THE IMPACT OF SOFTWARE USER EXPERIENCE ON CUSTOMER SATISFACTION

Omar Badran, King Talal School of Business Technology
Shafig Al-Haddad, Princess Sumaya University for Technology (PSUT)

ABSTRACT

This study aims to investigate the impact of user experience variables (utility, usability, aesthetics, identification and value) on customer satisfaction of smartphones in Jordan. A convenience sample (393) questionnaires were measured. Simple and hierarchal regression was used for statistical analysis, covering (78.6%) response rate. Adoption of the UX style was high and customer's satisfaction was also significant. All of the UX variables affect customer's satisfaction. Value was the most influencing variable. There was a statistical significance in adopting UX pattern for smartphone users due to gender, experience and age; the level of education did not show any statistical impact. This research includes implication for the impact of user experience variables on customer satisfaction of smartphones in Jordan. This study seeks to identify the software user experience dimensions in user and customer satisfaction in the development of the Jordanian software smart phone users and customers.

Keywords: Customer Satisfaction, User Experience, Information Technology, Jordan and Smartphone.

INTRODUCTION

The study aims to Identifying user experience different variables (Utility, Usability, Aesthetics, Identification and Value) for products. Investigating the product's vision intact and the user's experience remains reliable in order to keep its significance in the market competition, understanding user requirements which result in complete requirements and specifications and continually changing them through the suitable change management to control the different processes of the Software development life cycle, Identifying people's constantly changing opinions and demands to maintain and even take a lead in the market and preventing mistakes that new entrepreneur's make early in their survival and their trials to achieve their chances.

Problem Statement

User experience is a critical factor of a quality software product and is responsible for a defensible strategic advantage for businesses; especially for new entrepreneurs who launch new products that are similar to those of the competitors in the same market (Sward & Macarthur, 2007). Therefore, user experience is a primary capability upon today's software businesses, not to forget the globalization of the markets, especially in Jordan that made one of the main resources for the national market worldwide.

For several years, the User experience production has been tightening its grip over what it calls their own property. Therefore, ensuring that the product's vision remains clear and the

user's experience reliable is the key factor to obtaining solid user Experience. However, several obstacles came in the way of activating or even keeping this standard running, due to misunderstanding of what is needed since there is often shortage of contact with the users or misunderstanding of user requirements. This leads to incomplete requirements and specifications and continuous change of requirements and specifications without proper change management that controls the different processes of the Software development life cycle. In addition to what users experience comes the evaluation of the product. Accepting it relies basically on people's approval. However, people's opinions change constantly and continually; what is accepted one day is seen out of style on the other with no clear explanation why.

Last but not least, slipups those start-ups make early in their attempts to survive stop their achievement and lessen their chances. In their rush to promote, start-up companies repeatedly develop poorly structured and poorly designed software products. A business may have an original technology solution that it has applied to the accurate problem and accomplished some grip on in the market. Nonetheless, if its solution has a poorly designed user experience and a sloppy code design, the corporation may struggle and even fail.

The reality is that the association industries hope to have with client's interaction through these websites apps, or networks, but their exact position may not be on the same page. In reality, it is sorrowfully misleading and usually goes against the benefit of customers, who ultimately shake businesses. The scene of the software production is scattered with the remains of software companies which were not able to pull through from this mistake. As result to the issues discussed above, this study seeks to answer the following questions:

1. What is the impact of software user experience on customer satisfaction?
2. Are there any changes in the impact of Software User Experience on Customer Satisfaction due to the demographic factors of gender, age, years of experience and education?

The Model

Based on the points of view about the subject, the following research structure is developed for the study (Figure 1).

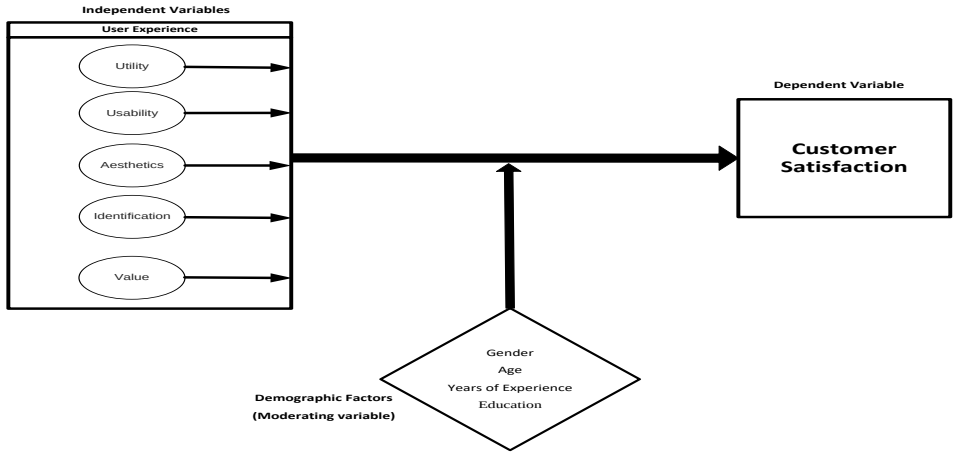

FIGURE 1
THE STUDY MODEL

The Study Model Developed by the researcher based on (Soegaard & Dam, 2012), the Encyclopaedia of Human-Computer Interaction and for demographic factors on (Venkatesh et al., 2003).

