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Consumer Behavior Towards Introducing 3G Mobile in Palestine: The Case of Bethlehem Governorate

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ABSTRACT

This research focuses on the factors that influence customers' behavior towards the introduction of 3G cellular data in Bethlehem Governorate, in the West Bank (WB), Palestine, which was introduced at the beginning of 2018. Therefore, the main purpose of this paper is about the examination of the factors that influence consumers' usage of 3G cellular data. The research framework was based on the theory of planned behavior (TPB) with the attitude, subjective norms, and perceived behavioral control factors. In addition to the extension of technology acceptance model (TAM), the proposed model included the perceived usefulness and perceived ease of use factors. The perceived enjoyment factor was added to the model along with the TPB and TAM in order to examine the influence on the behavioral intention to use 3G cellular data. A simple random sampling strategy of a sample size of 402 3G's customers from Bethlehem Governorate in the WB, Palestine was applied. Targeted respondents include who tried either currently using 3G services throughout a questionnaire that was constructed for this purpose. The data was analyzed by employing structural equation modeling (SEM). The results indicate that perceived behavioral control, perceived enjoyment, and subjective norms are the influential factors. In contrast, perceived usefulness, perceived ease of use and attitude are not influencing the behavioral intention to use 3G mobile data services. Based upon the research findings, business implications, and limitations, further research was suggested were placed.

Keywords: Theory of Planned Behavior, Technology Acceptance Model, 3G Mobile Data Services, Behavioral Intention to Use, Perceived Enjoyment

JEL Classifications: M31, M10

1. INTRODUCTION

Market functions of mobile data have sustained high growth rates during the last decade worldwide. According to the International Telecommunications Union (ITU), mobile broadband is considered one of the most dynamic market segments. In this regard, the global penetration of mobile broadband approximated 47% in 2015. Recent statistics indicate that the number of mobile subscription exceeds the global population (ICT, 2015; Skhirtladze, 2017). In addition, it was proven that mobile telecommunication has led to increase the competition in local market among providers, due to users' demand for transmission speed and application services (Mardikyan, 2012; Gandal et al.,

2003). Mobile telecommunication technologies have evolved in sequential generations (Jamoos et al., 2019; Mkheimer and Jamoos, 2012). The first generation was launched in the 1980's, followed by the introduction of second generation in 1990's. 3G, which stands for the third generation of wireless mobile telecommunication technology, was first introduced in 1998 in Japan (Gandal et al., 2003; De Vriendt et al., 2002).

More recently, researchers have given their definition of consumer behavior. For Solomon, 2017, Consumer behavior "is the study of the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy needs and desires" (Solomon, 2017. p. 28).

While Schofield, 2018 addressed that, it “is critical to understand consumer behavior to know how potential customers will respond to a new product or service. It also helps companies identify opportunities that are not currently met” (Schofield, 2018).

Technology is considered as a powerful tool in influencing and changing consumer behavior. Consumers’ expectations have changed with the introduction of mobile phones and the entrance of new communication channels that enables consumers to be connected on one platform at least (Iyoob, 2017; Claveria, 2017).

The limited researches regarding consumer behavior needs to be addressed to assess companies in designing and implementing marketing strategies. Thus, encourage the use of mobile technological products and services (Song, 2010).

Due to the Israeli restrictions imposed on the Palestinian cellular network, the introduction of the third generation of wireless mobile telecommunication technology in the WB has been delayed for several years (The World Bank Group, 2016). The introduction of 3G cellular data services was allowed to function in January 2018. The Israeli occupation authorities used to justify imposing restrictions due to security reasons. Therefore, the main purpose of this paper is about the examination of the factors that influence consumers’ usage of 3G cellular data during 2018 in Bethlehem Governorate in WB, Palestine.

2. THEORETICAL BACKGROUND

Theories employed in this study have identified key factors that influence consumers’ behavioral intention to use 3G cellular data services. In particular, they provide the base in formulating an integrated model. The used theories are theory of reasoned action, theory of planned behavior, and the technology acceptance model (TAM). Although the unified theory of acceptance of technology model (UTAUT) and the diffusion of innovation model (DOI) are used in similar studies. However, due to the popularity of TAM, it is considered the first most popular model in the field of IT devices and services adoption (Khan and Woosley, 2011). In this section, the major theories are presented below in brief.

2.1. Theory of Reasoned Action

Fishbein and Ajzen (1975; 1980) developed theory of reasoned action model (TRA) as shown in Figure 1. TRA model states that individual behavior is driven by behavioral intention. It is a function of attitude toward behavior and subjective norms. Concerning attitude it is defined as “*a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor.*” It was assumed that an individuals’ attitude allows predicting his/her behavior. Secondly, subjective norms are “*the perceptions that the individual thinks that one should (or should not) perform the behavior in question as well as the perceptions are (or are not) themselves performing the behavior*” (Fishbein, 2004; Theorizeit, 2017).

2.2. Theory of Planned Behavior (TPB)

TPB is an extension to the Theory of Reasoned Action (Figure 2). TPB states that individuals’ behavior is driven by intentions. While

behavioral intentions are a function of individual’s attitudes, subjective norms, and perceived behavioral control. Adding the perceived behavioral control construct to the TRA model, this represents how an individual perceives the ease of use engaged in performing behavior (McLeod, 2014; Theorizeit, 2017).

There are several drawbacks in the TPB, such as it omits environmental and economic factors that may have an influence on individuals’ intention to perform a behavior (Icek, 2002). In addition, it assumes that an individual has attained the opportunities and resources to perform the desired behavior successfully regardless of his/her intention. Lastly, it does not encounter a time frame between intention and the behavioral action.¹

2.3. Technology Acceptance Model

TAM was based on the roots of the theory of reasoned action (TRA) by Davis (1989) (Khan and Woosley, 2011). It is an adaption used in the field of information system. TAM was used profusely in technology adoption researches. Therefore, it has been considered the most useful model in predicting consumers’ acceptance of information technology. As a result, it was proved to be applicable in forecasting and explaining consumers’ behavioral intentions to adopt and use 3G mobile data services.

