Altınbaş University

USE OF MOBILE APPLICATION: EFFECTS OF E-SERVICE QUALITY AND PERCEIVED VALUE ON CUSTOMER SATISFACTION AND LOYALTY

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Bu çalışma tarafımızca incelenmiş olup, kapsam ve kalite açısından Yüksek Lisans olmaya yeterli bulunmuştur.

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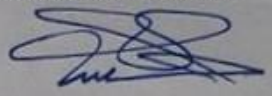

Abstract

Alhasan Aldahnan, “Use of mobile application: effects of E-service quality and perceived value on customer satisfaction and loyalty”

In the recent years, applications have grown significantly amongst the users of mobiles because the evolution of the services provided through mobile application. The study going to analyze the impacts affecting customer satisfaction and loyalty by perceived value and E-service quality when using mobile application. Was using a drop-off style to collect survay, and accumulate 375 questionnaires out of 400 in Jordan. Also, analyzed data extracting the results by using MEAN value, correlation, ANOVA, Coefficients, mediation test methods and regression analysis, to find the relation affect between dependent and independent variables. The results showed that there are a positive relationship and direct or indirect effect from the quality of E-service and perceived value on customer satisfaction and loyalty. Also found, there is no mediation relationship from E-service quality and perceived value on customer loyalty through their satisfaction.

Özet

Son yıllarda telefon kullanıcıları arasında uygulamalar telefon uygulaması ile sağlanan hizmetlerin gelişimi sayesinde büyük oranda artış göstermiştir. Bu çalışma; müşteri memnuniyetini, algılanan değer ile kazanılan sadakat ve telefon uygulaması kullanırkenki E_hizmet kalitesini etkileyen faktörleri analiz edecektir. Ürdün'deki 400 anketten 375 anket toplanmıştır. Ortalama değer, korelasyon, ANOVA, katsayılar, aracı test yöntemleri ve regresyon analizi kullanılarak elde edilen sonuçların verisi analiz edilmiş ve bağımlı ve bağımsız değişkenler arasındaki ilişki etkisinin bulunması amaçlanmıştır. Sonuçlar müşteri memnuniyeti ve müşteri sadakati üzerinde E-hizmet kalitesi ve algılanan değerin etkisi arasında pozitif bir ilişki, direkt veya direkt olmayan bir etki olduğunu göstermiştir. Ayrıca, müşteri memnuniyeti ile müşteri sadakatinde E-hizmet kalitesinden ve algılanan değerden arabuluculuk ilişkisi bulunmamıştır.

ACKNOWLEDGEMENTS

I would like to express my thanks to my thesis supervisor Prof. Dr. A. Ercan GEGEZ and Research Assistant Fadime İrem DOĞAN for their support and time. Finally, this work would have not been possible without the support and encouragement of my family and Rahma Al-Qaisy. I am exceedingly grateful for her endless support, love, high tolerance and patience throughout my life.

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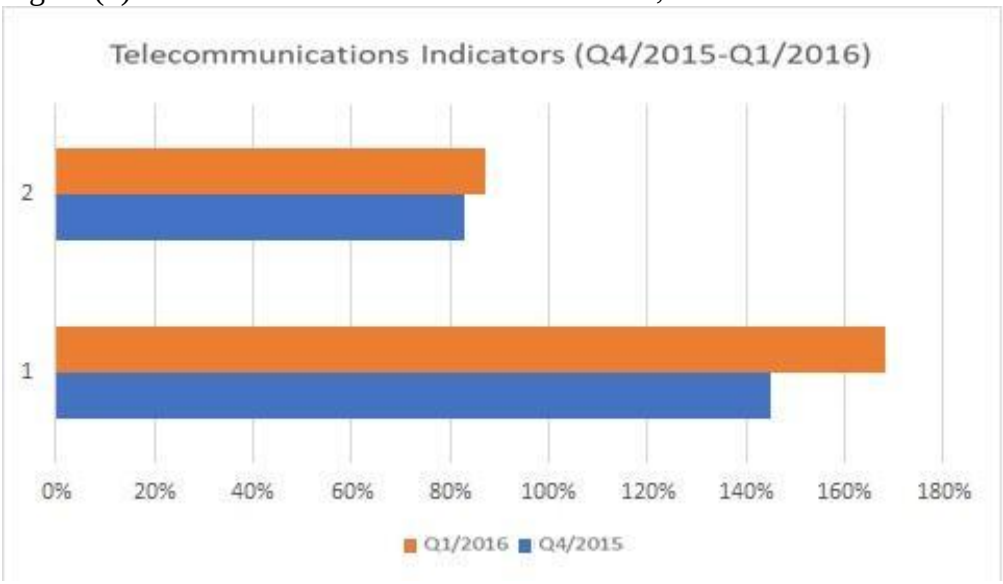
1. Introduction:

An e-service on mobile is the next generation of internet-based service (Johansson & Andersson, 2015). Now we can use E-service on a mobile application mostly to do everything. Such us : Food order, Hotel reservation, request for a taxi or check your bank account and make financial process, etc. any service can perform now easily and in one touch. With the incredible evaluation of E-services on the mobile application, companies or applications creator should know what a variable effect on the customer is positive or negative.

Studies show that Jordanian people have a major interest in technology and there is an increase in the numbers of people using mobile phones and internet over years. Statistics of the third quarter of 2016 showed that the total mobile phone users around 16 million in a percentage of 168% of the total population. Internet users of mobile phones range about 8.6 million people by a percentage of 87% of the total population (Telecommunication Regulatory Commission, 2016).

In comparison with the ratio of 2015 fourth quarter, the total mobile phone users around 13.8 million in a percentage of 145% of the total population. Internet users through mobile phones range about 7.9 million people by a percentage of 83% of the total while internet (Telecommunication Regulatory Commission, 2016).

Figure (1) - Jordan Telecommunications Indicators, 2016



Source: Telecommunication Regulatory Commission (2016)

The E-service field grew significantly in the last few years as Indicated in the studies of 2017.The number of application use approximates 3.5 million only in android store and I has been instantly increasing (number of android application, 2017). Mobile applications have recorded new numbers since the 1st quarter of 2017 regarding downloading and reviews, across both the popular operating system store (IOS and Android). The downloading rate grew by 15 percent in comparison with the previous year. The percentage is calculated only for applications that were the first download. The proportion of expense has increased by 45 percent since last year to become 15 billion dollars through (IOS and Android) in the world (Perez, 2017).

Thus, we conclude that the services offered by these applications can be considered as an important interest for ordinary people and profit organizations. Mobile applications and services have recorded big profits for the last few years and the increase has continued in an average 15% each year to reach a global profit of 25 billion US dollars in the first quarter - 2017 (Telecommunications Indicators, 2016). The main goal of the International

companies is to provide their best E-services in Jordan and in the world. The electronic have overcome many problems encountered both customers and developers. Mobile devices continue to grow and develop in both production and development in consumer and business markets, without slowing down (www.citrix.com). So, all organizations seek to provide their services through the internet because it could be the best way to attract more new consumers, yet, it might affect the organizations in a negative way.

The goal of the thesis is to specify the correlation between the factors that affect the quality of Electronic-services and perceived value on customer loyalty and satisfaction. It is decided through a questionnaire made to collect and analyze the relevant data in Jordan.

In this thesis, the researcher tries to answer the questions below:

1- Specifying the level of services provided by mobile applications as far as the perceived value and the E-service quality concerned?
2- To what extent do these values affect the loyalty of the customer and his satisfaction?

The study is divided into the following chapters:

Chapter two, we will display in the second section the previous studies (literature the review) about (The loyalty of the customer and his satisfaction, the perceived value and Electronic-services). There will be a review of different studies and research papers (businesses management, marketing, economic, etc.). Chapter three, we will continue the study focus on Hypothesis, Research Model and Measuring questions. Chapter four, the study continues as a (research methodology), there will be focus on (research methodology, study population & sample, procedures & data analysis, characteristics of respondents, discussion of

results and hypothesis testing methods). Chapter five, we complete this thesis with (conclusion and implementation).

2. Literature review

In this chapter some previous researchers and studies will be presented, these studies helped in the development of this study and its variables.

2.1. E-service quality

Santos defined the quality of Electronic-services as “the consumers overall evaluation and judgment of the excellence and quality of E-service offerings in the virtual marketplace” (“Santos, 2003”). The customers are the aim of any business to success, and service quality is the best part for business growth, safety, and success. (Ghobadian, Speller & Jones, 1995). Kundu & Datta (2015) study was implemented for analyzing how the independent variables affect the internet banking service, trust taking, quality of Electronic-services and the satisfaction of customer as a variable. Moreover, they discovered that there is a correlation between the quality of electronic-services and the customer satisfaction.

Chou at al. (2014) study customers loyalty in high speed rail service in Taiwan. They try to study how the service quality can influence the customer satisfaction by constructing a survey of 1235 passenger using high-speed rail. They come up with a statistically positive influence of the quality of service on the loyalty and satisfaction of the customer. Also, they found a positive correlation from customer satisfaction on their loyalty.

Additionally, Rami et al. (2017) study business in relation to customer model (B2C). They refer to on-line satisfaction and E-trust to reveal the correlation between the quality of service and on-line loyalty. Moreover, they used 302 user’s samples on the website and they found that the loyalty of the customer is dependent on the quality of service including the opinion of the customer, efficiency, and privacy with customer satisfaction. Cetinsoz (2015) suggests that market

researchers and store managers should understand an important concept of the customer's dimensions in an organization and focus on it. Whenever any problem occurs, they need to solve it.

