving the way to corporate success. Trust is the key factor for everything we do every day; communications, business operations, trading, marketing and advertising which includes the results of the action.

Davis *et al.* (2000) defined employee trust for the general manager as an internal organizational characteristic that provides a competitive advantage for the firm and further studied the relationship between trust for a business unit's general manager and organizational performance. Trust was found to be significantly related to sales, profits and employee turnover and managers who were either more or less trusted differed significantly in perceptions of their ability, benevolence and integrity.

McAllister (1995) studied the nature and functioning of relationships of interpersonal trust among managers and professionals in organizations, the factors influencing trust's development and the implications of trust for behavior and performance and stated that trust enables people to take risks. Additionally, trust is based on the expectation that one will find what is expected rather than what is feared with trust encompassing not only people's beliefs about others, but also their willingness to use that knowledge as the basis for action.

Claycomb and Martin (2002) studied 205 US commercial service providers identified companies' customer relationship-building objectives and practices. Of 42 possible relationship-building objectives, the following rated as top priorities were: (1) Encouraging customers to think of the firm

first when considering a purchase, providing better service, (2) Encouraging customers to speak favorably about the firm and (3) Encouraging customers to trust the firm. The findings suggested that "Customer relationship-building" means different things to different people and that practices to build such relationships vary considerably.

Wingworn and Piriyakul (2010) studied the determinants of perceived performance, corporate social responsibility and product and service quality and customer behavior of 731 consumers in northern Thailand. The study revealed that 4 elements including corporate affection, corporation reputation perception, corporate trustworthiness and the perceived corporate product and service quality improvement had ultimately the greatest effect on customer satisfaction.

The trust and the trust of our customers is a factor representing the relationship between the customer and the new generation of consumers, therefore, trust is a major factor leading to competitive advantage and is what clients trust in an organization (Aqueveque and Ravasi, 2006). Trust is the belief in the products and services that an organization provides as well as the client's respect and love of the company's product, brand and reputation (Carmeli and Cohen, 2001).

**Customer perceived value:** The competitive business environment today is filled with both domestic and foreign competitors who are working to respond to consumer demands at making goods better, faster and at a lower cost for both services and products.

Consumers today have the opportunity and the power to choose from a wide variety of competitors with ever higher expectations their choice of a product or service. Additionally, today's consumers want to feel satisfied about the benefits, value and the worth of the product or service, which is referred to as customer value and satisfaction.

Chen *et al.* (2012) studied 420 customers and the resultant impact of Taiwan financial services quality and fairness on customer satisfaction. The study used determinants of customer satisfaction throughout the financial services industry by incorporating the perceptions of fairness in service delivery (FAIRSERV) and outlining why and how FAIRSERV is important to customer satisfaction. The results showed that fair service not only has a significant impact on customer satisfaction but also plays a role equivalent to service quality in determining customers' trust and perceived value, which in turn leads to customer satisfaction.

Other researchers have determined that customer satisfaction is very important in a competitive business environment (Zeithaml *et al.*, 1990; Parasuraman *et al.*, 1988). Chen *et al.* (2012) and Roig *et al.* (2006) stated that customer perceived value (PERVAL) is considered or evaluated to compare between the interests of customers or received from the value of goods, services or relationships and perceived reduction in price and cost.

The perceived value of the product is the view that customers use in the evaluation of products/services and the purchase process must be effective for the purchase to occur (Woodruff, 1997; Eggert and Ulaga, 2002). The relationship between the consumption of goods or services and the attitudes and behavior which causes their purchase and or satisfaction of customers (Zeithaml *et al.*, 2006; Sigala, 2011) refers to the expectations of the parties prior to purchase and fulfillment. Perceived value is a multi-dimensional construct that consists of several interrelated attributes or dimensions that form a holistic representation of a complex phenomenon (Sheth *et al.*, 1991a, b). This 'consumption-value theory' states that the multifaceted consumer choice-to buy or not to buy, to choose one type of product or service over another and to choose one brand over another-entails a variety of forms of value. These forms of value can be categorized as functional, social, emotional, epistemic and conditional.