TAM model consists of two main constructs that affect the dependent variables, which include behavioral intention to use, perceived usefulness and Perceived ease of use (Figure 3). Perceived usefulness is represented by the degree that an individual believes that using information technology systems and devices will enhance his/her job performance. On the other hand, perceived ease of use (PEOU) is defined as “*the degree to which a person believes that using a particular system would be free of effort*” (Davis, 1989; Theorizeit, 2017). In fact, both TAM and TRA assume that once the intention to use is taken, performing that action would be without any limitations such as ability, environmental and organizational limits, and unconscious habits (Theorizeit, 2017).

2.4. Factors Affecting the Adoption of 3G Mobile Services

After reviewing past literature on 3G adoption, this part identifies the major factors believed to have an influence on consumers’ behavioral intention to use 3G mobile data services. Including: perceived usefulness, perceived ease of use, attitude, subjective norms, perceived behavioral control, and perceived enjoyment. They are discussed.

2.4.1. Perceived usefulness

As mentioned previously in TAM model, PU directly affects the individuals’ attitude to use IT devices and services, which in turn influence their intention behavior to use it. In addition, it was found that PU is significantly correlated with both current and future usage (Davis, 1989; IGI Global, 2018; Kuo and Yen, 2009). Several studies have found that PU has the largest impact in affecting consumers’ attitude toward using 3G data services. A study conducted in Italy by Paganì (2004), considered three main factors that influence PU. They include service offering,

¹ Boston University School of Public Health, April 2016.

degree of mobility, and compatibility. The results indicated that PU was on the top of hierarchy of importance, especially for people aged 25-34. Furthermore, another study handled in Turkey (2012), regarding the behavioral intention towards the use of 3G technology, found that PU have strong significant effect on the adoption of 3G Cellular data services (Pagani, 2004; Mardikyan et al., 2012; Suki, 2011; Muhammad et al., 2016).

In contrast, a study conducted in Taiwan by Kuo and Yen (2009) concluded that PU has insignificant influence on behavioral intention to use 3G mobile data services. That was attributed to the low usage rates of 3G, and because the study subjects were under-graduate and graduate students, this type of customers use limited number of services found that it was not useful in their lives. Measures developed in this study to show how useful are 3G in accomplishing tasks, increasing efficiency, and in providing information (Kuo and Yen, 2009). Compelling the results regarding service quality and its role in enhancing the usefulness of 3G mobile services, a study conducted in Turkey by Mardikyan et al. (2012) found that variety of services positively influences consumers' behavioral intention of 3G usage, as the variety of 3G services increases its quality. In addition, it was concluded that the most important properties of service quality is speed and safety.

Per contra, an empirical study handled in Singapore by Agarwal (2007) has showed that merely offering wide range of services does not attract many users, especially when they do not have real use of them; hence variety of services was insignificant in influencing perceived value (Mardikyan et al., 2012; Agarwal, 2007).

2.4.2. Perceived ease of use (PEOU)

Davis in (1989) claims that the more likely the application is perceived easier and clear to understand, the more it is accepted by users. PEOU is one of the major determinants of behavioral intention towards adopting 3G mobile services. In addition, PEOU directly affect PU as the increased easiness increases job performance (Davis, 1989; Mun and Yi, 2003; Kuo and Yen, 2009).

A study conducted in Malaysia by Suki (2011); found that users have learned quickly how to use 3G. Similarly, another research by Pagani (2004) in Italy showed that consumers' interest in 3G enhance the PEOU. Also, it was concluded in a study handled in Taiwan that the rise of ease of use positively affects consumers' attitude, which in turn positively affect their behavioral intention to use 3G value-added services (Kuo and Yen, 2009; Muhammad et al., 2016; Pagani, 2004; Suki, 2011; Velmurugan, 2014).

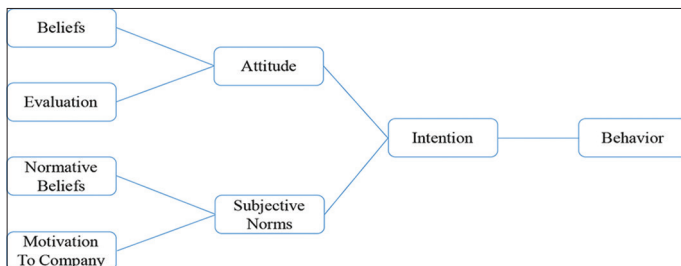
2.4.3. Attitude

The behavior addressed in this study is the use of 3G cellular data services. The variable is attitude toward the intention to use 3G value added services, as it's one of the key determinants to consumers' adoption behavior, and was found valuable in predicting usage behavior (Velmurugan, 2014; Li, 2010; Phuangthong, 2005). Compelling evidences from several studies, it was found that attitude has a positive influence on consumers' intention to use 3G cellular data services, and is used heavily in predicting consumers' behavior. It was concluded that using 3G Technology services is a good idea that lead to good attitude (Phuangthong, 2005; Suki, 2011). In a research conducted by Garg (2011) in Botswana in Africa targeting 125 faculty of science students has founded that 50% of the participants has positive attitude towards the usage of 3G mobile services (Garg, 2011).