Service quality is of more importace than product quality, and it's a key to gain profit. One cannot build a business relying only on the cost without quality (Ghobadian, Speller & Jones, 1994). Managers should focus on customer needs because of it effect on service quality provided (Liat, Mansori & Huei, 2014).

"Chen et. al." (2012) stated that quality of service and fairness have a strong impact on satisfying the customer, directly and indirectly. The effect is through the mediator value, trust and perceived value of the customer.

2.2. **Perceived value**

The perceived value could be characterized as a general evaluation of a benefit's value from the product, according to a guess of "what is given and what is received" (Wood, Heerden, 2007). Customer perceived value was divided into four dimensions "first value is low price, second value is whatever I want in a product, third value is the quality I get for the price I pay, and fourth value is what I get for what I give." ("Zeithaml 1988"). In another article, perceived value scale is defined in four dimensions: social and emotional value, cost and quality, while suggesting price and quality as a subcomponent (Sweeney & Soutar, 2001).

Flint, Woodruff & Gardial, (2002) believe that the perceived value can be considered as key to achieve satisfaction and patronage intention. "Grace and O'Cass (2005)" suggested that feelings and perceived value have two effects on

customer attention, an indirect impact via customer satisfaction and a stronger direct impact.

Measuring customer perceived value is basic to service assessment and development because the customer may have different or other needs for services (Pura, 2005). Companies should not, solely, focus on building and/or customers utility since other dimensions such as emotional and perceived values have equal benefits to the company (Gounaris, Tzempelikos & Chatzipanagiotou, 2007). The perceived value represents the customer's judgment on the product and sometimes has nothing to do with the price but dependent on customer's satisfaction and requirement (Zahir, Sehitoglu, Narcikara & Zehir, 2014). The perceived service quality is a significant value for influencing and determining perceived value (Shuklar, 2010). " Kuo et al. (2009)" suggested that by decreasing the perceived value, then the customer's loyalty will decrease too. This urges the customer for switching to another service provider to increase the perceived value.

The perceived value consists of two components: First, the "get" component which is when the buyer receives a benefit from the seller. Second, the "give" component which is when the product costs the buyer monetary or non-monetary values to receive it from the seller (Lin, Sher & Shih, 2005).

To conclude, the perceived value has become one of the critical factors which affect the customer's loyalty and satisfaction.

2.3. **Customer satisfaction**

The Customer's satisfaction is characterized as the evaluation made after purchasing or the general feedback made by the customer regarding the experience

of the service or product (Oliver,1992). It is known to be both a significant goal and a main concept in marketing business actions (Anderson, Fornell & Lehmann, 1994). Furthermore, customer satisfaction is also treated as an indicator of the success of information systems by many researchers (Doll and Torkzadeh, 1988). Also, service quality creates a positive effect on customer satisfaction, which incorporates "content quality, navigation and visual design, management and customer service, system reliability and connection quality" ("Kuo, Wu & Deng, 2009").

One notion of customer satisfaction is the satisfaction during post choice evaluation of the purchase decision (Churchill, A & Surprenant, 1982). Satisfaction is characterized as "the consumer's fulfillment response and a judgment on whether the product" or "the service provides a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment" ("Oliver, 1997").

Also, we can say that satisfaction is the fulfillment response which comes as an assessment with respect to how well a need, desire, or goal was met following consuming a product or service. Generally, it can be articulated that whether a customer will be satisfied depends on whether the performance of service or product is favorable or unfavorable (Deng, Lu, Wei & Zhang, 2010). Likewise, brand imaging and vendor responsiveness directly affect customer satisfaction, when in fact the qualities found in a website, such as interactivity and customization, do not create a significant change in customer satisfaction (suki, 2011).

A comprehensive model was suggested by "Wang and Liao (2004)", this model was designed for measuring user's satisfaction in M-commerce systems.

They developed a construct of M-commerce user's satisfaction in the study by examining the associated survey questions which could be categorized to; perceived usefulness, information quality, perceived ease of utilization, reliability, content validity, availability, design quality, speed, convenience, customer service, and customization. As reported those measures can be grouped into four constructs: quality of content, appearance, service quality and ease of utilization. As a result, they found that quality of content, appearance, service quality and ease of utilization, determine study of the customer's satisfaction in M-commerce.

The yield of stronger repurchasing intentions in on-line E-retailing services cases, since the general satisfaction which is experienced by on-line customers diminishes the perceived benefits of switching service providers (Lin & Sun, 2009).

Deng et al. (2010) make a questionnaire for measuring the impact of (trust, service question, perceived value) on loyalty and satisfaction of the customer. When developing a survey of (MIM), researchers arrived at the fact that service quality and trust has a positive effect on customers satisfaction yet not all dimensions of the perceived value has that effect. The social and monetary value didn't support his hypothesis while the functional and emotional values did.

An unsatisfied customer will prefer to find another source of service, to realize the personal satisfaction. (Anderson & Srinivasan, 2003). The customer has many options for finding and choosing service providers, and that has a direct relationship with the customer's satisfaction (Shukla, 2010).

Wu (2014), search on gaming establishments. He found, when perceived value increase that reflects on customer satisfaction and increase it, that explain there's a positive influence of the perceived value on customer's satisfaction. Nevertheless, he discovered no positive influence of service quality on customer satisfaction.

"Chang et al. (2009)", tested the intercorrelation among loyalty and satisfaction of the customer, the perceived value and E-service quality. They found three results on their research. First result says; quality of Electronic-service positively affects customer satisfaction, which supported our results. The second result says; the customer's satisfaction produces and impact the customer's loyalty. The third results found diminishing impact on the relationship between the loyalty and satisfaction of the customer.

Seto-Pamies (2012), search on travel agent, and to present the influence of service quality, customer satisfaction and trust how effect on customer loyalty. Also, they found strong impact and excellent predictor on customer satisfaction. Further, customer satisfaction positively affects their loyalty. Moreover, customer's satisfaction become a mediating variable between customer satisfaction and quality of service.

2.4. **Customer loyalty**

Customer loyalty were described by numerous researchers, like Oliver, Anderson et. al. "Oliver's, (1999)" definition was: "a deeply held commitment to re-buy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior".

"Anderson et al, (2003)" described e-loyalty as: "the customer's favorable attitude toward an electronic business resulting in repeat buying behavior".

The customer's general perception of the relative quality of a firm and its services and the measure of how well the service provided fit the customer expectations can be characterized as the service quality.

The process which leads to customer loyalty is spelled out as the customer recurring satisfactory experiences with a certain service provider (Oliver 1997). Customer loyalty comes forth when favorable attributes of the service are present in repeated buying (Kelle, 1993). In comparison, the loyal customers are far more unaffected by negative information concerning the service or product they use than disloyal customers. In many studies, the results point to the fact that loyal customers are inclined to purchase from the same supplier repeatedly (Anderson & Srinivasan, 2003). It can be said that research on customer loyalty in service contexts is still comparatively new (Lee, 2011).

The significant impact of the quality of service on consumer's loyalty and the results revealed that perceived quality of service is also a valuable predictor of consumer's loyalty (Shukla, 2010).

Service quality is one of the most significant positive effects on customer's loyalty (Chou, Lu & Chang, 2014). In Korea, a comprehensive model to measure customer satisfaction with mobile commerce has been developed. Researchers studied, a sample of 116 respondents that was utilized for examining the relations of consumer satisfaction to good word-of-mouth, and reusability of products. This study resulted in a consequential positive relation between, good word-of-mouth and reusability intentions with customer satisfaction (Wang & Liao, 2004).

Service quality has positively affected customer loyalty (Chou, Lu & Chang, 2014).

Similarly, the perceived value that includes Monetary value, Social value, Emotional and Functional has positively affected customer's loyalty (Deng, Lu, Wei & Zhang, 2010).

Customer satisfaction significantly influenced on customer' loyalty directly and positively, and the result of analyzing indicated that the customer's satisfaction has the most significant general direct impact and indirect through perceived quality of service and corporate image on the loyalty of the customer. ("Liat et al. 2014").

Lee and Lambert (2008) find a two-way effect of the perceived value on consumers loyalty, first the impact on customer's satisfaction as a partially mediated with service quality and second effect without an assistance from E-service quality.

Shukla (2010), recommended managers, should not be focused on service quality to determine consumer's loyalty and disregard another variables. Also, the found perceived value has a significant positive effect on customer's satisfaction and loyalty and mentioned the customer satisfaction is very important variable to determine and predict customer loyalty. Thus, they suggest according to the results; that the managers should use and emphasize customer's satisfaction, perceived value and perceived service quality as a forum to increase loyalty to the present customers.

"Chang & Wang (2011)" investigated the effect of customer's satisfaction, perceived value and the quality of Electronic-services on consumer loyalty, to understand customer behavior on online shopping. The result shows, customer satisfaction have bigger impact on customer loyalty in comparison with other variables in this research. Also, E-service quality and perceived value consider very significant to explain consumer loyalty. Because they have direct impact and indirect impact

through customer satisfaction. further, based to the result they posted: customer on traditional shopping channels expect equal or lower level of service quality than customer on online shopping channels.

Malai & Speece (2005), they studied how culture can affect the correlation between quality of service, brand name and customer loyalty. They reached a conclusion that the quality of service has a larger influence on consumer loyalty. Also, culture has an influence on the strength of the relationship. However, they post; the influence of culture varies from place to another one.