Hypotheses

H1	*There is no statistically significant impact of user experience (Utility, Usability, Aesthetics, Identification and Value) together on customer satisfaction at level of P ≤ 0.05. This hypothesis can be further divided into:*
H1a	*There is no statistically significant impact of Utility of User Experience on Customer Satisfaction at level of P ≤ 0.05*
H1b	*There is no statistically significant impact of Usability of user experience on customer satisfaction at level of P ≤ 0.05*
H1c	*There is no statistical significant impact of Aesthetics of user experience on customer satisfaction at level of P ≤ 0.05*
H1d	*There is no statistical significant impact of Identification of user experience on customer satisfaction at level of P ≤ 0.05*
H1e	*There is no statistical significant impact of Value of user experience on customer satisfaction at level of P ≤ 0.05*
H2	*There are no statistical changes in the impact of user experience on customer satisfaction, due to the demographic factors (gender, age, years of experience and education).*
H2a	*There are no statistical changes in the impact of software user experience on customer satisfaction due to gender.*
H2b	*There are no statistical changes in the impact of software user experience on customer satisfaction due to age.*
H2c	*There are no statistical changes in the impact of software user experience on customer satisfaction due to years of experience.*
H2d	*There are no statistical changes in the impact of software user experience on customer satisfaction due to education.*

Software User Experience

International Organization for Standardization (Part 210) describes user experience as "*a person's perceptions and responses that result from the anticipated use of a product, system or service*". Later studies on User Experience frequently focused on UX being momentary, primarily evaluative feeling (good-bad) while interacting with a product or service (Hassenzahl, 2008). Furthermore, Sutcliffe (2010) upholds the concept by explaining that the user's judgment of product quality arises from their experience of interaction and the product qualities which engender effective use and pleasure.

The user experience is the totality of end-user's perceptions as they interact with a product or service. These perceptions include: "*effectiveness"* (how good is the result?), "*efficiency"* (how fast or cheap is it?), "*emotional satisfaction"* (how good does it feel?) and "*the quality of the relationship with the entity that created the product or service"* (what expectations does it create for subsequent interactions?)

The success in any business; despite its industry or approach, depends significantly on the meeting the customer's exact needs and specification. The first obligation for a standard user experience is to meet the exact needs of the customer, with elimination of controversy or inconvenience. Following the simplicity and grace that creates a solution that are a delight to own as well as a pleasure to use (Friberg, 2017).

Where, User experience (UX) is a key factor in the success of software systems. Existing research does not analyse UX practices and challenges in relation to other software quality characteristics or, in particular, in relation to usability (Kashfi et al., 2017).

User experience characteristics

Under any circumstances, there are measures of user experience that researchers are interested in. There are many practices and some advanced hypotheses of user experience that can be used as the foundation for defining these measures.

Software Utility

Patel et al. (2011) elaborate the definition by stating that when applied to the computing services, these programs are available to the users whenever they need them and they will be charged based on the amount of usage.

For Parsons & Oja (2013) software utility is software user experience characteristic that is intended to support, analyse, configure, optimize or maintain a computer's software. Overall, programs that support assembling the user's computer better are considered utilities. On the other hand, (Hart & Zandbergen, 2014) delimits the definition to assisting the user's brad simplicity and to the user experience approach as an assessment that supports to handle, uphold and control computer resources.

Software Usability

The term "*Usability*" reveals its weight to support user experience significance. Usability refers to "*The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use*" (ISO, 1998).

Usability has always come side by side with the associated term "*user friendly*". Beckles (2005) demonstrates that from the definition of "*heavyweight software*", it should be clear that it is inherently difficult for such software to have high usability or to be "*user-friendly*". In other words, usability and user-friendly are not interchangeable since user-friendly indicates that it is easy to use, operate and understand (Beckles et al., 2006).

Aesthetics

When considering purchasing a product; despite the product's use or purpose, customers at first are often attracted and pulled by attractive and eye-catching products. In plain English, people like owning pretty things, as senseless as that sounds, even if that means to trade off functionality and even performance.

Software Identification

While strolling around shopping; as a regular consumer, you come across particular products that you buy without giving it a second thought; relying of course of your previous experience with the product that represents in your mind a representation of trust, recognition

and acknowledgment of a definite feature of quality. When spotting that particular product, you recognize that it is a brand that reflects a standard classification and quality.

Software Value

Taking an abstract view on products in general that serve the same purpose or contain the same functionality, they all come neck to neck with the prospects of task achievement and sometimes; for the same cost range, have the same quality. But what makes one product value more than the other? To start with, in every industry product range and even dominate the value of the business itself, therefore a lot has been set on the line to develop, improve and mature the invested product. So if value is the favour that something is detained to deserve, then what makes it valuable and to whom it concerns? (Cohen, 1989).

To answer that question, the researcher has to seek the potential customer to that product, because the customers themselves are the ones that thumb up or down the product either to success or execution. Consequently, determining what the customer needs/wants and applying it to the product makes it valuable. (Belle, 2015) indorses by stating that "*Creating valuable products requires getting valuable feedback*".

Then again, what the customer needs and what the customer wants, as stated previously are two different sides of the equation, where usually "*needs*" is what makes a customer buy the product at the first time, but "*wants*" is what makes the customer keeps on buying that particular product and not shift to an equivalent alternative (Oliver, 2014).

User Experience and Demographic Factors

Measurement of the characteristics of user experience is one issue, but the moderating effects that contribute from the differences of users themselves dramatically influence the result in a whole other calculation. For example, a recent study in 2015 on Facebook users showed that entertainment plays a more important role in determining user satisfaction with social network sites for male users, while relationship maintenance is more important in determining user satisfaction with social network sites for female users (Chan et al., 2015).

Venkatesh et al. (2003) participants summarize the factors that affect user approval: *experience, voluntariness, gender and age*. However, voluntariness was altered with education in this study to suit the scope of the researcher's scope of study.

The proposed model of the study demonstrates the relation between the characteristics of software user experience and the impact these characteristics have on customer satisfaction through the impression of the demonstrated demographic factors on the equation.

Customer Satisfaction

Customer satisfaction or user satisfaction has been defined in many different ways. It is accurate to mention that there is a slight difference between both terms when referring to software products, because on one hand, the user is the person that frankly uses the software himself/herself, therefore they are constantly affected by its UX measurements directly. On the other hand, the software customer can also be the user or the owner of the purchased software that is used by his/her business, which in the long run is affected by its measurements through

the employees that use it. However, for the purposes of this study, the researcher has referred to the customer in the title to represent the user too and throughout the study is referred to according to the situation that suits best (Farris et al., 2010).