2.4.4. Subjective norms

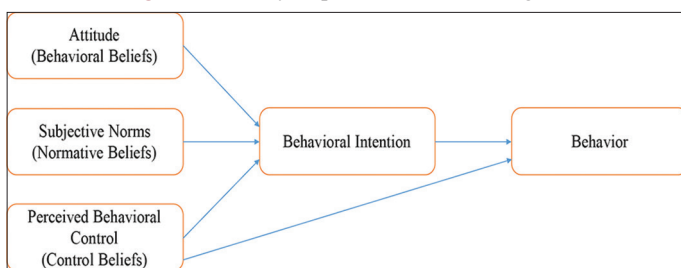
Subjective norms were proved to have an influence on users' behavioral intention to adopt 3G Mobile data services, especially in early stages. Taylor and Todd (1995) said that subjective norms have been found to be more important prior to, or in the early phases of usage. As long as users have limited information and experience to from an attitude towards it. Yang (2006) pointed; consumers may believe that their families, peers,

Figure 1: Theory of reasoned action diagram



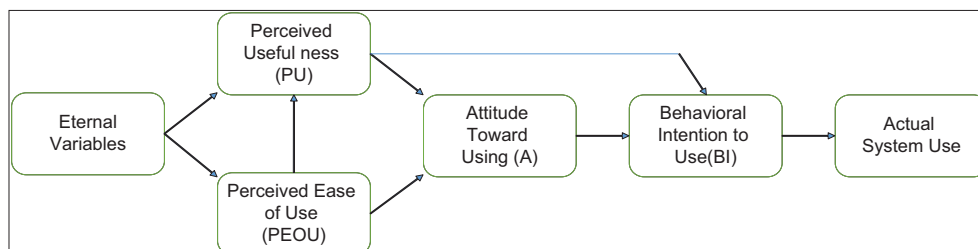
Source: Theorizeit.org

Figure 2: Theory of planned behavior diagram



Source: Theorizeit.org

Figure 3: Technology acceptance model



Source: Theorizeit.org

and friends would favor certain mobile behavior; as well their belief tends to affect their usage behavioral intention. A study conducted in Turkey by (Mardikyan et al., 2012) found that social influence increased consumers' willingness to use 3G Cellular data services (Mardikyan et al., 2012; Yang, 2006; Taylor and Todd, 1995).

In a comparison study conducted by Yang (2006) between American and Korean consumers, he found that subjective norms were significant in their effect on Americans' attitude and intention to use mobile data services, but not on Koreans'. Similar study by Muhammad et al. (2016) concluded that subjective norms were insignificant on Nigerian behavioral intention to use 3G services. In addition, Lu and others in Texas found that social influence doesn't form an important direct effect on the intention to use wireless mobile technology (Yang, 2009; Muhammad et al., 2016; Lu et al., 2005).

According to a study handled in Taiwan by Wu, using the unified theory of acceptance and use of technology (UTAUT) model founded that social influence directly influence the actual usage behavior (Wu, 2007).

2.4.5. *Perceived behavioral control (PBC)*

PCB reflects individuals' perception and belief of constraints or facilitation that affect the adoption of an innovation. Thus, PBC control is considered a significant antecedent on consumers' behavioral intention to use 3G mobile data services.

According to a comparative study conducted by (Song, 2010), he explored the difference among consumers' intention to adopt 3G within three regional cities in China. Song developed a measure for PBC through different variables such as; cost and quality concern. Result has shown that PBC influence the adoption of 3G services, cost has a negative influence due to high expense. On the other hand, consumers have concerns regarding the quality of 3G devices and services in the Chinese market, especially coverage area (Song, 2010).

Supporting pervious study findings, the cost of 3G services that consumers are willing to pay forms a constraint on the behavioral adoption among Indians. While the quality perceived is significantly affecting consumers' attitude towards using 3G mobile services. Together with a study targeted Chile, adopters of mobile data services attempt to assess perceived cost with its perceived value in order to determine the worthiness of adoption (Singh et al., 2010; Rao, 2007).

2.4.6. *Perceived enjoyment*

Perceived enjoyment was labeled under intrinsic motivation in TAM model. It is defined as "*the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated*" (Venkatesh, 2000). Perceived enjoyment is related to the perception of pleasure, satisfaction, entertaining, and liking associated with the use of certain technology device or service. It was found in a study conducted by Heijden (2001) in The Netherlands that enjoyment has a high effect on users' attitude

towards the usage of websites using the TAM model. Another research handled in China by Liu and Li (2011) confirmed that the enjoyment construct have a significant effect on both attitude and intention to adopt mobile hedonic services, specifically mobile gaming. Further, it was concluded that consumers evaluates the services not only by the expected functional performance and its cost, but also in terms of pleasure they receive. On the other hand, Kim et al. (2005) conducted a study in Singapore to examine the adoption of mobile internet, found that perceived enjoyment was insignificant in affecting MI users. They measured perceived enjoyment by joy and fun instruments. In addition, Suki and Suki conducted a study in Malaysia found that PE in not significant in affecting BI (Heijden, 2001; Liu and Li, 2011; Sweeney and Soutar, 2001; Kim et al., 2005; Suki, 2011).

3. RESEARCH MODEL AND RESEARCH METHODOLOGY

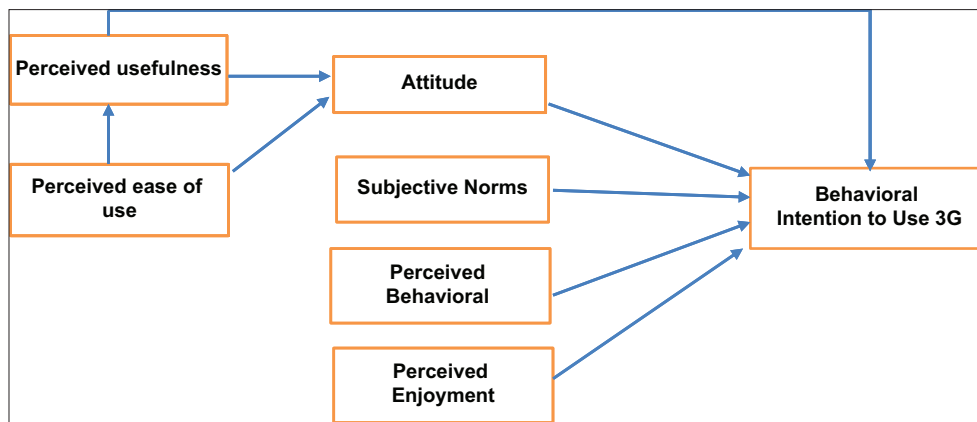
The purposes of this section are to specify the proposed research model, to develop the hypotheses for testing, and to describe the research methodology.