Other studies of Chen *et al.* (2012) studied the impact of service quality, finance and justice on customer satisfaction and found that the perceived quality of the customer directly affects customer

satisfaction through the perception of quality of service and transparency and justice in the service of the company. Eggert and Ulaga (2002) studied the perceived value on the purchasing manager's intentions as well as the perceived value being mediated by customer satisfaction. The study suggested that value and satisfaction can be conceptualized and measured as two distinct, yet complementary constructs.

**Perceived product/service quality:** Understanding brand quality does not have to come directly from knowledge about the brand but instead can come from understanding the properties of the product as a result of information perception or feeling towards the brand, which has a direct influence on the loyalty to the brand. So an understanding of the quality is different from satisfaction. The main goal of the service is to reduce the difference between what is expected and what is actually delivered, because a higher level of customer service management increases the burden on the provider, while lower than the required level of service that may result in customer dissatisfaction.

Parasuraman *et al.* (1985, 1990) have given a definition that the perceived quality of the product/service is caused by the expectation of customers or clients using the service. Businesses using SERVQUAL to measure and manage service quality deploy a questionnaire that measures customer expectations of service quality in terms of these 5 dimensions and their perceptions of the service they receive. When customer expectations are greater than their perceptions of received delivery, service quality is deemed low.

This is consistent with Gronroos (1988) which as a result of the evaluation process, customers compared their service expectations with the perception of the service actually received by the factors that indicate Service Quality. The study borrowed Parasuraman's concept and applied it to assess and improve quality of service by using 22 questions to evaluate the service quality (SERVQUAL) instrument in all 5 main dimensions (Fig. 1).

Early conceptualization of service quality was formed by Gronroos (1982, 1984, 1988), he defined service quality by technical or outcome (what consumer receive) and functional or process related (how consumer receive the service) dimensions (Fig. 1). Image build up by technical and functional quality and effect of some other factors (marketing communication, word of mouth, tradition, ideology, customer needs and pricing). The Nordic model is based on disconfirmation paradigm by comparing perceived performance and expected service. This was the first attempt to measure quality of service. Grönroos model was general in nature and without offering any technique on measuring technical and functional quality.

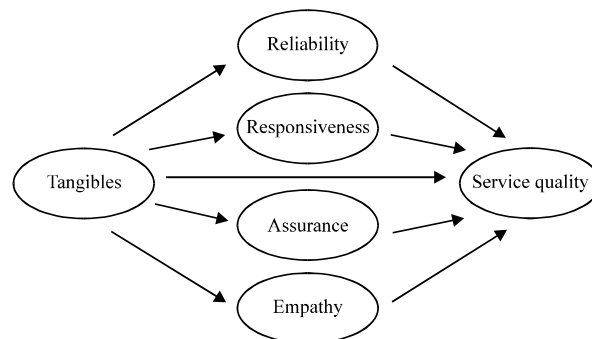


Fig. 1: Model for service quality (SERVQUAL)

Among general instruments, the most popular model used for evaluation of service quality is SERVQUAL, a well-known scale developed by Parasuraman *et al.* (1985, 1988). The attributes of Parasuraman *et al.* (1985), were; tangibles, reliability, responsiveness, competency, courtesy, assurance, credibility, security, access and understanding. Parasuraman *et al.* (1988) later reduced these ten dimensions into five by using a factor analysis. These five dimensions are:

**Tangibles:** Physical facilities, equipment and appearance of personnel

**Reliability:** Ability to perform the promised service dependably and accurately

**Responsiveness:** Willingness to help customers and provide prompt service

**Assurance:** It include competence, courtesy, credibility and security. Knowledge and courtesy of employees and their ability to inspire trust and confidence.

**Empathy:** It include access, communication, understanding the customer. Caring and individualized attention that the firm provides to its customers.