The study of Mahmood et al. (2000) Variables Affecting Information Technology End-User Satisfaction: A Meta-Analysis of the Empirical Literature. The study argues that the level of end-user satisfaction with Information Technology (IT) has roughly been acknowledged as a sign of IT accomplishment. The study combines and confirms the construct of IT end-user satisfaction associated with a meta-analysis. It concentrates on associations between end-user satisfaction and nine different variables: "*perceived usefulness, ease of use, user expectations, user experience, user skills and user involvement in system development, organizational support, perceived attitude of top management toward the project and user attitude toward information systems in widely different situations in the USA."* The analysis of the study showed positive support for the impact of all nine variables on end-user IT satisfaction, but to various degrees. However, the furthermost significant relationships were found to be user involvement in systems development, perceived usefulness, user experience, organizational support and user behaviour toward the information systems.

Seong & Yoon (2004) a Maturity Model and an Evaluation System of Software Customer Satisfaction: The Case of Software Companies in Korea. The study disputes that the importance of software has been rising intensively obligating to the development of several Internet and e-business applications on higher level of refined customers in Korea. Here, their research areas in software involve evaluation methods or models. The traditional methods to software evaluation are based on the development practice point of view and their key distresses are not toughly linked to user or customer-oriented evaluation of software. The scope of their study covers a development model and a corresponding evaluation system that is proposed to focus on software customer satisfaction.

Hassenzahl et al. (2008) User experience (UX): Towards an Experiential Perspective on Product Quality. The study is an attempt to understand a more specific type of modern approach to UX. User Experience (UX) is a severely extended and different viewpoint on the quality of interactive technology; away from products and problems to humans and the drivers of positive experience. The study presents the researcher's particular perspective on UX and discusses its implications for the field of Human-Computer Interaction globally. This demonstrated the author's personal view on UX and related occurrences and research. Instead of providing a one-size-fits-all-definition of UX, the authors highlight its bias, present-orienteers and dynamics and the central part of desire and discomfort. Furthermore, the study delivers a method that refers the desire and discomfort to the realization of basic human needs.

Kroll & Schiller (2009) Managing the Interface between The Public Sector Applied Research and Technological Development in the Chinese Enterprise Sector. The study indicates a robust association between public applied research and technological development. The core argument is that technological development in China is not suffering from a lack of innovative capacity or human resources, but from a mismatch of research supply and demand.

Saatçioglu (2009) What Determines User Satisfaction in ERP Projects: Benefits, Barriers or Risks? In order to recognize the effect of benefits, barriers and risks on user satisfaction in ERP projects. The study carries on describing that ERP systems are expensive and complex systems. First, a literature review on ERP benefits, barriers and risks is conducted. Second,

profit, obstacles and risks are checked with their effects on user satisfaction in ERP projects in Turkey. The research is developed in a division of a multinational firm. A questionnaire containing declarations related to benefits, barriers, risks and user satisfaction is designed. The questionnaire is handed out to 32 individuals; only 25 individuals replied. Benefits are more effective on user satisfaction in ERP projects.

Vermeeren et al. (2010), User Experience Evaluation Methods: Current State and Development Needs. The study stands to estimate a dissimilar course of approaches to modern modification of weight to user experience (UX). It condensed a critical importance of product design and evaluation. A mass of approaches for UX design and evaluation exist, but then again, a rich indication of the current state of the available UX evaluation methods is absent, due to an absence of agreement on the necessary characteristics of UX.

Walsh et al. (2010), Cultural Differences in Smartphone User Experience Evaluation. This study was developed to determine cultural differences in the UX of a Smartphone using distant online sentence completion technique. The study's investigation grants the outcomes of a distant online UX evaluation survey of smartphone with overall 72 participants from China, India, USA, Denmark and UK. The results display that a distant online sentence conclusion survey is a relatively firm and simple technique of gathering international user data and yet the examination can be challenging. The use of Hofstede's cultural measurements in the analysis of the data provided the author a better understanding of the effect of particular culture on the results.

Jeong et al. (2012), Improving User satisfaction *via* a Case-Enhanced e-learning Environment. The objective of this study is to inspect student's experiences with a case-enhanced e-learning atmosphere in a higher-education organization. Overall, 67 graduate scholars agreed to take part in this research. The applicants were assigned to behaviour groups using seminar with Case-Based Learning (CBL) module or evaluation groups using discussion groups only. They completed a background study, a technological proficiency study, a pre- and post-awareness assessment and a learner observation survey of the e-learning environment. The results reveal a major growth in the level of territory knowledge in both a seminar-only group and a tutorial with CBL module group. The tutorial with CBL group considerably recorded higher on learner's observations of the e-learning environment in relation to "*ease of use", "satisfaction"* and *"usefulness"*. Additionally, the outcomes of the use of a CBL module found "*individual dissimilarities such as gender, degree level* and *information technology self-efficacy"*.

Richardson & Mahmood (2012), eBook Readers: User Satisfaction and Usability Issues. Library Hi Tech). This study also relates to a more real-world angle of an education method to present a comprehensive evaluation of user satisfaction and usability setbacks associated to five of the leading eBook readers counting: The Amazon Kindle; the Apple iPad MB292LL/A; then Barnes & Noble's Nook BNRV100; Border's kobo reader N647-BUS-S; and the Sony Digital Reader PRs-950 globally. This research was established on a review of 81 information studies graduate scholars, who replied about "*their proprietorship of specific readers, their likes and dislikes, along with superficial issues"*. Moreover, involved respondents were requested to take part in an ethnographic journaling study which permitted 8 potential users to live with each of the five eBook readers for at least a weekend. Results indicate that the Kindle was the most common.

Kumar (2014), Relationship of OPAC User's Satisfaction with Their Demographic Characteristics, Computer Skills, User Education and User Assistance and User-Friendly. The study focused on the classification to identify whether user demographic characteristics, computer skills, user education, user assistance and user-friendly OPAC (online public access catalog) have an impact on user satisfaction in the context of users at an Indian university campus. The results emphasize that in general satisfaction was significant among the users. With the exception of academic majors, in general, there were no significant differences between satisfaction and user demographic characteristics.