In the other hand, internet service quality affect consumer satisfaction but there's no positive correlation impact with consumer loyalty. In addition, customer satisfaction have a positive effect on their loyalty ("Amin, 2016").

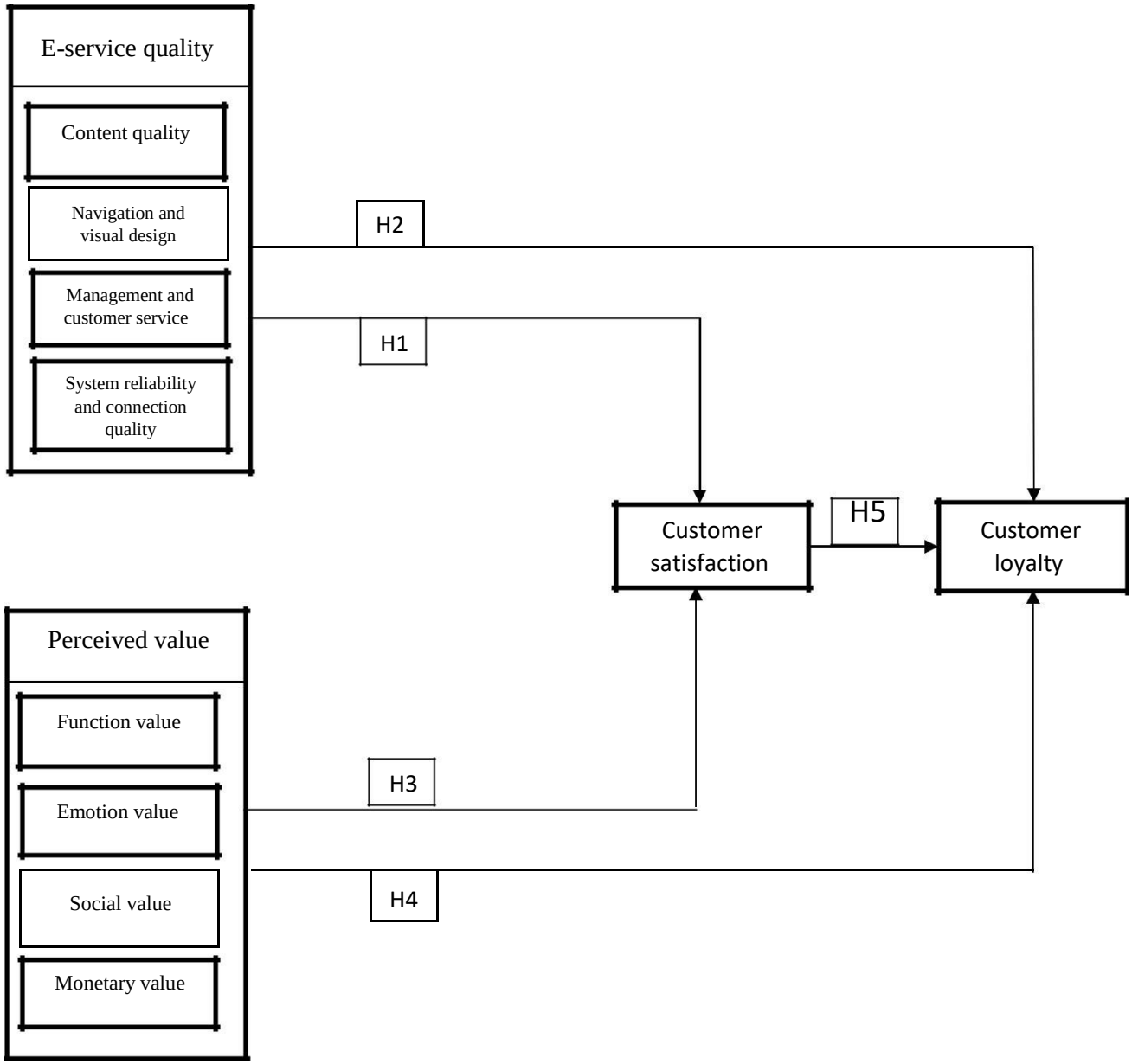
3. Research model and Hypotheses

This chapter provides Research Model, Hypothesis and Measuring questions.

3.1. Research model

This part reviews the research model to examine the factors effecting customer loyalty and satisfaction by using mobile applications.

Figure 2: **Research model**



3.2. **Hypotheses:**

The hypothesis could be defined as a relationship between two variables or more by examining hypotheses and assumptions of conjecture and it's expected to find solutions to fix problems. (Sekaran, p103, 2003).

This study's objective is to find the connection between dependent variables: (perceived value and quality of Electronic-services) and independent variables: (loyalty and satisfaction of the customer):

H1: the quality of the Electronic-services positively affects Customer's satisfaction.

H2: the quality of Electronic-services positively influences Customer's Loyalty.

H3: perceived values have positive impact on customer's satisfaction.

H4: perceived values have positive impact on Customer's Loyalty.

H5: customer's satisfaction has positive impact on Customer's Loyalty.

3.3. **Measuring question:**

The survey included 49 questions, the first five ask about demography information and the remaining 44 questions are distributed for independent variables (perceived value and quality of Electronic-service) and dependent variables (loyalty and satisfaction of the customer). All of the variable questions are LIKER type questions in five-point scale between ("strongly disagree and strongly agree").

In the first independent variable Electronic-service quality, have four dimensions; (**a.** quality of content, **b.** visual and navigation design, **c.** management and customer service, and **d.** connection quality and system reliability). The second independent variable perceived value also include four dimensions; (**a.** Functional value, **b.** Emotional value, **c.** Social value and **d.** Monetary value).

Table 1: **E-service quality questions**

Factor	**Original questions**	**Adapted questions**
E-Service quality		
Content quality	This value-added service supplies full content	This service of mobile applications offers full content
	This value-added service offers suitable contents	This service of mobile applications offers appropriate contents
	This value-added service offers important contents	This service of mobile applications supply significant contents
	This value-added service offers fashionable contents	This service of mobile applications offers fashionable contents
	This value-added service offers regularly updated contents	This service of mobile applications offers regularly updated contents
	The provided contents can be well understood	The provided contents can be well understood
Navigation and visual design	Easy to use value-added service	Easy to use mobile applications service
	Harmoniously displayed value-added service	Harmoniously displayed mobile applications
	Clearly understandable position of the screen the user browses in the navigation layout	Easy to move between pages of the application
	The home-page of this value-added service could entirely present the location of information	The home-page of this application service can fully present the location of information
Management and customer service	This tele-com company provides diversified value-added services	The software developer provides diversified mobile applications services
	This tele-com company offers several tariff choices	The application provides several service choices
	This tele-com company offers efficient post-services	The software developer provides good customer service.

	In case of any problem, the tele-com company can have solutions to it right away	In case of any problem, the software developer can immediately deal with it
	This tele-com company offers an FAQ for value-added services	The software developer provides an (FAQ) for mobile application services
System reliability and connection quality	This value-added service system has high degree of stability	The stability of this mobile application service system is considered high.
	Errors rarely happen in this value-added service system	Error scarcely occurs on the mobile application system
	This value-added service offers effective links	This mobile application service provides activated links
	The user can easily go back to the screen that has been previously viewed	The user can easily go back to the screen that has been previously viewed
	It doesn't take much time downloading the required information	It doesn't take much time downloading the required information
	It doesn't take much time loading the links that have been clicked on	It doesn't take much time loading the links that have been clicked on
	This value-added service system can directly response to the data the user inputs	This mobile application service system can directly react to the data the user inputs

Table 2: **Perceived value questions**

Factor	**Original questions**	**Adapted questions**
Perceived value		
Functional value	MIM is reliable	E-service on application is reliable.
	MIM has good functions	E-service on the application has efficient functions.
	MIM fulfills the user's needs efficiently	E-service on application fulfills my needs well.
Emotional value	It feels good to be using MIM	I feel good to use E-service on application
	Using MIM is enjoyable	Using E-service on application is entertaining
	I have pleasure when using MIM	E-service on application gives me delight
	Using MIM is interesting	Using E-service on application is interesting
Social value	By the help of MIM, I feel acceptable.	E-service on application helps me to feel acceptable
	MIM have a good impression on other people	E-service on application makes good impressions on other people
	I have sense of belongings to other users when using MIM	Using E-service on application gives me a sense of belongings to other users

Monetary value	MIM improves the way I am perceived	E-service on application improves the way I am perceived
	MIM is reasonably priced	E-service provided on application has a reasonable price
	The price of using MIM is economic	The prices offered through the application are economical
	MIM offers the value for money	E-service on application offers the value for money

Table 3: **Customer satisfaction questions**

Factor	**Original questions**	**Adapted questions**
Customer satisfaction	The user is pleased with their choice to buy from this web-site	The user is satisfied with their choice purchase from this mobile application
	If I had to purchase again, I would feel differently about buying from this web-site	I am satisfied with my decision to purchase from this mobile application
	My decision to purchase from this web-site was a good one	My decision to purchase from this application was a good one

Table 4: **Customer loyalty questions**

Factor	***Original questions***	***Adapted questions***
Customer loyalty	*I will advise other people to use on-line banking*	*I will advise other people to use this application.*
	I prefer on-line banking rather than others	*I prefer this application above others.*
	I will say good things about on-line banking to others	*I will say good things about this application to others.*
	I will recommend online banking to someone who seeks advice	*I will recommend this application to anyone seeking advice.*
	I plan to keep using on-line banking	*I intend to continue using this application.*

4. Research methodology

This chapter of the study gives the process and details of the research which includes focusing on Hypothesis, Research Model, Measuring questions and Characteristics of respondents.