3.1. Proposed Research Model

Based on the literature, theories and models have assisted in identifying and explaining the most influential factors that affect consumers' intention to adopt and use 3G mobile data services, by using the theory of acceptance model and the theory of planned behavior.

The adapted research model for testing would be based on seven constructs (the six concepts and the intention to use). Perceived usefulness and ease of use were derived from TAM model. On the other hand, the remaining three constructs were derived from TPB including attitude, subjective norms, and behavioral control. In addition, perceived enjoyment was added to the model as an external variable in order to assess its importance on individuals' adoption intention towards using 3G mobile services.

The dependent variable in the research model is the behavioral intention to use 3G mobile services. Intention is assumed to be the immediate antecedent of behavior. People are expected to implement an action when they have an opportunity; in this case to use 3G mobile data services. As mentioned previously in TPB theory, its three main constructs lead to the formation of behavioral intention (Ajzen, 2002). In this regard, the independent variables are: perceived usefulness, perceived ease of use, subjective norms, enjoyment, and perceived behavioral control. In addition, PEOU is considered in TAM as a direct determinant of perceived usefulness (Davis et al., 1989). On the other hand, where other things held constant, the less complexity a system is to use, the more it can increase job performance (Venkatesh and Davis, 2000). The change in attitude depends on both PU and PEOU. An individual with strong believes and perceptions that a positive result will be gained from performing the behavior will have a positive attitude towards this behavior. Therefore, the relationship between perceived usefulness and behavioral intention to use 3G mobile services is mediated by attitude. In addition, the relationship

Figure 4: Proposed research model

between perceived ease of use and behavioral intention to use 3G mobile services is mediated by attitude. The proposed research model is illustrated in Figure 4.

3.2. Hypothesis Development

This part includes the hypotheses that were proposed based on the available literature and theoretical framework. The eight hypotheses for testing are as follows:

- H₁: Perceived ease of use has significant influence on perceived usefulness to use 3G mobile services.
- H₂: Perceived Usefulness has significant influence on the attitude towards using 3G mobile services.
- H₃: Perceived usefulness has significant influence on the behavioral intention towards using 3G mobile services.
- H₄: Perceived ease of use has significant influence on the attitude towards using 3G mobile services.
- H₅: Attitude has significant influence on the behavioral intention to use 3G mobile services.
- H₆: Subjective norms have significant influence on the behavioral intention to use 3G mobile services.
- H₇: Perceived behavioral control has significant influence on the behavioral intention to use 3G mobile services.
- H₈: Perceived Enjoyment has significant influence on behavioral intention to use 3G mobile services.

3.3. Methodology

The purpose of this study is to examine the impact of introducing 3G cellular data services on individuals' behavior in Bethlehem Governorate, Palestine. A descriptive exploratory approach is used to understand an area of interest, and was selected for this study to describe and explore consumers' beliefs and perceptions towards using 3G mobile data services. In the following section, measurements of the dependent and independent variables are discussed in details.

3.3.1. Measurement item selection

The purpose of item selection is to achieve accurate estimates for each factor in the research model by identifying items from existing scales, and when necessary, by creating additional instruments that fit the constructs' operational definition. The structural model includes a set of constructs and their corresponding measures. The following variables are hypothesized to affect users' perceived ease of use:

- Simple and clear
- Easy to use 3G mobile service
- Using mobile applications became easier after launching 3G
- Easy to understand.

While the variables that are hypothesized to influence users' usefulness:

- Increase job performance and effectiveness
- Improve academic performance
- Useful in research.

In addition, variables predicted to have influence on subjective norms are:

- The effect of peers, families, and friends perceptions and preferences on the use of 3G mobile data services
- Gaining social role.

Moreover, attitude construct will be measured by respondents' evaluation on how favorable or unfavorable is the using 3G mobile services, and whether users prefer WIFI over 3G mobile data services. Although, enjoyment is measured by the following instruments:

- Entertainment
- Interesting
- Mean to fill free time.

Davis claims that the higher the level of perceived control the stronger is a persons' intention towards performing that behavior. Hence, Cost and quality concerns are the two concepts identified to examine perceived constraints that affect consumer's intention to use 3G mobile services. Cost concern concept represents the total price paid for using 3G mobile services which include subscription fees and economic feasibility. While, quality concerns exhibits potential users' perception and assessment of service coverage, speed, and service quality (Ajzen, 2002).

The final instrument items used to measure each variable are summarized in Table 1 with the references indicating their resources.

3.3.2. Data collection method

It is defined as the process of collecting information on targeted variables from relevant sources to crystallize the research problem,

Table 1: List of instrument items

Factor	Measurement	Reference
Perceived ease of use	Ease to use 3G	(Suki, 2011)
	Ease to use apps with 3G	(Velmurugan, 2014)
	Ease to understand	(Davis, 1989)
	Simple and clear	(Davis, 1989)
Perceived usefulness	Increase job performance and effectiveness	(Davis 1989)
Subjective norms	Useful in research	(Researcher)
	Gaining social role	(Yang, 2006)
	Effect of friends	(Yang, 2006; Lu et al., 2005; Taylor and Todd, 1995)
	Effect of peers	(Yang, 2006; Taylor and Todd, 1995)
Perceived enjoyment	Effect of family	(Yang, 2006)
	Interesting	(Suki, 2011) (Kim et al., 2005)
	A way of entertainment	(Song, 2010; Sweeney and Soutar, 2001)
Perceived behavioral control	Enjoy the free time	(Researcher)
	Subscription fees	(Agarwal, et al., 2007) (Kim, et al., 2005)
	Cost	(Song, 2010)
	Economic feasibility than WIFI	(Researcher)
	Quality concerns	(Song, 2010)
	Service coverage	(Song, 2010)
	Speed	(Mardikyan et al., 2012; Agarwal et al., 2007; Pagani, 2004)
	Service offering	(Pagani, 2004)
Attitude	Favorability to use	(Suki, 2011)
	Preferred over WIFI	(Researcher)
Behavioral intention	Intention to use in the next 6 months	(Song, 2010)
	Intention to frequently use	(Kim et al., 2011)