Zhou & Jiao (2014), Prospect-Theoretic Modelling of Customer Affective-Cognitive Decisions under Uncertainty for User Experience Design. The study aims to combine both affective and rational factors in the management process. A user experience (UX) estimation function built on growing prospect theory was anticipated for three diverse disturbing circumstances and two different types of products (affect-rich versus affect-poor) worldwide. To tackle multiple restrictions involved in the UX evaluation function, a model was proposed with a technique that estimated parameters that represent diverse rational propensities and affective influences for customers at the individual and group levels by generating subsequent probability compactness functions of the parameters that included inherent uncertainty. Participants showed an affective-cognitive decision-making behaviour in the complex domain of UX design. As a consequence, they exemplified the potential and possibility of the suggested technique.

O'Brien (2015), Weaving the Threads of Experience into Human Information Interaction (HII). This study pursues to deliver an overview of UX and to explore the intersection between HII and UX, specifically with respect to the collective weight on context, need s and logic creation. Information behaviour has been developed to focus on the dynamic human information interactions between systems and users in order to improve models that embrace user behaviour, understanding and affect and to comprehend the ways in which situation and tasks motivate information needs and form information pursuing and use. The result of this research reveal that in order to set new guidelines for information behaviour, we view HII through a UX lens as the researcher fights to theorize, evaluate and design for human information experiences internationally.

METHODOLOGY

Population and Sample of the Study

The study population consisted of Smartphone OS (iOS & Android etc.) users in companies and educational institutions (schools & colleges) in Jordan. This population was carefully selected, it represents the community sample that would mostly use smartphones and interact with their features. The study sample consisted of Smartphone OS (iOS & Android etc.) users and customers in Jordan and is made up of three categories regarding gender, age and education qualifications and experience. The researcher distributed the questionnaire personally and others were contacted through e-mail and social media using Google Docs. In order for the unit of analysis to be reliable in the required data collection, it included students and post school users (employees, workers) and retired senior citizens. Questionnaires for each category were distributed separately. Due to time constraints, a sample that consist of (500) questionnaires were distributed to all levels of users. The numbers of the returned questionnaires were (410), and then

in order to insure the accuracy of the study (17) questionnaires were excluded. Thus, (393) questionnaires were measured, which considered a simple and hierarchal regression for statistical analysis, covering (78.6%) response rate. In addition, they were distributed as convenience sample on a non-probability sampling in both Arabic and English to be applicable for the Jordanian sample; taking into consideration that the sample size doesn't statistically change much for a population that is larger than twenty thousand respondents (Chanu, 2016).

Data Analysis Techniques

Descriptive statistical analysis was applied and calculated and simple and multiple regressions analysis was conducted to test the relations between the External variables and other research factors. SPSS was used for analysing the collected data and testing the hypotheses of the study.

Normality test

In order to start off with the data analysis process, the researcher needs to make sure that the data is normally distributed. Therefore, skewness and kurtosis tests were conducted for all study variables, taking into consideration that for samples larger than 300 if the absolute values of skewness are less than (2) and the absolute values of kurtosis are less than (7), this indicates that the study variables are close to the normal distribution. As shown in the Table 1 below all the absolute values of the study variable's skewness is less than 2; in the same way, all the absolute values of the study variable's kurtosis are less than 7. This supports that the study variables are near to the normal distribution.

Table 1
NORMALITY TEST

Study Variables	Skewness		Kurtosis	
	Statistic	Std. Error of Skewness	Statistic	Std. Error of Kurtosis
Utility	-1.051	0.123	0.959	0.246
Usability	-1.336	0.123	2.006	0.246
Aesthetics	-0.669	0.123	0.256	0.246
Identification	-0.615	0.123	-0.370	0.246
Value	-0.680	0.123	-0.032	0.246
Satisfaction	-0.648	0.123	-0.431	0.246

Questionnaire face validity

The researchers used this test to make sure that the tool that was used in this study actually measures what should be measured (Sekaran & Bougie, 2009). The aim of this test is to make sure that the phrases contained in the study tool can lead to collect data accurately and to achieve this, the researcher disseminated the research questionnaire to the number of specialized

experts and academics in the field in order to judge the whole questionnaire to void the indistinctness in the style of questions, extreme difficulty in the language that was used, suitable response types for some questions. To ensure that the questionnaire was well designed, was written in both English and Arabic and was reviewed and validated by multiple scholars. In order to ensure the validity of the data collection and after retrieving the questionnaires, the researcher conducted the proposed amendments of the arbitrators before being distributed to the sample study.

Cronbach's alpha

The researchers used the Cronbach Alpha method for measuring the stability of the questionnaire. This technique is meant to measure the stability which has been shown by the study carried out by the researcher. Cronbach's Alpha reliability coefficient reliability normally ranges between 0.0 and +1.0. The closer Cronbach's Alpha is to 1, the higher the internal consistency reliability. Conversely, Cronbach's Alpha values should be greater than 0.6 to be accepted as reliable values (Hair et al., 1998).

All the values are greater than (0.70), which is statistically significant (Hair et al., 1998). The consistency rate was, acceptable and can be considered to be reliable to achieve the research undertakings. However, "*Aesthetics"* was rated a little low because the study of "*Aesthetics"* is supported with the associate applications that run on the smart phone not just the operating system itself.

Collinearity diagnostic

Flawless collinearity occurs when at least one independent/predictor variable is perfect linear combinations of the others. It means that if there are two independent variables that are symmetrically related, then the values of β for each variable are compatible.
The multicollinearity test between independent variables is examined. The Variance Inflation Factor (VIF) values are between (2.052 and 2.413) and do not exceed 5, which indicates that the collinearity is not a problem in the study model (Gujarati & Porter, 1999).

Years of smartphone or smartphones usage

The respondents have (Less than 6 months), 2.3% of them have (6 months-less than 1 year), 4.6 % have (1 year-less than 2 years) and 90% have (2 years or more).