Service organizations are physical presences that can be seen and felt and are related to the delivery of services. Equipment providers must look beautiful, should provide modern equipment and technology, materials associated with the service have to be clean, service staff must have a professional personality and organizations should facilitate both service users and service providers (Parasuraman *et al.*, 1988).

Aydin and Ozer (2005) conducted a study on the analysis of causal factors influencing customer loyalty with GSM mobile phones in Turkey. They studied the relationships between corporate image, perceived service quality, trust and customer switching costs, which are the major antecedents of customer loyalty and loyal customers may buy more, accept higher prices and have a positive word-of-mouth effect. Also, they concluded that the cost of selling to new customers is much higher than the cost of selling to existing customers. Although, this fact is apparent to everyone, many companies are still losing customers at a formidable rate. In this context, the main aim of this study is to examine the relationships between these factors and customer loyalty and the relationships among these factors in the Turkish GSM sector. Data was obtained from 1,662 mobile phone users in Turkey via questionnaire. The data was analyzed by Structural Equation Modeling (SEM) in order to test all the relationships between variables in the model.

Telecommunications technology is changing and highly competitive. Quality of service makes customers feel confident and is important for entrepreneurs to build a loyal customer base. According to Chen *et al.* (2012), they found that the perceived quality of the product/service has a direct influence on customer satisfaction.

After a literature review and development of the above concepts, the following hypotheses were developed (Fig. 2):

**H1:** Perceived product/service quality influences customer perceived value

**H2:** Perceived product/service quality influences customer trust

**H3:** Customer perceived value influences customer loyalty

**H4:** Customer trust influences customer loyalty

## **MATERIALS AND METHODS**

This study was conducted from a sample population of 320 Bangkok metropolitan product and service users from the information technology sector using both quantitative and qualitative research.

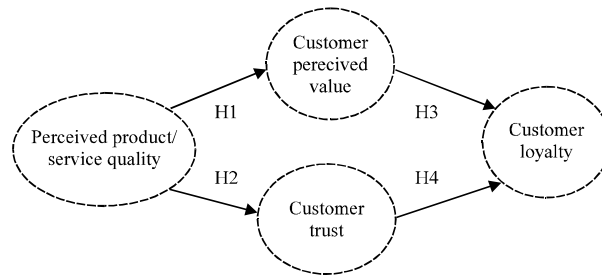


Fig. 2: Conceptual framework

**Data collection:** For this study, the measurement instrument or questionnaires utilized were prepared from the literature. Samples used included 320 individuals who were customers using information technology related product and/or services in the Bangkok metropolitan area (Hair *et al.*, 2006). To gauge both the content validity and reliability of the survey, 5 specialists in their respective fields were chosen to evaluate the consistency of the content and confirm it was valid for the purposes of the research. Additionally, the index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977), was employed to carry out the screening of questions. The IOC is a procedure used in test development for evaluating content validity at the item development stage. This measure is limited to the assessment of unidimensional items or items that measure specified composites of skills. The method prescribed by Rovinelli and Hambleton (1977) results in indices of item congruence in which experts rate the match between an item and several constructs assuming that the item taps only one of the constructs which is unbeknownst to the experts. The study then proceeded to select items that with an IOC index higher than 0.5 which were considered acceptable.

Questionnaires were constructed to be a tool to measure concept definition and practice. The instrument or questionnaire used the 7-Point Likert Scale (Likert, 1970) as the measurement scale and the conceptual framework for determining the internal consistency measured by coefficient alpha ( $\alpha$ -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient which ranged from 0.523-0.840, which is considered highly reliable. All values lower than 0.50 were eliminated from the measurement.

## MEASUREMENT

**Dependent variable:** Customer loyalty analysis of the information technology sector used a measurement instrument or questionnaires utilizing a 7-Point (Likert, 1970) and have been constructed with the scales developed enabling measurement of Behavior (loyalty\_b) (Guenzi *et al.*, 2009; Homburg *et al.*, 2002; Swan *et al.*, 1999; Liu and Wu, 2008) and Attitude (loyalty\_a) (Broyles, 2009; Chang *et al.*, 2010).