4.1. Study population and sample:

The study population was composed of mobile phone users in Jordan. However, as it is difficult to reach the whole study community, the researcher took 400 mobile phone users which were selected by using convenience sampling methods. The study was carried out in Jordan in a short period of time (15/July to 5/ September) of 2017 to distribute and collect the survey for one time.

4.2. Procedures and Data analysis

4.2.1. Procedures

The procedures involved the field study conducted by using a drop-off survey that is mean drop the survey and take it on another time. The study's sample was selected by utilizing convenience sampling methods, through obtaining data that accomplish the aims of study.

Below, a review of relevant literature and based surveys performed with people who have interest and who are specialized in this field. Therefore, the researchers have compiled information and knowledge that have been used to develop and draw up a questionnaire covering every aspect that has been addressed within the theoretical framework and research hypotheses.

The five-point Likert scale has been implemented for measuring the opinion of the target sample. The scale depends on giving the sample's an option between (strongly agree and strongly disagree).

The collection of the necessary data on descriptive analysis of the variables of the study through a questionnaire is composed of two parts. The first one included

demography data with regard to the information of (gender, age, education, etc.). The second part has included four areas, designed based on the Likert scale quintet where identified options to answer five levels, namely: **Strongly Agree** (five-degrees), **Agree** (four-degrees), **Neither Agree nor Disagree** (three-degrees), **Disagree** (two-degrees) or **strongly disagree** (one-degree). There are (44) questions in the survey. What has been taken into consideration when designing the questionnaire, was the clarity of the questions, their sequence and the absence of difficulties during the packing. The survey's form was adopted as a valid tool for the study. Table (2) shows the tool study of (44) questions. Data were collected about the study (theoretical framework) by reference to books, studies, and previous research.

4.2.2. **Data Analysis**

The (SPSS) which is an abbreviation of (Statistical Package for the Social Science) has been implemented to analyze the data and test the study hypotheses.

4.2.2.1. **Reliability**

This section previews the reliability of respondents on the survey, there are answered questions for 4 variables (customer's loyalty and satisfaction, perceived value and Electronic-services quality). The independent variables are (perceived value and Electronic-services quality) which consist of 4 dimensions for each independent variable. E-service quality includes (**a.** quality of Content, **b.** Navigation and visual design, **c.** Management and customer service and, **d.** System Reliability and connection quality). Perceived value includes (**a.** functional value, **b.** motion value, **c.** social value and, **d.** monetary value).

This research used (Cronbach's alpha) for measuring the stability of the value and the alpha result for all variables and dimensions was 0.961. It was excellent being higher than the acceptable of up to 0.70 (Nunnally, 1978, p. 245).

Table 5: Reliability

Variables	**Dimensions**	**N**	**Cronbach's Alpha**
Quality of E-service			
	Content quality	6	0.830
	Navigation and visual design	4	0.792
	Management and customer service	5	0.920
	System Reliability and connection quality	7	0.887
Customer Satisfaction		3	0.921
Perceived value			
	Functional Value	3	0.710
	Emotional Value	4	0.769
	Social Value	4	0.764
	Monetary value	3	0.711
Customer loyalty		5	0.821

By looking at the above table (5), the lower Alpha result in this research was a Functional value as (a dimension) equal to 0.710. The higher Alpha result on this research was customer satisfaction as (a variable) equal to 0.921. According to Nunnally (1978), all variables and dimensions are acceptable if they are higher than 0.70 (Nunnally, 1978, p. 245).

4.3. Characteristics of respondents

A descriptive analysis has been utilized for getting frequencies and percentages for the analysis of the respondents to each question on the (demographic data analysis) and (The Subject of Study) in the questionnaire.

Part one: Demographic factors

A set of demographic factors that relate to matters of personal information were selected. The results are referred in the following tables showing features of the study sample according to (gender, age, marital state, work, education, and application type).

1- Gender:

Table (6): Features of respondents (gender)

Gender	**Frequency**	**100%**
Male	227	60.5%
Female	148	39.5%
Total	**375**	**100.0%**

As shown in Table (6), 60.5% of the respondents are Male and 39.5% are Female.

2- Age:

Table (7): Characteristics of respondents (age)

Age	**Frequency**	**100%**
less than 25	107	28.5%
25-30	82	21.9%
31-35	57	15.2%
36-40	44	11.7%
41-45	36	9.6%
more than 46	49	13.1%
Total	**375**	**100%**

As listed in Table (7), 28.5% of the respondents were younger than 25 years, 21.9% of them were between 25 to 30 years, 15.2% of them were between 31 and 35 years, 11.7% of them were between 36 and 40 years, 9.6% of them were 41 to 45 years, and 13.1% of them were more than 46 years.

3- **Do you have work:**

Table (8): Characteristics of respondents (work)

Do you have work	**Frequency**	**100%**
Yes	296	78.9 %
No	79	21.1 %
Total	**375**	**100%**

As shown in Table (8), 78.9% of the respondents answered YES, and 21.1% of them answered NO. Approaching what is stated in the Jordanian Statistics Department (Unemployment rate, 2018).

4- **Social Status:**

Table (9): Characteristics of respondents (social status)

Social Status	**Frequency**	**100%**
Single	185	49.3 %
Married	111	29.6 %
Other	79	21.1 %
Total	**375**	**100%**

As shown in Table (9), 49.3% of the respondents were single, 29.6% of them were married, and the rest is other.

5- **Education:**

Table 10: Characteristics of respondents (education)

Education	**Frequency**	**100%**
High school	74	19.7
Diploma	37	9.9
Bachelor's degree	148	39.5
High School Diploma	74	19.7
MSc degree	32	8.5
Doctorate degree	10	2.7
Total	**375**	**100%**

As shown in Table (10), 19.7 of the respondents were High school, 9.9% of the respondents were Diploma, 39.5% of the respondents were Bachelor's degree, 19.7% of them were High School Diploma, 8.5% of the respondents were MSc degree, and 2.7% of them were PhD degree.

6- **Selection of E-Services application use:**

Table 11: Characteristics of respondents (by type of service).

Selection of E-Services	**Frequency**	**100%**
Social media	148	39.5
E-shopping applications	74	19.7
Banking applications	111	29.6
Reservation applications	42	11.2
Total	**375**	**100.0%**

As shown in Table (11) 39.5% of the respondents answered Social media, 19.7% of them answered E-Shopping applications, 29.6% of them answered banking applications, and 11.2% of them answered Reservation applications.

4.4. Discussion of results:

Mean and the standard deviation are utilized for describing attitudes of the sample toward questions in ten sections of the questionnaire.

Respondents of the survey answered positively to all questions on the questionnaire.

The mean for responses to every question was taken for determining if the target population responded positively to all questions or not. A scale of (3) of the Mean, was taken as a standard for judgment.

In the case where the outcome is less than (3), the reaction will not be applicable, however, if the outcome is higher than or equal to (3), the result will be applicable.

Part Two: Statistical analysis.

The statistical analysis for this part is explained in the tables below. The later analysis included Mean results (to 375 samples were collected before), include questions for each of the variables and dimensions.

Service Quality variable:

Content quality dimension:

Table 12: Statistical analysis (Content quality)

Questions	**Mean**
1-This services of mobile applications provide complete content	4.0960
2-This services of mobile applications provide appropriate content	4.0507
3-This services of mobile applications provide important content	3.9760

4-This services of mobile applications provide fashionable content	4.0960
5-This services of mobile applications provide regularly updated content	4.0133
6-I can fully understand the content provided	3.9333
Average	**4.0276**

Content quality consist of 6 questions as it mentioned in the table above and the Mean value in this dimension is 4.0276 out of 5 which equal to agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (12), there were positive attitudes toward the above questions due to the fact that their mean was bigger than the mean of the scale of (3).

The question number (4) which said (This service of mobile applications provides fashionable content) is the high mean in this field. That question's mean was (4.0960). The question number (1) which said (This service of mobile applications provides complete content) has a same mean equal (4.0960).

The question number (6) which said (I can completely comprehend the provided content) it's the lowest in this field (3.9333).

Navigation and Visual Design dimension:

Table 13: Statistical analysis (Navigation and visual design)

Questions	**Mean**
7-The mobile applications service is easy to use	3.9867
8-This services of mobile applications are displayed in a harmonious way	4.0107
9-I can easily move between pages of the application	4.1680
10-The home-page of this mobile applications service can directly present the location of information	4.1147
Average	4.0700

Navigation and visual design consist of 4 questions as it mentioned in the table above and the Mean value in this dimension is 4.0700 out of 5 which equal to agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (13), there were positive attitudes toward the questions above, due to the fact that the value of their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (9) that stated (I can easily move between pages of the application). Whereas its means was reached (4.1680).

Whereas its means was minimal and reached (3.9867) to the question number (7) that said (I can easily use the mobile applications service).

Management & Customer Service dimension:

Table 14: Statistical analysis (Management and customer service)

Questions	**Mean**
11-The software developer provides diversified mobile applications services	3.9120
12-The application provides multiple service options	4.0427
13-The software developer provides good customer service.	3.8933
14-in case of problems, the software developer can deal with it directly	3.9813
15- The software developer provides an (FAQ) for mobile application services	4.0107
Average	3.9680

Management and customer service consist of 5 questions as it mentioned in the table above and the Mean value in this dimension is 3.9680 out of 5 which almost to equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (14), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (12) that stated (The application provides multiple service options). Whereas its means was reached (4.0427).