Type of smartphone operating system used

63.9% of the respondents own Android (Samsung, Sony, HTC, LG, Motorola……. etc.), 31.3% of them own (iOS (iPhone), 4.3% own (Windows), 0.5% own (Blackberry). It is evident that the majority of users use Android more than any other operating system, due to reasons such as convenience, purchasing power and financial capacity.

Descriptive statistics

A statistical standard has been used to divide the levels of importance into three levels (high, medium, low) according to the following equation (Kerlinger, 1986):

Category length=(upper limit-lower limit)/the number of levels

Category length=(5-1)/3=4/3=1.33

And thus the levels are ranked as follows:

1. Low level of importance: 1-2.33.
2. Medium level of importance: 2.34-3.66.
3. High level of importance: 3.67-5.

User experience characteristics descriptive statistics

As shown in Table 2 below, the personal phone significance "*Value*" came in first place with the highest average (4.07). This, in turn, reflects the high degree of approval and consensus of the study sample, supported by the percent of the standard deviation (0.84). Thus, this measurement is the most commonly used among software companies. In second place came "*Usability*", which had a mean of (4.05), followed by "*Utility*" with a mean of (3.86). "*Identification*" ranked fourth with a mean of (3.85) and standard deviation of (0.92). Finally, "*Aesthetics*" had a mean of (3.63) with a standard deviation of (0.83).

Table 2
USER EXPERIENCE CHARACTERISTICS DESCRIPTIVE STATISTICS

User Experience Characteristics: Descriptive Statistics	Mean	Std. Deviation	Order	Level
Utility	3.86	0.78	3	High
Usability	4.05	0.75	2	High
Aesthetics	3.63	0.83	5	Medium
Identification	3.85	0.92	4	High
Value	4.07	0.84	1	High

Customer satisfaction

The mean of customer satisfaction is above three as shown in Table 3, which means that it was medium, which indicates that the respondents have a positive attitude using smartphones.

Table 3
DESCRIPTIVE STATISTICS

Customer Satisfaction: Descriptive Statistics	Mean	Std. Dev.	Level
Customer Satisfaction	3.65	1.08	Medium

The descriptive statistics for all items of the study variables are displayed below in Table 4.

Table 4
DESCRIPTIVE STATISTICS OF UTILITY

User Experience Characteristics: Descriptive Statistics	Mean	Std. Dev.	Level
I believe that my smartphone device is reliable.	3.72	1.06	High
I perceive the functions in the Operating System as useful and fit for their purpose.	3.91	0.9 1	High
I feel that it's easy to get things done with the Operating System.	3.90	1.01	High
I feel that it's efficient to get things done with the Operating System.	3.81	1.05	High
When buying my Smartphone I took into consideration its specifications (PLATFORM, MEMORY, CAMERA, COMMS, BATTERY…etc).	4.0 7	1.13	High
Mean of Utility	3.86	0.84	High

The means range software utility is between (3.7-4.0). The highest mean was to item "*When buying my Smartphone, I took into consideration its specifications (PLATFORM, MEMORY, CAMERA, COMMS, BATTERY etc.*)", whereas the lowest mean was to item "*I believe that my smartphone device is reliable*". This supports that most respondents found that utility is beneficial to attract and accomplish tasks more rapidly.

Table 5
DESCRIPTIVE STATISTICS OF USABILITY

User Experience characteristics: Descriptive Statistics	Mean	Std. Dev.	Level
I find it easy to read characters on the screen.	4.30	1.01	High
I think that highlighting simplifies tasks in the Operating System.	4.11	1.03	High
The software uses similar terms throughout Operating System.	4.01	1.01	High
It is easy to learn how to use the Operating System.	4.14	1.01	High
The Operating System of my smartphone is designed for all levels of users.	3.85	1.04	High
Mean of Usability	4.05	0.8	High

The level of importance of software usability as shown in Table 5 is between (3.8-4.3). The highest mean was to item "*It is easy to learn how to use the Operating System*", whereas the

lowest mean was to item "*The Operating System of my smartphone is designed for all levels of users*". This indicates that most respondents face minimum difficulties in using smartphones. At the same time, everything related to smartphone devices is easy to learn and understand.

The means range of the level of importance of software aesthetics between (3.4-3.8). It can be observed from Table 6 that the highest mean was to item "*I think that my device feels pleasurable in hand*.", while the lowest mean was to item "*I would never change my smart phone device for an alternative product that is more visually attractive or has brighter and attractive interface displays*". This indicates that most respondents give intermediate impact to the smartphone's design and aesthetics.

Table 6
DESCRIPTIVE STATISTICS OF AESTHETICS

User Experience characteristics: Descriptive Statistics	Mean	Std. Dev.	Level
I see the Operating System of my smartphone as visually attractive.	3.73	1.10	High
I think that my device feels pleasurable in hand.	3.86	1.14	High
I would never change my smart phone device for an alternative product that is more visually attractive or has brighter and attractive interface displays.	3.41	1.24	Medium
The Operating System of my smartphone informs me of its progress when performing a certain task.	3.64	1.23	Medium
Mean of Aesthetics	3.63	0.8 3	Medium

Table 7
DESCRIPTIVE STATISTICS OF IDENTIFICATION

User Experience characteristics: Descriptive Statistics	Mean	Std. Dev.	Level
I identify myself with the operating system of my smart phone (iOS or Android…etc.)	3.73	1.05	High
I feel good while using my Smartphone.	3.81	1.2	High
The type of Operating System is important to me when deciding on buying a new phone.	4.03	1.15	High
Mean of identification	3.85	0.91	High

The level of importance of software aesthetics; the identification means range between (3.7-4.0). It can be observed from Table 7 that the highest mean was to item "*The type Operating System is important to me when deciding on buying a new phone.*", whereas the lowest mean was to item "*I identify myself with the operating system of my smart phone (iOS or Android…etc.)*". This entails that most respondents give high influence to the smartphone's identification and what it resembles to them.