**Independent variables:** Perceived Product/Service Quality (perserv) analysis used a measurement instrument or questionnaires utilizing a 7-Point (Likert, 1970) which were developed and constructed from scales enabling the measurement of Reliability (Percserv\_c), Responsiveness (Percserv\_r), Confidence (Percserv\_n), Customer Care (Percserv\_m) and Physical Confidence (Percserv\_a) (Parasuraman *et al.*, 1985, 1988, 1990; Gronroos, 1982, 1984, 1988; Aydin and Ozer, 2005; Chen *et al.*, 2012).

Customer Perceived Value (pervalue) analysis used a measurement instrument or questionnaires utilizing a 7-Point (Likert, 1970) which were developed and constructed from scales



enabling the measurement of Social Values (perceived\_s), Emotional Values (perceived\_e) and Functional Values (perceived\_f) (Chen *et al.*, 2012; Zeithaml *et al.*, 1990; Parasuraman *et al.*, 1988; Roig *et al.*, 2006; Woodruff, 1997; Eggert and Ulaga, 2002; Zeithaml *et al.*, 2006; Sigala, 2011; Sheth *et al.*, 1991a, b).

Customer Trust (trus) analysis used a measurement instrument or questionnaires utilizing a 7-Point (Likert, 1970) which were developed and constructed from scales enabling the measurement of Brand (trust\_s), Corporate Image (trust\_m) and Salesperson (trust\_p) (Davis *et al.*, 2000; McAllister, 1995; Claycomb and Martin, 2002; Wingworn and Piriyaikul, 2010; Aqueveque and Ravasi, 2006; Carmeli and Cohen, 2001).

## ANALYSIS AND RESULTS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of Manifest Variable and Latent Variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001). According to the analysis result of scale validity and reliability, scale investigation was conducted using internal consistency measurement coefficient alpha ( $\alpha$ -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient, whose range ranged from 0.523-0.840, which is considered highly reliable.

In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ( $|t| \geq 1.96$ ) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Wingworn and Piriyaikul, 2010) and analysis results as shown in Table 1.

Perceived Product/Service Quality (Perserv) factors underlying the external variable influencing Reliability (Percserv\_c), Responsiveness (Percserv\_r), Confidence (Percserv\_n),

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct/item	Loading	t-stat
<b>Perceived product/service quality (Perserv)</b>		
Reliability (Percserv_c)	0.932	44.8260
Responsiveness (Percserv_r)	0.933	45.8076
Confidence (Percserv_n)	0.903	40.1909
Customer care (Percserv_m)	0.908	43.4992
Physical confidence (Percserv_a)	0.870	28.3391
<b>Customer perceived value (Pervalue)</b>		
Social value (perceived_s)	0.919	53.4949
Emotional value (perceived_e)	0.934	62.2721
Functional value (Perceived_f)	0.895	49.1011
<b>Customer trust (Trus)</b>		
Brand (trust_s)	0.910	52.5599
Corporate image (trust_m)	0.939	59.6313
Salesperson (trust_p)	0.940	62.8287
<b>Customer loyalty (Loyalty)</b>		
Behavior (loyalty_b)	0.940	38.4768
Attitude (loyalty_a)	0.955	32.4949