Whereas its means was minimal and reached (3.8933) to the question number (13) that stated (The software developer provides good customer service).

System Reliability & Connection Quality dimension:

Table 15: Statistical analysis (System Reliability & connection quality)

Questions	**Mean**
16-This mobile application service system is stable.	4.0373
17-Error scarcely occurs on the mobile application system.	4.0400
18-This mobile application service provides activated links.	4.0880
19-I can simply go back to the screen that has been browsed before.	4.0560
20-It takes no much time downloading the required information.	3.8747
21- It takes no much time loading the links I clicked on.	3.9573
22-This mobile application service system can immediately response to the data the user inputs.	3.8880
Average	3.9916

System Reliability & connection quality consist of 7 questions as it mentioned in the table above and the Mean value in this dimension is 3.9916 out of 5 which almost to equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (15), there have been positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (18) that stated (This mobile application service provides activated links). Whereas its means was reached (4.0880).

Whereas its means was minimal and reached (3.8747) to the question number (20) that stated ("It does not take too much time to download the information I need").

Customer Satisfaction variable:

Table 16: Statistical analysis (Customer satisfaction)

Questions	**Mean**
23-I am satisfied with the choice of purchasing through mobile application	4.0533
24-If I want to buy again, I will feel differently about purchasing from this application	3.9600
25-My decision of purchasing from this application was a good decision	4.0107
Average	4.0080

Customer satisfaction consist of 3 questions as it mentioned in the table above and the Mean value in this dimension is 4.0080 out of 5 which equal to agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (16), there were positive attitudes toward the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (23) that stated ("I am satisfied with my decision to purchase through mobile application"), whereas its means was reached (4.0533).

Whereas its means was minimal and reached (3.9600) to the question number (24) that stated ("If I had to purchase again, I would feel differently about buying from this application").

Perceived Value variable:

Functional Value dimension:

Table 17: Statistical analysis (Functional Value)

Questions	**Mean**
26- E-service on application is reliable	3.8107
27- The application offers service that matches customer needs	4.0133
28- E-service on application fulfills my needs well.	3.9147
Average	3.9129

Functional value consists of 3 questions as it mentioned in the table above and the Mean value in this dimension is 3.9129 out of 5 which almost to equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (17), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (27) that stated (The application offers service that matches customer needs). Whereas its means was reached (4.0133).

Whereas its means was minimal and reached (3.8107) to the question number (26) that stated (E-service on application is reliable).

Emotional Value dimension:

Table 18: Statistical analysis (Emotional Value)

Questions	**Mean**
29-I feel good when I use E-service on application	4.1173
30-Using E-service on application is enjoyable	4.0773
31-E-service on application gives me pleasure	4.0827
32-Using E-service on application is interesting	4.0347
Average	4.0780

Emotional value consists of 4 questions as it mentioned in the table above and the Mean value in this dimension is 4.0780 out of 5 which equal to agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As depicted in Table (18), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (29) that stated (I feel good when I use E-service on application), whereas its means was reached (4.1173).

Whereas its means was minimal and reached (4.0347) to the question number (32) that stated (Using E-service on application is interesting).

Social Value dimension:

Table 19: Statistical analysis (Social Value)

Questions	**Mean**
33-I keep watching continuously what's new on the application	4.0693
34-Using the application makes me the person that are updated with technology	4.0613

35-Using E-service on application gives me a feeling of belonging to the community	4.1920
36-E-service on application improves the way I am perceived	3.8400
Average	4.0407

Social value consists of 4 questions as it mentioned in the table above and the Mean value in this dimension is 4.4047 out of 5 which equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (19), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (35) that stated (Using E-service on application gives me a sense of belonging to the community), whereas its means was reached (4.1920).

Whereas its means was minimal and reached (3.8400) to the question number (36) that stated (E-service on application improve how I am perceived).

Monetary Value dimension:

Table 20: Statistical analysis (Monetary Value)

Questions	**Mean**
37- E-service on application is reasonable priced	3.8853
38- The price of using E-service on application is economic	4.1760
39- E-service on application offers the value for money	4.1760
Average	4.0791

Monetary value consists of 3 questions as it mentioned in the table above and the Mean value in this dimension is 4.0791 out of 5 which equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (20), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this two Fields is numbered (38 and 39) which said (The price of using E-service on application is economic) and (E-service on application offers the value for money), whereas its means was reached (4.1760).

Whereas its means was minimal and reached (3.8853) to the question number (37) that stated (E-service on application is reasonably priced).

Customer loyalty variable:

Table 21: Statistical analysis (Customer loyalty)

Questions	**Mean**
40-I will advise other to use this application.	4.2053
41-I prefer this application above others	4.1947
42-I will say good things about this application to others.	4.4827
43-I would recommend this application anyone seeking advice.	4.3387
44-I plan to keep using this application.	4.4533
Average	4.3349

Customer loyalty consist of 5 questions as it mentioned in the table above and the Mean value in this dimension is 4.3349 out of 5 which equal agree.

Based on the table there's no question below 0,5 so there's no need to delete any question from this dimension.

As listed in Table (21), there were positive attitudes to the above questions due to the fact that their mean was bigger than the mean of the scale (3).

The question which is the high mean in this Field is a number (42) that stated ("I would like to say positive things about this application to other people"), whereas its means was reached (4.4827).

Whereas its means was minimal and reached (4.1947) to the question number (41) that stated (I prefer this application above others).

4.5. **Hypotheses testing methods:**

The hypotheses testing will be through regression analysis, where it will be used to as an indication the extent of impact between independent variables on dependent ones, we going to test (first, second, third, fourth, fifth) hypotheses, that will be through regression analysis simple which will be used to indicate the extent the influence of independent variable on dependent ones.

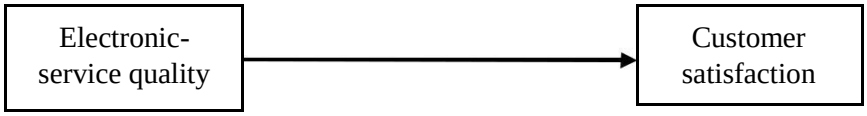
The study is based on five hypotheses, and in this part, we used two methods to test the hypotheses. The first method is a simple linear regression, and the second method, is multiple-regression, which are as follows:

4.5.1. **Simple linear regression:**

Simple linear regression briefly is to test the relationship between two variables (one-on-one), that is mean this method tested every single independent variable how the effect on single dependent variable if will be affected positively or negatively

H01: Quality of E-service has a positive impact on Customer's satisfaction.

Figure 3: Relationship between electronic-services and customer's satisfaction



To validate the hypothesis test has been conducted. The table below explains.

Table 22: **correlation between customer's satisfaction and the quality of services**

Correlations				
		Customer satisfaction	Hypothesis	Result
Pearson Correlation	Service quality	0.786**	H01: Positive Relation	Supported

**Correlation is significant at the level 1%.

Based on Pearson correlation table (22), it is to find a connection between 2 variables or more and take a value between (1 and -1). The Pearson correlation will be positive. That means, customer satisfaction is positively impacted by Electronic-service quality, when Electronic-services quality decreases, the customer's satisfaction will be reduced.

Table 23: **ANOVA table between customer's satisfaction and services quality**

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	157.153	1	157.153	0.000
	Residual	97.210	373	0.261	
	Total	254.363	374		

Dependent Variable: customer satisfaction
Predictors: (Constant), service quality

ANOVA table (23) demonstrates that, the degree of significance is smaller than (0.05). therefore, have a decision rule states; in order to accept the hypothesis the significance degree should be less than (0.05), and to reject the hypothesis in the case where the significance level is greater than (0.05). The table above demonstrates that the degree of significance is equal to (0.000), and since it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of E-service quality on customer satisfaction".

Table 24: Coefficients table between customer's satisfaction and quality of service

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.644-	0.225		-7.304-	0.000
	Service quality	1.369	0.056	0.786	24.556	0.000

a. Dependent Variable: customer satisfaction

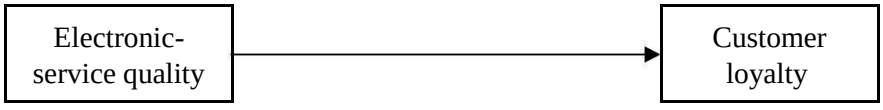
According to coefficients table (24), there's a positive effect in this relationship by looking to T-value is greeter then zero, Beta value equal 0.786, and the model was significant (p-value ≤ 0.05). That is mean when service quality increase equivalent to 1 unit that is make customer satisfaction increase equivalent 0.786. Also, R square gets a value between (1 and -1), in this relationship will be (0.618). When measuring simple linear regression from the quality of E-service to customer satisfaction. This is can explain the results of R square, for this relation is predictable.

That explain, when the mobile application provides a good or bad quality that will be affected on customer satisfaction, and that will affect indirectly, customer's loyalty that in turn will increase the possibility of customer retention of the service provider.

It was concluded testing Hypotheses 1**:** There is a statically significance impact, (at α≤ 0.05) of the quality of Electronic-service on customer's satisfaction. This corresponds to the hypothesis of the study.

H02: quality of E-service has a positive influence on Customer Loyalty.