Source: By researcher as indicated

and achieve the overall objective of the research. Primary and secondary data were used in this research. First of all, primary data represents data collected from original sources for the specific objective of the research. Semi-structured interview was used to better understand the research topic and to determine the most influential variables. In addition, Questionnaire is the second method used in this study. It was personally administer in order to ensure collecting complete responses in companies and stores' show rooms, hospitals, as well as universities. Questions tapped the dimensions and elements of the concept for the purpose of measuring individuals' beliefs, perceptions, and attitudes towards using 3G data services. Furthermore, the questionnaire design included an introduction, demographic information that helps to describe the sample characteristics and measure the difference between respondents' answers. The information included gender, age, academic qualification, average monthly salary, occupation, address, and application usages by smart phone.

While scale questions were used based on Likert scale, where respondents need to answer based on a scale from strongly agree to strongly disagree. The second part of the questionnaire aims to specify the type of the relationship whether it is positive or negative and compare it with the studies discussed in the literature review. The last part consisted of a comparison between the second and third generation based on five criterions. The purpose of this part is to answer the first question of this study (Sekaran and Bougie, 2016).

Respecting language, questionnaire was translated to Arabic to ensure that it is well understood by respondents. Moreover, forty questionnaires were used as a sample pilot to ensure that it's understandable, well-structured with high level of reliability and validity.

Secondly, secondary data represents data being reused. This research used periodicals, books, articles, and statistics from the Palestinian Central Bureau of Statistics (2016).

3.4. Data Analysis Method

Two types of statistical programs were used to achieve the study objectives and answer its questions. The first was the statistical package for social sciences (SPSS) version 20. This was used to generate the following statistical analysis (Panayides, 2013):

- Cronbach's Alpha equation to ensure the reliability of the study tool
- Person Correlation coefficient to verify the internal validity of the study
- The means, standard deviations, and frequencies
- Independent sample t-test, F-test one way ANOVA, Least significant difference (LSD).

The second program was the Smart PLS 3.2 to analyze the structural equation model (SEM). It is known as one of the covariance - based methods, which it is widely adopted by social science researchers. In addition, PLS is a technique used in SEM-based analysis that is used for theory confirmation and testing relationships among factors (Chin, 1998).

The justification for using the SEM is that it's considered one of the most popular research methods that have been widely used in marketing and consumer behavior researches (Song, 2010; Noyan and Simsek, 2012).

3.5. Sampling Design

In general, population in statistics represents all the subjects of the study. Population includes elements that represent individuals who will participate in the research. In specific, this research population includes all 3G users in Bethlehem

Governorate in order to examine the factors that influence their usage intention.

The main idea of sampling is to be representative and non-bias. To achieve this, the study targeted 3G users in Bethlehem Governorate due to its special social, religious, and geographic characteristics; as it's surrounded by Israeli settlements. Bethlehem Governorate is consisted of three main cities (Bethlehem, Beit Jala, and Beit Sahour). In addition, there are three minor cities (Al Doha and, Obeideiah Al Khader), and a number of villages, and three refugee camps. The questionnaire focused on users who benefits from 3G services, provided by local telecommunication companies and excluded who benefits from other providers especially Israelis' companies. The main reason is to avoid bias due to the significant difference between the services provided. Simple random sampling is one of the types of probability sampling strategy. It is adopted in this research as every element in the population is known and has an equal chance to be selected. In addition, this strategy offers the least bias and the most generalizability (Sekaran and Bougie, 2016).

It is recommended to have a sample size of 384 respondents for population more than 75000 members. The formula for calculating the sample size was not applicable since the number of 3G mobile services users is not known. However, 402 samples were distributed (Sekaran and Bougie, 2016).

4. DATA ANALYSIS AND RESULTS

This section describes data analysis and research findings. Data analysis aims to identify the sample characteristics, in depth exploration of the difference among respondents groups. In addition, it examines the relationships between the six constructs and behavioral intention to use 3G cellular data.

4.1. Sample Characteristics

Four hundred and two participants answered the questionnaire from different areas in Bethlehem Governorate. Table 2 illustrates the characteristics of participants according to the demographic distribution.

According to gender 203 were males with a percentage of 50.5%, while 199 were females with a percentage of 49.5%. The majority of respondents' ages were <30 years old with a percentage of 59%. 103 participants were between the age (30-40) with a percentage of 25.6%. The remaining participants were between the ages (41-50) and more than 50 years old, with a percentage of 10.7% and 4.7% respectively.

Concerning the academic qualification distribution of the 402 respondents, it was found that the number of participants who have diploma were 66 with a percentage of 16.4%, 219 participants have bachelor degree representing a percentage of 54.5%, 48 participants have master degree with a percentage of 11.9%, 5 participants have PhD with a percentage of 1.2%, and 64 participants have chosen the option other than that represents 15.9%.