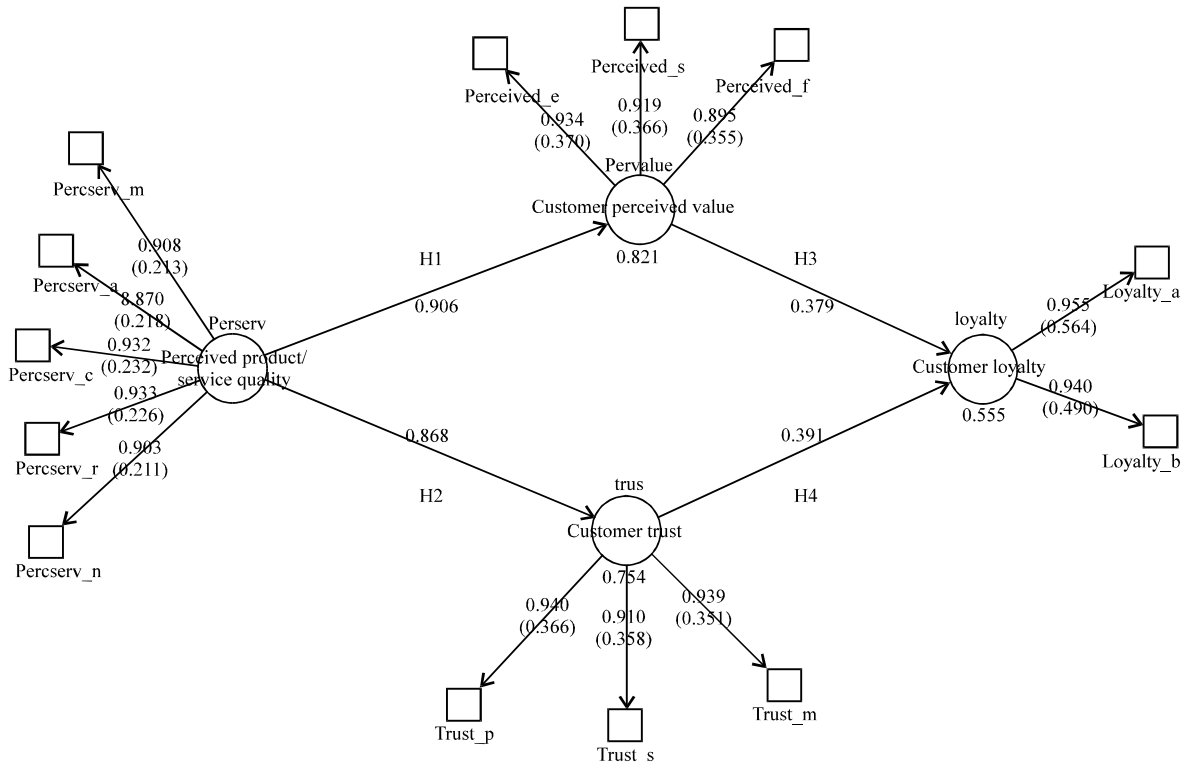


Fig. 3: Final model-analysis of factors that affect customer loyalty in information technology products and services

Customer Care (Percserv\_m) and Physical Confidence (Percserv\_a) with values loading from 0.707 and a significant level of confidence percentage 95 (t-. stat>1.96), which considers such factors highly reliable. Perceived Product/Service Quality affects Customer Trust (Fig. 3).

Customer Perceived Value (Pervalue) factors underlying the external variable influencing Social Value (perceived\_s), Emotional Value (perceived\_e) and Functional Value (Perceived\_f) with values loading from 0.707 and a significant level of confidence percentage 95 (t-. stat>1.96), which considers such factors highly reliable. Customer Perceived Value (Pervalue) affects Customer Trust (trus).

Customer Trust (trus) factors underlying the external variable influencing Brand (trust\_s), Corporate Image (trust\_m) and Salesperson (trust\_p) with values loading from 0.707 and a significant level of confidence percentage 95 (t-. stat> 1.96), which considers such factors highly reliable. Customer Trust (trus) affects Customer Loyalty (loyalty).