Table 8
Descriptive statistics of value

User Experience characteristics: Descriptive Statistics	Mean	Std. Deviation	Level
My smart phone is valuable to me.	4.18	1.03	High
I rely on my smartphone often.	4.13	0.90	High
I can't go without relying on my smartphone.	3.8 7	1.09	High
Mean of value	3.97	0.83	High

The level of importance of software value, it can be observed from Table 8 that the value means range between (3.8-4.1). The highest mean was to item "*My smart phone is valuable to me*."; while the lowest mean was to item "*I can't go without relying on my smartphone*." This supports the idea that most respondents give high influence to the smartphone's value and what it resembles to them. This indicates that most respondents rely on smartphones in their everyday tasks to get through the day.

Table 9
DESCRIPTIVE STATISTICS OF SATISFACTION

User Experience characteristics Descriptive Statistics	Mean	Std. Dev.	Level
I feel satisfied with my smart phone that I currently use.	3.9 7	1.24	High
I'm likely to buy the same phone (iOS or Android… etc.) again.	3.8 1	1.12	High
I'm likely to recommend my phone (iOS or Android … etc.) to others.	3.80	1.23	High
I still would have bought the same smart phone even if there were other alternatives with the same features.	3.65	1.32	Medium
I won't buy another alternative smartphone even if I don't find the smartphone I prefer.	3.22	1.42	Medium
Mean of satisfaction	3.65	1.05	High

The level of importance of software aesthetics, where the value means range between (3.2-3.9). It can be observed from Table 9 that the highest mean was to item "*I feel satisfied with my smart phone that I currently use.*", whereas the lowest mean was to item "*I won't buy another alternative Smartphone even if I don't find the smartphone I prefer*". This shows that most people are satisfied with using their smartphones and they don't regret using that particular software, but not the device itself.

Test of Hypotheses

H01: Simple Regression analysis was used, P=(0.000) which was lower than (0.05). According to the decision rule: Accept (H01) if P-value is greater than (0.05) and reject (H01) if P-value is lowers than 0.05. The researchers will, therefore reject (H01) and accept the alternative hypothesis (Ha). Thus, there is a statistical significant impact of user experience on customer satisfaction. The relation is considered strong as r=63% and the independent variables explains 40% of changing on the dependent variable; customer satisfaction.

H01a: The researchers reject (H011) and accept the alternative hypothesis (Ha11). Thus, there is a statistical significant impact of utility user experience on customer satisfaction. The researchers also found that the determination coefficient R Square=0.276. This means that utility can account for (27.6%) of the variation of software UX, due to Utility which was taken individually.

H01b: There is a statistical significant impact of usability user experience on customer satisfaction. It was found that the determination coefficient R Square=0. 223. This means that usability can account for (22.3%) of the variation of software UX, due to usability which was taken individually.

H01c: There is a statistical significant impact of aesthetics user experience on customer satisfaction. It was found that the determination coefficient R Square=0.395. This means that aesthetics can account for (39.5%) of the variation of software UX, due to aesthetics which was taken individually.

H01d: There is a statistical significant impact of identification user experience on customer satisfaction. It was found that the determination coefficient R Square=0.233. This means that identification can account for (23.3%) of the variation of software UX, due to Identification which was taken individually.

H01e: There is a statistical significant impact of value user experience on customer satisfaction. It was found that the determination coefficient R Square=0.277. This means that value can account for (27.7%) of the variation of software UX, due to value which was taken individually.

H02a: Hierarchal Regression analysis was used to test the researcher's hypothesis and the researcher found that R=0.645, R^2=0.416 and R Square Change=0.008, which means that the impact of UX, due to gender is 8% and that (P=0.024) was lower than (0.05). According to the researcher's decision rule: Accept (H021) if P-value is greater than (0.05) and reject (H021) if P-value is lowers than (0.05). The researcher will, therefore accept that there are statistical changes in the impact of software user experience on customer satisfaction, due to gender.

H02b: R=0.653, R^2=0.427and R Square Change=0.018, which means that the impact of UX, due to age was 18% and that (P=0.001) was lower than (0.05). The researchers will, therefore accept that there are statistical changes in the impact of software user experience on customer satisfaction, due to age.

H02c: R=0.645, R^2=0.416 and R Square Change=0.007, which means that the impact of UX, due to work experience was 7% and that (p=0.032) was lower than (0.05). The researchers will, therefore accept that there are statistical changes in the impact of software user experience on customer satisfaction, due to work experience.

H02d: R=0.639, R^2=0.409 and R Square Change=0.000, which means that there was no impact of UX, due to education, which equalled 0% and that (P=0.779) was greater than (0.05). The researchers will, therefore accept (H024). Thus, there are no statistical changes in the impact of software user experience on customer satisfaction, due to education.

CONCLUSION

The study illustrated that the majority of Jordanian users use Android more than any other operating system, as a result of reasons of convenience, purchasing power and financial capacity. Walsh et al. (2010) displays that a remote online sentence conclusion survey is a relatively firm and simple technique of gathering international user data in smartphone user experience evaluation and yet the examination can be challenging. The study also shows that the majority of smartphone users were younger and they preferred to use Android to iOS. The study gives a better understanding of the effect of Jordanian culture on the results.

1. There was a relationship between the age group and gender among the respondents.
2. The user experience was adopted in the five dimensions (utility, usability, aesthetics, identification and value). The idealized influence "*value*", came in first place, followed by usability, then utility, identification and finally aesthetics.
3. The results also show that user experience with the five characteristics (utility, usability, aesthetics, identification and value) have an impact on customer satisfaction.

The researchers found that R=0.639, R^2=0.459, β=0.639 and (P=0.000) was lower than (0.05). The researcher rejected (*H01*) and accepted the alternative hypothesis (*Ha*).

The study of (Mahmood et al., 2000) indicated positive support for the influence of all nine variables on end-user IT satisfaction but to variant degrees. However, the furthermost significant relationships were occasioned to be: first, user involvement in systems development, then, perceived usefulness, user experience, organizational support and finally, user behaviour toward the information systems. On the other hand, the study showed positive influence on users, in all the five dimensions (utility, usability, aesthetics, identification and value).

O'Brien's, research (2015) aimed to set new guidelines for information behaviour by proposing that we view HII through a UX lens as the researcher fights to theorize, evaluate and design for human information experiences internationally.