Table 2: The characteristics of respondents based on the demographic distribution

Number		Frequency	Percentage
1	Gender		
	Male	203	50.50
	Female	199	49.50
2	Age		
	<30	237	59.00
	30-40	103	25.60
	41-50	43	10.70
	More than 50	19	4.70
3	Academic qualification		
	Diploma	66	16.40
	Bachelor degree	219	54.50
	Master degree	48	11.90
	PHD	5	1.20
	Other	64	15.90
4	Average month salary		
	<2000 NIS	144	35.80
	2000-4000 NIS	161	40.00
	4001-6000 NIS	61	15.20
	6001-8000 NIS	23	5.70
	More than 8000 NIS	13	3.20
5	Occupation		
	Employee	213	53.00
	Free business	54	13.40
	Student	112	27.90
	Other	23	5.70
6	Address		
	Bethlehem	70	17.40
	Beitjala	74	18.40
	Eastern countryside	61	15.20
	Beitsahoor	106	26.40
	Refugee camps	32	8.00
	Western countryside	13	3.20
	Al-Doha	39	9.70
Al-Khader	7	1.70	

Based on the average monthly income distribution in New Israeli Shekel (NIS), it was found that the highest percentage earned a salary between (2000 and 4000) NIS with a percentage of 40%. While the rest earned monthly income <2000 NIS, between (4001 and 6000) NIS, (6001 and 8000) NIS, and more than 8000 NIS according to the following percentages in order 35.8%, 15.2%, 5.7%, 3.2%.

The majority of participants were employees with a percentage of 53%; fifty four of them were working in free businesses representing 13.4% of the sample, 112 was students representing 27.9%, and the rest have chosen other with a percentage of 5.7%.

At last, all participants selected for this study resided in Bethlehem Governorate. The majority were living in Beitsahoor City with a percentage of 26.4%. While the remaining were living in Bethlehem, Beitjala, Eastern countryside, refugee camps, Western countryside, Al-Doha, and Al-Khader representing the following percentages 17.4%, 18.4%, 15.2%, 8%, 3.2%, 9.7%, and 1.7% respectively.

4.2. Smart Phone Application Usage

This part of the questionnaire aimed to highlight the most used applications by participants. Thirteen widely used applications were ranked by 3G data services users by applying 5 rank scales

from very high to very low based on the following measures to interpret the result:

- Low for means <2.33
- Medium for means between 2.34 and 3.66
- High for means >3.66.

Means and standard deviation statistical tests were executed to rank application usage by smart phones in descending order as shown in Table 3.

The highest used applications based on Table 3 are social media apps, phone calls, and web browsing with means 4.23, 4.01, and 4 respectively. While the lowest means were for travel apps, mobile shopping and mobile banking with means 2.34, 2.58, and 2.65 respectively. The coefficient of variation exhibits that less variability in social media applications, phone calls and Web browsing compared to high variability in mobile banking, mobile shopping and travel applications.

4.3. Analysis of Variance (ANOVA) Test

One way analysis of variance (ANOVA) is a statistical technique that was used to assess if there is a statistically significant differences in the dependent variables with respect to demographic factors (gender, age, academic qualification, salary, occupation, location of residencies). The F-ratios and the associated probability P-value were calculated to determine the existence or absence of differences among different groups.

Once the P-value associated with the F-ratio is smaller than 0.05, the means of all the groups are not equal. This required the use of *post-hoc* tests such as t-test and Fisher's least significant difference (LSD) to figure out which groups are different from each other.

In addition, independent sample t-test is used to determine whether there is a statistically significant difference between the gender groups regarding all constructs. While LSD was used to provide additional exploration of the difference among means to provide specific information on which means are significantly different from each other. LSD was applied on the remaining demographic data along with the dependent measures.

Table 4 summarizes the ANOVA, t-value, F-value, and their significance level to determine whether there are differences in the dependent variable by a demographic group.

To conclude, there were statistically significant differences between age groups means regarding PU and BI. Concerning academic qualification, there was a statistically significant difference between the groups' means with the PU construct. In addition, there was a statistically difference among salary groups with PU. At last, there were statistical differences between location address with PEOU, SN, BI, and attitudes. These results should be highly considered in formulating marketing strategies. For example, since there significant variations in the PU with respect to age, cellular companies should design different packages to their customers (age segmentations).

Table 3: Arranged application usage means and standard deviation by descending order

Application	Mean	Standard deviation	Degree	Coefficient of variations
Social media apps	4.23	0.914	High	21.6
Phone calls	4.01	1.136	High	27.7
Web browsing	4.00	0.907	High	22.6
Watching films and listening to music	3.59	1.233	Medium	34.3
E-mail	3.53	1.205	Medium	34.1
Download files	3.31	1.211	Medium	36.6
Games	3.27	1.315	Medium	40.2
Reading books, articles, and magazines	2.94	1.131	Medium	38.46
Home control systems apps	2.84	1.469	Medium	51.7
GPS	2.80	1.259	Low	44.9
Mobile banking	2.65	1.345	Low	50.7
Mobile shopping	2.58	1.298	Low	50.3
Travel apps	2.34	1.293	Low	55.3

Table 4: ANOVA, t-test, and their significant level

Demographic factor/ variables	T-test/ Significant level	Perceived ease of use	Subjective norms	Perceived usefulness	Perceived enjoyment	Perceived behavioral control	Behavioral intention	Attitude
Gender	T	-0.363	-0.071	-0.503	1.050	0.827	-0.458	-1.305
	Sig.	0.717	0.944	0.615	0.294	0.409	0.647	0.193
Age	F	2.020	1.368	2.974	2.232	1.719	2.999	0.441
	Sig.	0.111	0.252	0.032**	0.084	0.163	0.031**	0.724
Academic qualification	F	1.889	0.233	3.094	0.545	1.513	2.042	1.014
	Sig.	0.112	0.920	0.016**	0.702	0.198	0.088	0.400
Salary	F	0.790	0.499	3.448	0.455	0.847	1.861	1.075
	Sig.	0.532	0.737	0.009*	0.769	0.496	0.117	0.369
Occupation	F	2.253	1.484	0.394	1.818	1.525	0.279	1.305
	Sig.	0.082	0.218	0.757	0.143	0.208	0.841	0.272
Location of residency	F	2.746	2.178	1.325	1.377	1.047	4.548	2.887
	Sig.	0.009**	0.035**	0.237	0.213	0.397	0.000**	0.006**

4.4. Partial Least Square (PLS) - SEM

The structural equation model is divided into a measurement model and a structural models. The measurement model which is also called the outer model used to test validity and reliability of measurement items and constructs in the model that was tested previously using the SPSS. The structural model which is also called the inner model is used to specify the relationships among constructs. (Song, 2010).