**Convergent validity:** Technically, convergent validity can be evaluated by three tests; item reliability, composite reliability and Average Variance Extracted (AVE) (Chau, 1997). The first measure, item reliability, captures the amount of variance in a measure due to the construct rather than the error. Item reliability is indicated if items have significant factor loadings of 0.50 or above (Hair *et al.*, 2006). The second measure, construct composite reliability, is assessed based on the criteria that the indicator's estimated pattern coefficient is significant on its underlying factor (Nunnally, 1978). The threshold value for construct reliability is 0.70 or above. The interpretation

Table 2: Statistic values presenting convergent validity of reflective scales of latent variables

Construct	CR	R <sup>2</sup>	AVE	Cross construct correlation			
				Perceived product/service quality (perserv)	Customer perceived value (Pvalue)	Customer trust (Trus)	Customer loyalty (Loyalty)
Perceived product/service quality (perserv)	0.960	-	0.827	0.909			
Customer perceived value (pvalue)	0.940	0.821	0.839	0.906	0.916		
Customer trust (trus)	0.950	0.754	0.865	0.868	0.876	0.930	
Customer loyalty (loyalty)	0.946	0.555	0.898	0.668	0.721	0.722	0.817

Statistical significance level is at 0.05 and diagonal figures mean  $\sqrt{AVE}$ , CR: Composite reliability; R2: Square of the correlation, AVE: Average variance extracted

Table 3: Hypotheses test results

Hypotheses	Coefficient	t-stat	Results
H1: Perceived product/service quality affects the customer perceived value	0.906	79.0444	Supported
H2: Perceived product/service quality affects customer trust	0.868	55.1990	Supported
H3: Customer perceived value affects customer loyalty	0.379	4.2468	Supported
H4: Customer trust affects customer loyalty	0.391	4.3503	Supported

of the resultant coefficient is similar to that of Cronbach’s alpha, except that it also takes into account the actual factor loadings rather than assuming that each item is equally weighted in the composite load determination. The third measure, Average Variance Extracted (AVE) for each construct, similar to item reliability, indicates the amount of variance in the item explained by the construct relative to the amount due to measurement error. The threshold value for AVE is 0.50 or above.

The above reflective model in Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R<sup>2</sup>. The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R<sup>2</sup> values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Wingworn and Piriyakul, 2010).

Table 2 shows the results of factor analysis affecting Biomass Power Environmental Impact. The data also shows the CR values are higher than 0.60, with all AVE values higher than 0.50 for all values and R<sup>2</sup> values higher than 0.20, representing the reliability of the measurement. It found that data sets in the  $\sqrt{AVE}$  have higher values than all of the corresponding values in the ‘Cross Construct Correlation’ in the same column, representing discriminant validity of the measure in each construct and with a greater value than 0.50 of AVE as shown in Table 2. The samples were analyzed to answer the research hypotheses criteria in the three assumptions presented in Table 3.

Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 1 and 2 as well as the test results presented in Table 3. Table 2 shows the Confirmatory Factor Analysis (CFA) of the independent variables of Perceived Customer, Perceived Product/Service Quality (perserv) and Customer Trust (trus) and their effects on the dependent variable Customer Loyalty (loyalty).

## **RESULTS AND DISCUSSION**

The results of the study showed that the customer perception of information technology product service quality had a direct effect on both customer trust and the perceived value of the product or service. They, in turn, had a direct effect on customer loyalty.

Other researchers have also determined that related factors are perceived quality of products and services, reliable service quality, responsibility, confidence, care and physical presence (Parasuraman *et al.*, 1988). Quality is caused by the service expectation of customers or clients or the comparison between the expectations of customers in the product or service. A definition of this service quality is the perceived quality of the product/service is caused by the expectation of customers or clients using the service (Parasuraman *et al.*, 1985, 1990).