Individually all the variables (utility, usability, aesthetics, identification and value) have statistical significant impacts of user experience on customer satisfaction.

There is a statistical significant impact of utility characteristic of user experience on customer satisfaction at level of $P \leq 0.05$.

Longinidis & Gotzamani, **(**2009) designated those three main components that affect the level of satisfaction of an ERP system user: "*interaction with the IT department*," "*pre-implementation processes," and "ERP product and adaptability*". In addition, a various satisfaction level has been observed among users from different departments.

Yet in the study here, we combined Value and Usability together which had the greatest statistical significant impact of user experience on Jordanian customer satisfaction.

There is a statistical significant impact of aesthetics user experience on customer satisfaction.

Zhou & Jiao (2014) acceptably tackled multiple restrictions which were involved in the UX evaluation function; a model proposed with a technique that estimates parameters that represent diverse rational propensities and affective influences for customers at the individual and group levels by generating subsequent probability compactness functions of the parameters to include inherent uncertainty. The affective-cognitive decision-making behaviour in the complex domain of UX design, thus, exemplifies the potential and possibility of the suggested technique.

There is a statistical significant impact of identification user experience on customer satisfaction, as shown in the corrected hypothesis below:

There is a statistical significant impact of identification characteristic of user experience on customer satisfaction at level of $P \leq 0.05$

There is a statistical significant impact of value user experience on customer satisfaction.

There is a statistical significant impact of value characteristic of user experience on customer satisfaction at level of $P \leq 0.05$

Saatçioglu (2009) results suggest benefits that are more effective on user satisfaction in ERP systems. Here, the study of value supported with usability had the greatest statistical significant impact of user experience for Jordanian customer satisfaction. The study of Seong & Yoon (2004) contributes to a development model and a corresponding evaluation system which is proposed to focus on software customer satisfaction.

Vermeeren et al. **(**2010) demonstrate the outcome of their effort over the years, of collecting UX evaluation methods from university and industry. The study releases development needs for UX evaluation methods such as rising approaches, for: social and combined UX evaluation, founding practicability and scientific quality and a more complex understanding of UX.

Richardson & Mahmood (2012) indicated that the Kindle is the most common irrespective of reader due to the unfortunate navigation and inability to loan titles in their collection. Furthermore, By contrast, this study showed more impact toward convenience of usage (usability). Unlike the previous study, it showed a major value for the design support or color presentation (aesthetics).

There are statistical changes in the impact software user experience on customer satisfaction, due to gender, as shown in the hypothesis below:
There are statistical changes in the impact of software user experience on customer satisfaction, due to gender.

Jeong et al. **(**2012) discovered a significant growth in the level of territory knowledge in both a seminar-only group and a tutorial with module group. The tutorial with group recorded considerably higher on learner's observations of the e-learning environment in terms of ease of use, satisfaction and usefulness. Additionally, the outcomes of the use of a module found individual dissimilarities such as gender, degree level and information technology self-efficacy.

This study discovered that user experience has a significant impact with the five characteristics (utility, usability, aesthetics, identification and value) on customer satisfaction and that the characteristic of usability (ease of use,) associated with UX Value has the most impact on satisfaction. In addition, the outcomes also showed major statistical differences in the impact of user experience of Jordanian smartphones on customer satisfaction, due to education and age but not due to gender and work experience.

Kumar's (2014) results emphasized that in general satisfaction was significant among the users. With the exception of academic majors there were no significant differences between satisfaction and user demographic characteristics. The study displayed that satisfaction with usability of OPAC was higher. It also revealed that simple possession of computer skills was not sufficient for efficient use of OPAC, hence affecting the completion of a high level satisfaction.
Conversely, this study showed that there were significant differences between satisfaction and user demographic characteristics of education and age. However, there were no significant differences between satisfaction and user demographic characteristics of gender and work experience. In congruence with the previous study, satisfaction with ease of usage (usability) was higher than the other variables.

There were statistical changes in the impact of user experience on customer satisfaction on software due to age. There were statistical changes in the impact of User Experience software on Customer Satisfaction due to work experience. There were no statistical changes in the impact of software user experience on customer satisfaction due to education.

1. There is a need to promote reliance on user experience pattern in the software development due to its positive impact on customer satisfaction.
2. There is a need to promote interest in the characteristics utility, usability, aesthetics, identification and value, due to their significant impact on customer satisfaction in smartphone development sector, by developing smartphones that have more importance to the user in ways of better usability and convenience.
3. There is a need to promote interest in the characteristic of value and manifest it to future development, due to its significant impact on customer satisfaction in smartphone development sector.
4. There is a need to promote interest in both combined characteristic value and usability because both have a significant impact. The interaction between both characteristics lead them to support each other in reaching the highest customer satisfaction, by making smartphones that are more customizable to each user, due to their significant impact on customer satisfaction in smartphone development sector.
5. There is a need to promote interest in developing stereotypical smartphones according to gender or gender related preferences, by developing smartphones that can be easily customizable to reflect the user's preference and style; because there are statistical changes in the impact of software user experience on customer satisfaction due to gender.
6. There is a need to indorse the most attention on developing categorized smartphones according to age groups, by developing smartphones that are adaptable to the younger age group; because there are statistical changes in the impact of software user experience on customer satisfaction due to age.
7. There is a need to take interest in developing fixed smartphones according to work experience, by developing customizable smartphones that relate to different professions and experiences; since there are statistical changes in the impact of software user experience on customer satisfaction due to years of experience.
8. There is a little need to encourage interest in developing labelled smartphones according to education level. Since there are no statistical changes in the impact of software user experience on customer satisfaction due to education.

DISCUSSION

The differences between this study and the previous studies can be summarized as follows: First, this study seeks to identify the software user experience dimensions in user and customer satisfaction in the development of the Jordanian software smart phone users and customers, while previous studies varied in the research trends that measure the impact of user experience on other variables such as effective decision-making and organizational innovation. Second, in terms of the application of the study environment, this study has been applied to Jordanian software smart phone users and customers. Third, the previous studies have mainly focused on developed countries that relate to the case study the researcher considered of Jordan. Finally, the study seeks to clarify the software user experience variables as one of the most important entrepreneurial and leading approaches in the present day.