Figure 4: Relation between Electronic-service quality and customer's loyalty



To validate of the hypothesis test that has been carried out. The table below explains

Table 25: the relationship between customer's loyalty and service quality

Correlations				
		Customer loyalty	Hypothesis	Result
Pearson Correlation	Service quality	0.337**	H01: Positive Relation	Supported

**Correlation is significant at the level 1%.

Based on Pearson correlation table (25), it is to find a relation between 2 variables or more and take a value between (1 and -1). The Pearson correlation will be positive. That means, customer loyalty is positively impacted by Electronic-service quality, and when service quality decreases, the customer's loyalty will be reduced.

Table 26: ANOVA table between customer loyalty and service quality

ANOVA[a]					
Model		Summation of Squares	Df	Mean Square	Sig.
1	Regression	10.138	1	10.138	.000[b]
	Residual	79.394	373	.213	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), service quality

ANOVA table (26) shows that, the degree of significance is smaller than (0.05). therefore, have a decision rule that states; in order to accept the hypothesis the level of significance should be less than (0.05), and to reject the hypothesis in the case where the significance level is greater than (0.05). The table above demonstrates that the level of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of E-service quality on customer loyalty".

Table 27: **Coefficients** table between customer loyalty and service quality

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.941	.203		14.456	0.000

	SERVICE QUALITY	.348	.050	.337	6.901	0.000

a. Dependent Variable: customer loyalty

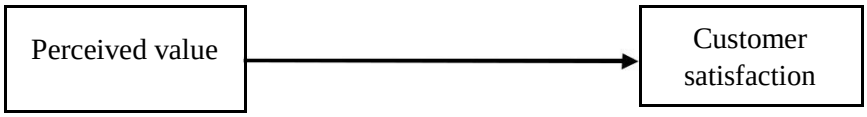
Coefficient table (27) shows, there is a positive effect in this relationship by looking to T-value is greeter then zero, Beta value equal 0.337, and the model was significant (p-value ≤ 0.05). That is mean when service quality increase equivalent to 1 unit that is make customer loyalty increase equivalent 0.337. Also, R square gets a value between (1 and -1), in this relationship will be (0.113). When measuring simple linear regression from E-service quality to customer loyalty. This is can explain the results of R square, for this relation is predictable.

That means, an important component to keeping customers using the applications and depends definitely on the service quality, when the application provides good quality, that will reflect on customer satisfaction and how loyal they are to the application.

It was concluded testing Hypotheses 2: There is support hypotheses in statically significance impact, (at $\alpha \leq 0.05$) of E-service quality on customer's loyalty.

H03: perceived values have a positive impact on customer's satisfaction.

Figure 5: Correlation between perceived value and customer's satisfaction



For the validation of the hypothesis test has been done. The table below explains this.

Table 28: correlation between customer's satisfaction and perceived value

Correlations			
	Customer satisfaction	Hypothesis	Result

Pearson Correlation	Perceived value	0.648	H01: Positive Relation	Supported

**Correlation is significant at the level 1%.

According to Pearson correlation table (28), it is to find a correlation between two variables or more and take a value between (1 and -1). The Pearson correlation will be positive. That means, customer satisfaction is positively impacted by perceived value, and when perceived value decreases, the customer satisfaction will be reduced.

Table 29: ANOVA table between customer satisfaction and perceived value

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	106.746	1	106.746	.000
	Residual	147.617	373	.396	
	Total	254.363	374		

Dependent Variable: customer satisfaction
Predictors: (Constant), PERCEIVED_VALUE

ANOVA table (29) shows that, the level of significance is less than (0.05). Thus, have a decision rule that states; to accept the hypothesis the degree of significance should be less than (0.05), and to reject the hypothesis in the case where the significance level is greater than (0.05). The previous table demonstrates that the level of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) between the perceived value and customer satisfaction."

Table 30: Coefficients table between customer satisfaction and perceived value

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.273-	.374		-6.078-	.000
	Perceived value	1.504	.092	.648	16.423	.000

a. Dependent Variable: customer satisfaction

According to the coefficients table (30), there is a positive effect in this correlation by looking to T-value is greeter then zero, Beta value equal 0.648, and the model was significant (p-value ≤ 0.05). That is mean when perceived value increase equivalent to 1 unit that is make customer satisfaction increase equivalent 0.648. Also, R square gets a value between (1 and -1), in this relationship will be (0.420). When measuring simple linear regression from perceived value to customer satisfaction. This is can explain the results of R square, for this relation is predictable.

That explain, the perceived value is very significant to determine the customer's satisfaction and when perceived value decreases, it will reduce customer's satisfaction and indirectly affect customer's loyalty.

It was concluded testing Hypotheses 1**:** There is a statically significance impact, (at $\alpha \leq 0.05$) of perceived value on customer satisfaction. This corresponds to the hypothesis of the study.

H04: perceived values positively affect the Customer's Loyalty

Figure 6: Correlation between perceived value and customer's loyalty

For the validation of the hypothesis test has been done. The table below explains this.

Table 31: correlation between customer's loyalty and perceived value

Correlations				
		Customer loyalty	Hypothesis	Result
Pearson Correlation	Perceived value	.629	H01: Positive Relation	Supported

**Correlation is significant at the level 1%.

Based on Pearson correlation table (31), it is to find a relation between 2 variables or more and take a value between (1 and -1). The Pearson correlation will be positive. That means, customer's loyalty is positively impacted by the perceived value, and when perceived value decreases, the customer loyalty will be reduced.

Table 32: ANOVA table between customer loyalty and perceived value

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	35.401	1	35.401	.000[b]
	Residual	54.131	373	.145	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), perceived value

ANOVA table (32) shows that, the degree of significance is less than (0.05). therefore, have a decision rule that states; to accept the hypothesis the degree of significance should be less than (0.05), and to reject the hypothesis in the case where the significance level is greater than (0.05). The table above shows that the level of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of perceived value on customer loyalty".

Table 33: Coefficients table between customer loyalty and perceived value

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.812	.226		3.584	.000
	Perceived value	.866	.055	.629	15.618	.000

a. Dependent Variable: customer loyalty

Coefficient table (33) shows, there is a positive effect in this relationship by looking to T-value is greeter then zero, Beta value equal 0.629, and the model was significant (p-value ≤ 0.05). That is mean when perceived value increase equivalent

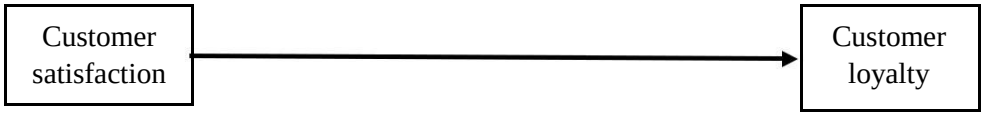
to 1 unit that is make customer loyalty increase equivalent 0.629. Also, R square gets a value between (1 and -1), in this relationship will be (0.395). When measuring simple linear regression from perceived value to customer loyalty. This is can explain the results of R square, for this relation is predictable.

That means, perceived value is very important to determine the customer loyalty and when perceived value decreases, it will reduce customer loyalty.

It was concluded testing Hypotheses 4: There is support hypotheses in statically significance impact, (at $\alpha \leq 0.05$) of perceived value on customer loyalty. Also, this relationship has a partial mediation through customer satisfaction.

H05: customer's satisfaction positively influences their Loyalty.

Figure 7: relation between customer's satisfaction and their loyalty



For the validation of the hypothesis test has been done. The table below explains this.

Table 34: relation between customer's loyalty and their satisfaction

Correlations				
		Customer loyalty	Hypothesis	Result
Pearson Correlation	Customer satisfaction	.335	H01: Positive Relation	Supported

**Correlation is significant at the level 1%.

Based on Pearson correlation table (34), it is to find a relation between 2 variables or more and take a value between (1 and -1). The Pearson correlation will be positive. That means, customer loyalty is positively impacted by customer satisfaction.

Table 35: ANOVA table between customer's satisfaction and their loyalty

ANOVA[a]					
Model		Summation of Squares	Df	Mean Square	Sig.
1	Regression	10.023	1	10.023	.000[b]
	Residual	79.509	373	.213	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), Customer Satisfaction

ANOVA table (35) shows that, the degree of significance is less than (0.05). therefore, have a decision rule that states; to accept the hypothesis the degree of significance should be less than (0.05), and to reject the hypothesis in the case where the degree of significance is greater than (0.05). The table above illustrates that the level of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact (at $\alpha \leq 0.05$), from customer satisfaction to customer loyalty".

Table 36: Coefficients table between customer's satisfaction and their loyalty

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.572	.114		31.373	.000
	customer satisfaction	.199	.029	.335	6.857	.000

a. Dependent Variable: customer loyalty

According to the coefficients table (36), there's a positive effect in this correlation by looking to T-value is greeter then zero, Beta value equal 0.335, and the model was significant (p-value $\leq$ 0.05). That is mean when customer satisfaction increase equivalent to 1 unit that is make customer loyalty increase equivalent 0.335. Also, R square gets a value between (1 and -1), in this relationship will be (0.112). When

measuring simple linear regression from customer's satisfaction to customer's loyalty. This is can explain the results of R square, for this relation is predictable.

That explains when user satisfaction is affected, it has a direct impact in the same way on loyalty.

It was concluded testing Hypotheses 5: There is support hypotheses in statically significance impact, (at $\alpha \leq 0.05$) from customer satisfaction on customer loyalty.

4.1.1. Multiple-regression:

In the multiple-linear regression we found and test direct relationship and indirect relationship through mediator variable. When there are undirect relationship between two variables or more through variable that generate mediation relationship (Baron & Kerry). It was split into three type of mediation analysis; full-mediation, partial-mediation and no mediation (Newsom, 2018).