This is consistent with the analysis by Aydin and Ozer (2005) of the causal factors influencing customer loyalty with GSM mobile phones in Turkey. They studied the relationships between corporate image, perceived service quality, trust and customer switching costs, which are the major antecedents of customer loyalty and loyal customers may buy more, accept higher prices and have a positive word-of-mouth effect. It was additionally concluded that the cost of selling to new customers is much higher than the cost of selling to existing customers. Although, this fact is apparent to everyone, many companies are still losing customers at a formidable rate. In this context the main aim of this study is to examine the relationships between these factors and customer loyalty and the relationships among these factors in the Turkish GSM sector. Data was obtained from 1,662 mobile phone users in Turkey via questionnaire. The data was analyzed by Structural Equation Modeling (SEM) in order to test all the relationships between variables in the model. Telecommunications technology is changing and highly competitive. Quality of service makes customers feel confident and is important for entrepreneurs to build a loyal customer base. Raimondo *et al.* (2008) investigated the influences on attitudinal loyalty and behavioral loyalty. The study determined that relational equity is recognized as a significant determinant of customer loyalty over and above satisfaction and trust effects and its influence increases along with relationship age. From a managerial point of view, results suggest that loyalty programs should be tailored according to the age of the relationship. Moreover, particular care should be devoted to monitoring perceived relational equity, especially in longer-term relationships.

According to Chen *et al.* (2012), the perceived quality of the product/service has a direct influence on customer satisfaction. Reason, fairness and trust are also factors that affect customer loyalty and satisfaction (Oliver, 1997; Chaudhuri and Holbrook, 2001; Aldas-Manzano *et al.*, 2011; Sirdeshmukh *et al.*, 2002; Lam *et al.*, 2004) trust (Liu *et al.*, 2010; Garbarino and Johnson, 1999; Morgan and Hunt, 1994) affect the relationship with customer loyalty. This results in an expected positive impact on customer satisfaction, creating trust and loyalty of customers or consumers. Consumer behavior can be defined as the acts of individuals associated with the decision to purchase the goods or services to meet their needs (Solomon, 2009).

The perceived value of the product is the view that customers use in the evaluation of products/services and if the purchase process is effective, the purchase will occur (Woodruff, 1997; Eggert *et al.*, 2006).

This is consistent with Chen *et al.* (2012) which studied the impact of service quality, finance and justice on customer satisfaction and found that the customer's perceived quality directly affects customer satisfaction through the perception of service quality and transparency and fairness of company service. Additionally, Eggert and Ulaga (2002) found that perceived customer value has a direct positive influence on customer satisfaction.

This is also consistent with the findings of Kumar *et al.* (2003) and Lages *et al.* (2008) which found that perceived customer value affects customer trust. However, Roig *et al.* (2006) stated that customer perceived value (PERVAL) is considered or evaluated to compare between the interests of customers or received from the value of goods, services or relationships and perceived reduction in price and cost.

This is also consistent with Raimondo *et al.* (2008) investigation of the influences on attitudinal loyalty and behavioral loyalty. The study determined that relational equity is recognized as a significant determinant of customer loyalty over and above satisfaction and trust effects and its influence increases along with relationship age which consisted of a loyal attitude and loyalty arising from customer behavior (Morgan and Hunt, 1994).

The study of Songsom and Trichun (2013) found that customer loyalty is influenced by psychological factors or elements within the male consumer as well as the composition caused by factors outside the influence of the environment.

Wingworn and Piriyaikul (2010) showed that corporate trustworthiness entails the dissemination of information that is transparent. Trust is a major factor leading to competitive advantage which leads to clients trusting organizations (Aqueveque and Ravasi, 2006) and the belief in the products and services the organization provides.

Trust is the belief in the products and services that an organization provides as well as the client's respect and love of the company's product, brand and reputation (Carmeli and Cohen, 2001).

## **CONCLUSION**

Customer loyalty affects products and services in addition to the retention of business as consumers will be unwilling to change to another service or competitor. It is also useful in word-of-mouth marketing and additionally, expands a customer base. When customers are loyal, they will support the business and encourage others that they know to use the products and services. Customer loyalty is beneficial to the business in the long run and every organization should try to discover the factors that keep customers loyal by implementing marketing strategies such as customer relationship management, building relationships using social media tool and retaining customers in the long run to maintain the existing customer base as long as possible.

The results of the study showed that the customer perception of information technology product service quality had a direct effect on both customer trust and the perceived value of the product or service. They, in turn, had a direct effect on customer loyalty.

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