REFERENCES

Beckles, B. (2005). *Re-factoring grid computing for usability*. Proceedings of the UK e-Science All Hands Meeting.

Beckles, B., Coveney, P.V., Ryan, P., Abdallah, A., Pickles, S., Brooke, J., & McKeown, M. (2006). *A user-friendly approach to computational grid security*. Proceedings of the UK e-Science All Hands Meeting.

Belle, B.C. (2015) *Creating valuable products requires getting valuable feedback. HELP SCOUT and entrepreneur.com.*

Chan, T., Cheung, C., Shi, N., & Lee, M. (2015). Gender differences in satisfaction with Facebook users. *Industrial Management & Data Systems, 115*(1), 182-206.

Chanu, A.I. (2016) Exploring the cultural tourism potentials in north eastern region of India. *International Journal of Scientific Research, 4*(10), 1-28.

Cohen, G. (1989). On the currency of egalitarian justice. *Ethics, 99*(4), 906-944.

Farris, P., Bendle, N., Pfeifer, P., & Reibstein, D. (2010). *Marketing metrics: The definitive guide to measuring marketing performance*. Pearson Education.

Friberg, A. (2017). *Continuous usability testing: The importance of being iterative when it comes to assessment and development of the library's digital services.* In library assessment conference building effective, Sustainable, Practical Assessment. Association of Research Libraries.

Gujarati, D., & Porter, D. (1999). *Essentials of econometrics*. University of Southern California.

Hair, J., Anderson, R., Tatham, R., & William, C. (1998). *Multivariate data analysis*.

Hart, T., & Zandbergen, P. (2014). Kernel density estimation and hotspot mapping: Examining the influence of interpolation method, grid cell size and bandwidth on crime forecasting Policing. *An International Journal of Police Strategies & Management, 37*(2), 305-323.

Hassenzahl, M. (2008). *User experience (UX): Towards an experiential perspective on product quality.* Proceedings of the 20th International Conference of the Association Francophone d'Interaction Homme-Machine.

ISO, W. (1998). *Ergonomic requirements for office work with visual display terminals (VDTs). The* international organization for standardization.

Jeong, K.H., Pederson, S., & Baldwin, M. (2012). Improving user satisfaction via a case-enhanced e-learning environment. *Education+Training Information, 54*(2-3), 204-218.

Kashfi, P., Nilsson, A., & Feldt, R. (2017). Integrating user experience practices into software development processes: implications of the UX characteristics. *Peer Journal of Computer Science, 3*(1), 130-145.

Kerlinger, F. (1986). *Foundations of behavioural research*. New York: Holt, Rinehart and Winston.

Kroll, H., & Schiller, D. (2009). *Managing the interface between public sector, applied research and technological development in the Chinese enterprise sector.* Fraunhofer ISI discussion papers innovation systems and policy analysis.

Kumar, S. (2014). Relationship of OPAC user's satisfaction with their demographic characteristics, computer skills, user education, user assistance and user-friendly OPAC. *The Electronic Library, 32*(1), 106-123.

Longinidis, P., & Gotzamani, K. (2009). ERP user satisfaction issues: Insights from a Greek industrial giant. *Industrial Management & Data Systems, 109*(5), 628-645.

Mahmood, M., Burn, J., Gemoets, L., & Jacquez, C. (2000). Variables affecting information technology end-user satisfaction: A meta-analysis of the empirical literature. *International Journal of Human-Computer Studies, 52*(4), 751-771.

O'Brien, H.L. (2015). *Weaving the threads of experience into human information interaction (HII): Probing User Experience (UX) for new directions in information behaviour.* New Directions in Information Behaviour.

Oliver, R. (2014) *Satisfaction: A behavioural perspective on the consumer*. Routledge.

Parsons, J.J., & Oja, D. (2013). *New perspectives on computer concepts: Comprehensive.*

Patel, A., Seyfi, A., Tew, Y., & Jaradat, A. (2011). Comparative study and review of grid, cloud, utility computing and software as a service for use by libraries. *Library Hi Tech News, 28*(3), 25-32.

Richardson, J.J., & Mahmood, K. (2012). E-book readers: User satisfaction and usability issues. *Library Hi Tech, 30*(1), 170-185.

Saatçioglu, O. (2009). What determines user satisfaction in ERP projects: Benefits, barriers or risks? *Journal of Enterprise Information Management, 22*(6), 690-708.

Sekaran, U., & Bougie. M. (2009). *Research methods for business: A skill building approach.* UK: John Wiley & Sons.

Seong L., & Yoon, Y. (2004). A maturity model and an evaluation system of software customer satisfaction: The case of software companies in Korea. *Industrial Management & Data Systems, 104*(4), 347-354.

Soegaard, M., & Dam, R. (2012). *The encyclopaedia of human-computer interaction.* The Encyclopaedia of Human-Computer Interaction.

Sutcliffe, A., Yuksel, F., & Bilim, Y. (2010). Destination attachment: Effects on customer satisfaction and cognitive, affective and conative loyalty. *Tourism Management, 31*(2), 274-284.

Sward, D., & Macarthur, G. (2007). *Making user experience a business strategy*. Proceedings of the Workshop on Towards a UX Manifesto.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, *21*(1) 425-478.

Vermeeren, A., Law, E., Roto, V., Obrist, M., Hoonhout, J., & Väänänen-Vainio, K. (2010). *User experience evaluation methods: Current state and development needs.* Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries.

Walsh, T., Nurkka, P., & Walsh, R. (2010). *Cultural differences in smartphone user experience evaluation*. Proceedings of the 9th International Conference on Mobile and Ubiquitous Multimedia.

Zhou, F., & Jiao, R. (2014). Prospect-theoretic modelling of customer affective-cognitive decisions under uncertainty for user experience design. *Human-Machine Systems, IEEE Transactions*, *44*(4), 468-483.