H2-H5: Electronic-service quality effect customer's loyalty through customer's satisfaction

Figure 8: relation between the Electronic-service quality and customer's loyalty

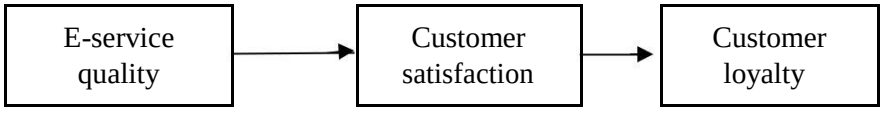


Table 37: ANOVA table between customer's loyalty and service quality

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	11.289	2	5.645	.000[b]
	Residual	78.243	372	.210	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), service quality, customer satisfaction

ANOVA table (37) shows that, the degree of significance is less than (0.05). therefore, have a decision rule that states; to accept the hypothesis the degree of significance should be less than (0.05), and to reject the hypothesis in the case where the significance level is greater than (0.05). The table above shows that the significance degree is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of E-service quality on customer loyalty through customer satisfaction".

Table 38: Coefficients table between customer loyalty and service quality

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.120	.216		14.430	.000
	Service quality	.199	.081	.192	2.453	.015
	Coatomer satisfaction	.109	.047	.183	2.339	.020

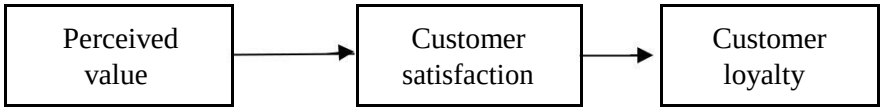
a. Dependent Variable: customer loyalty

As a result, regression equation to this relationship ≈
3.120 + 0.199 * (service quality) + 0.109 * (customer satisfaction)

Coefficient table (38) shows, there is partial mediation in this relation between the quality of service and customer's loyalty by customer's satisfaction. Considering, Beta value for E-service quality decrease when affecting customer loyalty through customer satisfaction and both of them have a significant (p-value ≤ 0.05) on loyalty. That is mean when service quality increase equivalent to 1 unit that is make customer satisfaction increase equivalent 0.192. moreover, when customer satisfaction increase equivalent to 1 unit that is make customer loyalty increase equivalent 0.183. Also, R-square get a value between (1 and -1), in this relationship we have R square value for through customer satisfaction to equal 0.126. When measuring mediation regression from E-service quality on customer loyalty.

H2-H5: The effect of perceived value on customer's loyalty through customer's satisfaction

Figure 9: correlation between perceived value and customer loyalty



For the validation of the hypothesis, test has been done. The table below explains this.

Table 39: ANOVA table between customer loyalty and perceived value

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	36.218	2	18.109	.000[b]
	Residual	53.315	372	.143	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), perceived value, customer satisfaction

ANOVA table (39) demonstrates that, the degree of significance is less than (0.05). therefore, there is a decision rule that states; to accept the hypothesis the degree of of significance should be less than (0.05), and to reject the hypothesis in the case where the degree of significance is greater than (0.05). The table above illustrates that the degree of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of perceived value on customer loyalty through customer satisfaction".

Table 40: Coefficients table between customer loyalty and perceived value

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.643	.236		2.724	.007
	Perceived value	.978	.072	.710	13.519	.000

	Customer satisfaction	-.074-	.031	-.125-	-2.387-	.017

a. Dependent Variable: customer loyalty

As a result, regression equation to this relationship ≈
0.643 + 0.199 * (perceived value) + -0.074 * (customer satisfaction) Coefficient table (40) shows, there is partial mediation in this relation between perceived value and customer's loyalty through customer's satisfaction. Considering, Beta value for perceived value increase when affecting customer's loyalty by customer's satisfaction and both of them have a significant (p-value ≤ 0.05) on loyalty. That is mean when service quality increase equivalent to 1 unit that is make customer satisfaction increase equivalent 0.710. moreover, when customer satisfaction increase equivalent to 1 unit that is make customer loyalty decrease equivalent 0.125. Also, R-square get a value between (1 and -1), in this relationship we have R square value for through customer satisfaction to equal 0.405. When measuring mediation regression from perceived value on customer loyalty.

H1-H3: Electronic-service quality and the perceived value effect together on customer satisfaction.

Figure 10: Multi-relationship on customer satisfaction

Table 41: ANOVA table for multiple regression on customer's satisfaction

ANOVA[a]					
Model		Summation of Squares	df	Mean Square	Sig.
1	Regression	165.132	2	82.566	0.000b
	Residual	89.231	372	0.240	
	Total	254.363	374		

a. Dependent Variable: customer satisfaction
b. Predictors: (Constant), PERCEIVED VALUE, SERVICE QUALITY

ANOVA table (41) shows that, the degree of significance (0.000) that is less than (0.05). therefore, there is a decision rule that states; to accept the hypothesis the degree of significance should be less than (0.05), and to reject the hypothesis in the case where the degree of significance is greater than (0.05). The table above illustrates that the degree of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of E-service quality and perceived value on customer satisfaction".

Table 42: Coefficients table for multiple regression on customer satisfaction

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.786-	.293		-9.509-	.000
	Service quality	1.102	.071	.633	15.602	.000
	Perceived value	.543	.094	.234	5.767	.000

a. Dependent Variable: customer satisfaction

According to the the coefficients table (42), there's a positive effect in this correlation by looking to T-value and Beta value are greeter then zero and the model was significant (p-value ≤ 0.05). That is mean when service quality increase equivalent to 1 unit that is make customer satisfaction increase equivalent 0.633. moreover, when perceived value increase equivalent to 1 unit that is make customer satisfaction decrease equivalent 0.234 Also, R square gets a value between (1 and -1), in this relationship will be (0.649). When measuring multiple linear regression from

perceived value and quality of E-service on customer satisfaction. This correlation between these variables Electronic-service quality and the perceived value on customer's satisfaction is predictable.

H2-H4-H5: Electronic-service quality, perceived value and customer's satisfaction impact on customer loyalty.

Figure 11: Multi-relationship on customer's loyalty

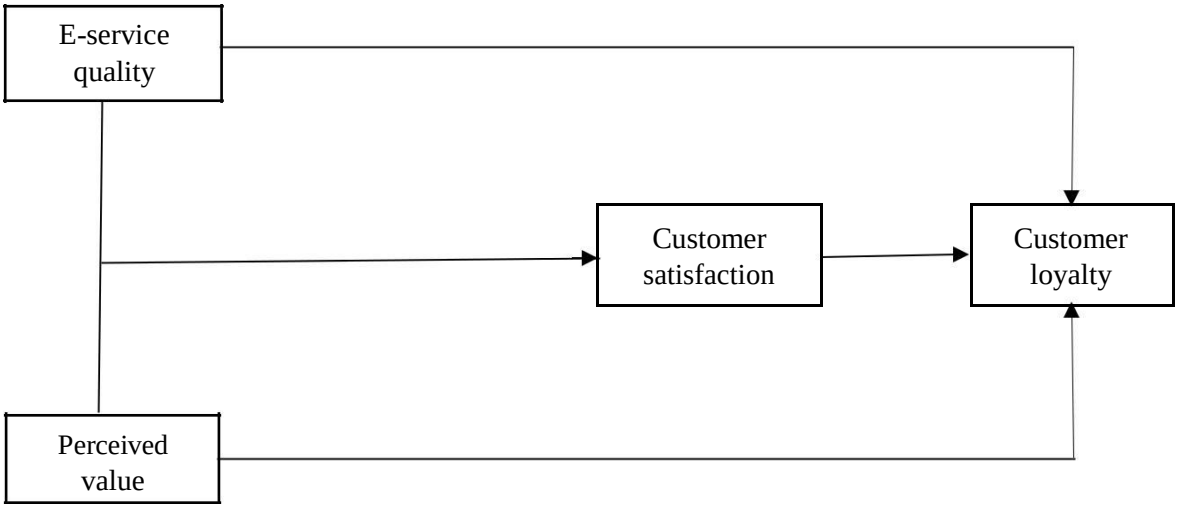


Table 43: ANOVA table for multiple regression on customer loyalty

ANOVA[a]					
Model		Summation of Squares	Df	Mean Square	Sig.
1	Regression	36.269	2	18.134	.000[b]
	Residual	53.264	372	.143	
	Total	89.532	374		
2	Regression	36.436	3	12.145	.000[c]
	Residual	53.096	371	.143	
	Total	89.532	374		

a. Dependent Variable: customer loyalty
b. Predictors: (Constant), "PERCEIVED_VALUE, SERVICE_QUALITY"
c. Predictors: (Constant), "PERCEIVED_VALUE, SERVICE_QUALITY"
customer satisfaction

ANOVA table (39) shows that, the degree of significance is less than (0.05). therefore, there is a decision rule that states; to accept the hypothesis the degree of

significance should be less than (0.05), and to reject the hypothesis in the case where the degree of significance is greater than (0.05). The table above shows that the degree of significance is equal to (0.000), and due to the fact that it is less than (0.05) the decision rules that "There is a statically significance impact, (at $\alpha \leq 0.05$) of E-service quality, perceived value and customer satisfaction on customer loyalty".