The standardized root mean square residual (SRMR) was used to evaluate the overall fit of models' structure. SRMR is "the square root of the sum of the squared differences between the model-implied and the empirical correlation matrix" (Henseler et al., 2016. p. 9). Therefore, the SRMR for the model was 0.082 which adequate as proposed by Henseler et al. (2016).

Figure 5, presents graphical description of the path coefficients of the structural model and the coefficient of determination (R^2) of the latent variables (not directly measured). This was accounted for 22% of the variance in perceived usefulness, 4.2% of the variance in Attitude, 39% of the variance in Behavioral Intention. For the whole model, the R^2 is equal to 39% which mean that 39% of the independent variables (IV) perceived usefulness, perceived ease of use, attitude, subjective norms, and perceived behavioral control were good in predicting the dependent variables (DV) behavioral intention. According to perceived usefulness, the variables of perceived ease of use explain 22% of the variance on perceived usefulness. However, the variables of perceived usefulness and perceived ease of use together explain 4.7% of the variance on attitude. In addition and according to behavioral intention, 39% of the variance on behavioral intention was explained by perceived

usefulness, perceived ease of use, attitude, subjective norms and perceived behavioral control.

4.5. Comparison between 2G and 3G

The questionnaire was used to determine the difference between the second and third generation of mobile data services. It consisted of (5) items, by using 5 ranks for answers (Strangely agree = 5, agree = 4, nature = 3, disagree = 2, strongly disagree = 1). As illustrated in Table 5.

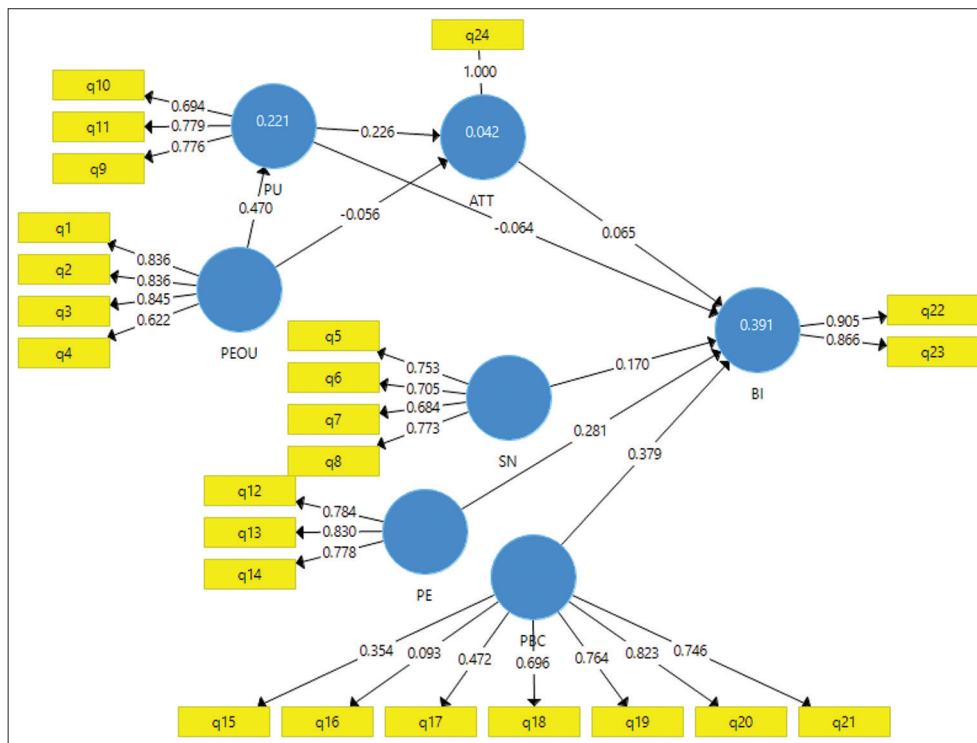
The third generation of 3G mobile data services is preferred by users over the second generation based on the criterions shown on Table 5. Means had high degree and low variability for all items, coverage got (4.08), features (4.01), speed (3.98), compatibility (3.89), and security (3.87). The coefficient variations showed relatively the same level of variability. However, variability in the security factor was relatively greater than other factors.

4.6. Hypotheses Testing

Based on the results of the structural model testing, bootstrapping test was used to check if the t-value in greater than $z = 1.96$ for 2- tailed which is equivalent to $P < 0.05$ in order to accept or reject the hypotheses. While the type of relationships and their effect sizes were determined by the path coefficient's estimation as shown in Table 6.

Hypothesis one stated that perceived ease of use has significant influence on perceived usefulness to use 3G mobile services. Analysis results supported this hypothesis as path coefficient (β) = 0.470, $t = 10.998$ which means that perceived usefulness has a positive significant influence on perceived ease of use. Hence, the first hypothesis was supported. The result is

Figure 5: Structural equation model



Source: Researcher

Table 5: Comparison between 2G and 3G by arrange items depending on means

Item	Mean	Standard deviation	Degree	Coefficient of variations
Coverage	4.08	0.917	High	22.5
Features	4.01	0.875	High	21.82
Speed	3.98	0.849	High	21.4
Compatibility	3.98	0.872	High	21.9
Security	3.87	0.937	High	24.21

Table 6: Estimated path coefficients estimations and its t-value

Number of hypothesis	From	To	Path coefficient's estimation (β)	t-value	Hypothesis support
H 5	ATT	BI	0.065	1.356	No
H 7	PBC	BI	0.380	7.406	Yes
H 8	PE	BI	0.281	5.010	Yes
H 4	PEOU	ATT	-0.056	0.903	No
H 1	PEOU	PU	0.470	10.998	Yes
H 2	PU	ATT	0.226	3.568	Yes
H 3	PU	BI	-0.064	1.269	No
H 6	SN	BI	0.170	3.517	Yes

consistent with those of previous studies (Davis, 1989; Kuo and Yeng, 2009).