Table 44: Coefficients table for multiple regression on customer loyalty

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.874	.226		3.862	.000
	Service quality	-.134-	.055	-.130-	-2.462-	.014
	Perceived value	.983	.073	.714	13.509	.000
2	(Constant)	.754	.252		2.987	.003
	Service quality	-.087-	.070	-.084-	-1.235-	.218
	Perceived value	1.007	.076	.731	13.255	.000
	Customer satisfaction	-.043-	.040	-.073-	-1.081-	.281

a. Dependent Variable: customer loyalty

According to coefficients result on the table (40), beta value for E-service quality equal -0.130, and for a perceived value equal 0.714 and the relationship was significant (p-value ≤ 0.05). That clarify, there is multiple linear regression from the quality of E-service and perceived value on customer loyalty. But when testing the relationship with mediation value we found a different result, Beta value increased to each independent variable and significant level for Electronic-service quality and customer's satisfaction equal

(p-value > 0.05). The result explains, this relationship does not mediate by customer satisfaction.

5. Discussion

In this chapter we will discuss the results and suggests according to the results. Further, at the end of chapter present limitations of the research

5.1. Summary Discussion

The goal of this study is to find the effect of perceived value and Electronic-service quality on loyalty and satisfaction of the customer, also to find a mutual correlation between customer satisfaction on their loyalty, and effects from perceived value, Electronic service quality and customer satisfaction on customer loyalty. Measuring all these variables by using a mobile application.

A literature review has been conducted including different topics such as management information systems. business administration, marketing, economy and different topics to the adoption of search, loyalty and satisfaction of the customer, perceived value and E-service quality. After an extensive literature review, the questionnaire is distributed to users of mobile application service, to gather sample data, all questions in the questionnaire were closed, distributed 400 surveys and the data gathered 375 responses at the end of the gathering phase is analyzed with “multiple regression”, using SPSS analysis program version-24.0.

Analyzing the questionnaire indicated that most of the responses were greater than "3", indicating that most respondents agree with the questions in the survey.

For the study to be acceptable Cronbach's Alpha must be more than 0.60 (Nunnally, 1978, p. 245). This study constructed on 44 questions and alpha equal to (0.961), the minimum mean for the answers is (3.811) and the maximum is (4.483), the average mean for all question is (4.054).

This study has seven relationships, five main relationships; these are dependent relationships, and two sub-relationships; these are mutual relationships

The main relationships:

H1: There is a positive correlation, and statistical significance impact, (at $\alpha \leq 0.05$) equal to (0.00) of the quality of Electronic-services on customer's satisfaction. According to previous studies ("Chang, 2009; Kuo et. al. 2009; Shukla 2010; Deng et. al. 2010; Chang & Wang, 2011; Chou, Lu & Chang, 2014; Kundu & Datta, 2015"). The quality of Electronic-services has a positive statistical impact on customer's satisfaction.

That explains, when the mobile application provides a good or bad quality that will be affected on customer satisfaction, and that will affect indirectly, customer loyalty which in turn will increase the possibility of customer retention of the service provider.

H2: There is a positive correlation, and statistical significance impact, (at $\alpha \leq 0.05$) from E-service quality to customer loyalty. According to previous studies (Malai & Speece, 2005; Chou et al 2014; Lin & Sun, 2009; Chang & Wang 2011; Liat et al ,2014; and Wang, 2015) the Electronic-services quality has a positive statistical influence on customer's loyalty.

That means, an important component to keeping customers using the applications and depends definitely on the service quality, when the application provides good quality that will reflect on customer satisfaction and how loyal they are to the application.

H3: There's a positive correlation, and statistical significance impact, (at $\alpha \leq 0.05$) from the perceived value to customer's satisfaction. Moreover, perceived

value has a positive statistical impact on customer's satisfaction according to studies (Lee, 2006; Shukla, 2010; Chang & Wang, 2011; and Tam, 2012).

That means, a perceived value is very significant to determine the customer satisfaction and when perceived value decreases, it will reduce customer's satisfaction and indirectly influence customer's loyalty.

H4: There's a positive correlation, and statistical significance impact, (at $\alpha \leq 0.05$) from the perceived value on customer satisfaction. According to previous studies ("Chang, 2009; Kuo et. al. 2009; Shukla 2010; Deng et. al. 2010; Chang & Wang, 2011; Chou, Lu & Chang, 2014; Wu, 2014; Kundu & Datta, 2015"). The quality of Electronic-services has a positive statistical impact on customer's satisfaction.

That means, perceived value is of high importance to determine the customer loyalty and when perceived value decreases, it will reduce customer loyalty.

H5: There's a positive correlation, and statically significance impact, (at $\alpha \leq 0.05$) from customer satisfaction effect on customer loyalty. Finally, previous studies ("Chang et al, 2009; Lin & Sun, 2009; Deng et al 2010; Setó-Pamies, 2012; Chou et al, 2014"), did prove that customer's satisfaction has a positive influence on customer's loyalty.

That explains the relevance and effect of customer's satisfaction on their loyalty. when user satisfaction is affected, it has a direct impact in the same way on loyalty.

The mutual relationships:

• There is partial mediation relationship, and is statistical significant impact, (at $\alpha \leq 0.05$) from Electronic-service quality on customer's loyalty through customer's satisfaction.

• There is partial mediation relationship, and is statistical significant impact, (at $\alpha \leq 0.05$) from perceived value on customer loyalty through customer satisfaction.

•

• There's a positive correlation, and is a statistical significance impact, (at $\alpha \leq 0.05$) from of perceived value and Electronic-service quality on customer's satisfaction. That means perceived value and E-service quality and affect, decreasing or increasing customer's satisfaction.

• There is a positive relation, and a statistical significance impact, (at $\alpha \leq 0.05$) from perceived value and Electronic-service quality on customer's loyalty. That is mean Electronic-services quality and perceived value affect, decreasing or increasing customer loyalty.

The researcher suggested two recommendations according to the data analyzed from survey, including:

There is a clear impact on perceived value and Electronic-service quality on loyalty and satisfaction of the customer, customer satisfaction dependently or mutually affects way on customer loyalty, so you must develop policies and strategies to increase the effectiveness of knowledge repositories.

The application providers need to improve and provide best electronic services to customers because of services has a strong effecting (positively and negatively) on satisfying and loyal of customers.

5.2. **Limitations**

The first limitation, on translating the questionnaire into Arabic, to makes it well understood. The difficulty in translating having words that give the same meaning. The second limitation, which got the researcher traveling to Jordan-Amman to collect the survey and analysis it. The third limitation is when the questionnaire was distributed. The researcher was required ask people (before giving him survey) whether they are using e-service on the mobile application, which makes the study mostly consist of the youth classes. Finally, time is the last limitation, because time constraints this study they make it between (15/July - 5/ September) surveys was collected only for one time. To determine effect between the perceived value and quality of e-service on customer's satisfaction and all the impact on customer loyalty.

Appendix (1) final version of survey

Survey

As part of my M.B.A. research thesis at the KEMERBURGAZ UNIVERSITY, I am conducting a survey on using the mobile application, it will be greatly appreciated if you could complete the following table.

Any information obtained is connected with this study that can be identified you will remain confidential.

Personal information:

Gender:	Male	Female

Age:

Less than 25	
25-30	
31-35	
36-40	
41-45	
More then 45	

Marital status:

	Single		Married		Others

Are you working?

	Yes		No

Education:

Less than high school	
High school graduate	
Diploma degree	
Bachelor's degree	
MSc degree	
Ph.D. degree	

Please pick your favorite type of E-service application:

Social media	Delivery applications	E-shopping	Reservations

Please indicate your opinion below in the box and Answer all the questions depending on the type of application you mentioned before.

	Factors	Strongly agree	Agree	Neither Agree nor disagree	Disagree	Strongly disagree
1	This service of mobile applications offers full content					
2	This service of mobile applications offers a content that is considered suitable					
3	This service of mobile applications offers a content that is considered significant					
4	This service of mobile applications offers a content that is considered fashionable					
5	This service of mobile applications offers content that is frequently updated					
6	The content is fully understandable					
7	The mobile applications service is easy to use					
8	This service of mobile applications is displayed harmoniously					
9	I can easily move between pages of the application					
10	The home-page of this mobile applications service can clearly display where the location is located					
11	The software developer provides diversified mobile applications services					
12	The application provides multiple service options					
13	The software developer provides good customer service.					
14	In case of problems, the software developer can immediately deal with it					
15	The software developer provides a (FAQ) for mobile application services					
16	This mobile application service system is stable					
17	Error scarcely occurs on the mobile application system					
18	This mobile application service provides activated links					
19	It is easy to go back to the page that has been previously browsed					
20	It takes no much time downloading the required information					
21	It takes no much time loading the links that have been clicked on					
22	This mobile application service system can immediately react to the input data					

23	I am satisfied with my decision to purchase through mobile application					
24	If I had to buy again, I would feel differently about purchasing from this application					
25	My decision to purchase from this application was a good choice					
26	E-service on application is reliable.					
27	The application offers service that matchers customer needs					
28	E-service on application fulfills my needs well.					
29	I feel good when I use E-service on application					
30	Using E-service on application is enjoyable					
31	E-service on application gives me pleasure					
32	Using E-service on application is interesting					
33	I keep watching continuously what's new on the application					
34	Using the application make me the person that are updated with technology					
35	Using E-service on application gives me a sense of belonging to the community					
36	E-service on application improves the way I am perceived					
37	E-service on application is of a reasonable cost					
38	The cost of utilizing E-service on application is economic					
39	E-service on application offers the value for money					
40	I will be recommending this application to others.					
41	I prefer this application above others					
42	I will say good things about this application to others.					
43	I will recommend this application to anyone seeking advice.					
44	I have the intention to keep using this application					

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