The second hypothesis proposed that perceived usefulness has significant influence on the attitude towards using 3G mobile services. Table 6 proved that perceived usefulness is related to attitude (path coefficient [β] = 0.226, $t = 3.568$) which means that perceived usefulness has a positive significant influence on attitude. These results match those of previous studies (Davis, 1989; Kuo and Yen, 2009).

Hypothesis three examined the existence of significant influence from perceived usefulness on the behavioral intention to use 3G mobile data services. Results found that there was no statistically significant effect as path coefficient (β) = -0.064, $t = 1.269$. Therefore, the hypothesis was rejected. The results were inconsistent with TAM hypothesis and previous studies. (Pagani, 2004; Mardikyan et al., 2012; Suki, 2011; Muhammad et al., 2016) except for Kuo and Yen (2009) study.

The fourth hypothesis stated that perceived ease of use has a significant influence on attitude towards using 3G mobile services. Analysis results showed that PEOU is not related to attitude as the path coefficient (β) = 0.056, $t = 0.903$. Consequently the hypothesis was rejected. The results contradict with studies mentioned in the literature review. This may be attributed to the lack of guidance and knowledge on how to use this technological service. (Kuo and Yen, 2009; Muhammad et al., 2016; Pagani, 2004; Suki, 2011; Velmurugan, 2014).

The fifth hypothesis examined whether attitude has a significant influence on the behavioral intention to use 3G mobile services. Based on the analysis of the results, it was found that attitude is not related to BI to use 3G (path coefficient (β) = 0.065, $t = 1.356$) and for that reason the hypothesis is rejected. The results contradict

with researches in the literature review by Phuangthong, 2005; Suki, 2011, and Garg, 2011. This result may be attributed to respondents' preference of WIFI over 3G.

The sixth hypothesis stated that subjective norms have significant influence on the behavioral intention to use 3G mobile services. The results demonstrated that this hypothesis was supported with path coefficient (β) = 0.170, $t = 3.517$. This means that SN positively affects BI to use which was consistent with Wu (2007) and Mardikyan et al. (2012). While Muhammad (2016) found that SN was insignificant on Nigerian BI to use 3G mobile services. Whereas Yang (2006) concluded that SN affected significantly Americans BI but not Korean 3G users.

Hypothesis seven assumed that PBC has significant influence on the behavioral intention to use 3G mobile services. It was found that PBC positively influence BI with path coefficient (β) = 0.380, $t = 7.406$. Thus, the hypothesis was supported. However, results do not substantiate studies on PCB (Song, 2010; Singh, 2010; Rao, 2007) who have concluded that PCB significantly influences the BI to use 3G mobile services.

At last, hypothesis eight supposed that PE has a significant influence on BI to use 3G mobile services. The results indicated that PE positively affected BI with path coefficient (β) = 0.281, $t = 5.010$. Accordingly, the eighth hypothesis was supported. Liu and Li (2011) and Suki (2011) results were compatible while Hee-Wong et al. (2005) findings were inconsistent.

In conclusion, the highest effect was the influence of PEOU on PU with 0.47 path coefficient. The effect of PBC on BI to use 3G mobile data services came in the second place with 0.38 path coefficient. This was followed by the effect of PE on BI to use 3G, PU on attitude, and SN on BI to use 3G respectively with the following path coefficients 0.281, 0.226, and 0.17.

5. CONCLUSIONS

The major findings of this research were accomplished from testing the hypotheses about the six constructs affecting the behavioral intention to use 3G. Perceived behavioral control, perceived enjoyment, and subjective norms are the major constructs that significantly affect behavioral intentions.

This study contributed in analyzing the factors that influence Palestinian consumers' intention to use 3G. This contribution would benefit local provider companies to improve their marketing strategies to encourage 3G acceptance and usage. Therefore, providers should focus on promotion in order to communicate the features and benefits of 3G cellular data. Raising awareness should call up towards this service to make it more convenient to use. In addition, providers should focus on promoting the applications that could be used by the 3G services.

Service providers may need to pay attention to perceived behaviors. They should position the offered services in a way that take into account the quality of the service, coverage, and speed. Consequently, appropriate pricing strategies should be considered

in order to reduce perceptions of high subscription fees compared with Israeli cellular data providers.

The research results revealed that users are affected by subjective norms, which may indicate that the “the word of mouth” influence their usage decision. Therefore, based upon the research results it is recommended to concentrate on the enjoyment aspects. Promotion campaigns should build a proper image about the pleasure and entertainment that are associated to using 3G. However, advertising is considered the main element of promotion because it can reach large audience. They should concentrate on internet advertising such as digital marketing channel. In fact, social media applications are highly used by Palestinian users. In addition, information advertising to inform customers about 3G packages and services should be applied along with reminder advertising to stimulate users to continue purchasing the offered packages.

At last, the investment in 3G cellular data services, which took a long time, Palestinian customers do not have gained options and preferences compared to services offered by Israeli providers. Thus, local telecommunication companies should offer competitive and motivating services to increase usage rates. In addition, The Ministry of Communication and Information Technology should monitor prices periodically besides monitoring the offered services and emphasizing that it meets customers' needs. In addition, the Ministry should devote part of its resource for raising the awareness about these services at both individuals and business levels.

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