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The Effect of Facebook Marketing on Brand Engagement: The Role of Demographics and Psychographics An Empirical Study on Smartphone Users in Egypt

Abstract

Social media are increasingly finding a place for themselves in all aspects of our lives. Social media are being extensively used as a platform to conduct marketing and advertising activities (Alalwan, 2018). However, there is always a challenge in how organizations can figure out the results of Facebook marketing (Costa et al, 2018). Therefore, this study aimed to determine the effect of Facebook marketing on brand engagement among smartphone users in Egypt, moreover, to identify the effect of some demographics and psychographics on this relationship. Ex-post facto design has been chosen to achieve the research objectives. A questionnaire has been designed and a cluster sample consisting of 502 smartphone users have been surveyed. Results showed that Facebook marketing significantly affects brand engagement, moreover, smart-phone users' age, income, and education significantly affect this relationship. Finally, smartphone users' psychographics significantly affected this relationship.

Keyword: Facebook Marketing, Brand Engagement, Demographics, Psychographics, Smartphones, ex post facto design.

المخلص

لقد نمى في الفترة الأخيرة استخدام مواقع التواصل الاجتماعي بشكل متزايد لتنفيذ أنشطة التسويق والإعلان (Alalwan, 2018)، ومع ذلك، فإن هناك تحدٍ دائم في كيفية الاستفادة من مواقع التواصل الاجتماعي في التسويق واستخداماتها المثلثي (Costa et al, 2018)، لذلك، هدفت هذه الدراسة إلى تحديد تأثير التسويق عبر موقع فيسبوك على الارتباط بالعلامة التجارية بين مستخدمي الهواتف الذكية في مصر، علاوة على ذلك، تحديد تأثير بعض العوامل الديموجرافية والسيكوجرافية على العلاقة بين التسويق عبر موقع فيسبوك والارتباط بالعلامة التجارية، وقد تم اختيار منهج الدراسة البعديّة Ex-post facto لتحقيق أهداف الدراسة الحالية، وتم اختيار العينة العنقودية (المساحية) لتحقيق هذه الأهداف، تم تصميم قائمة استقصاء لقياس متغيرات الدراسة و تم تلقي 502 قائمة استقصاء صالحة للتحليل، ولقد أظهرت النتائج أن التسويق عبر موقع فيسبوك يؤثر معنويًا على الارتباط بالعلامة التجارية بين مستخدمي الهواتف الذكية في مصر، علاوة على ذلك، فإن العمر و الدخل و مستوى التعليم يؤثران بشكل معنوي على العلاقة بين التسويق عبر موقع فيسبوك و الارتباط بالعلامة التجارية، وأخيرًا، تؤثر العوامل السيكوجرافية على العلاقة بين التسويق عبر موقع فيسبوك و الارتباط بالعلامة التجارية لدى مستخدمي الهواتف الذكية في مصر.

الكلمات المفتاحية: التسويق عبر فيسبوك، الارتباط بالعلامة التجارية، العوامل الديموجرافية، العوامل السيكوجرافية، الدراسة البعديّة Ex-post facto.

1/ Introduction

In less than two decades, social networking has become a global phenomenon that is attractive to both individuals and corporations (Ouoba, 2011). Indeed, 3.196 billion are on social media out of 4.021 billion on internet (Annual Digital Report, 2018), therefore, countless consumers and potential consumers can be reached through various digital channels: emails, social networking sites, blogs and microblogs, peer review or referral sites, and social content sites. Hence, more companies are encouraged to use social media as more people are joining social network sites which offer simple and inexpensive means to market brands and communicate customers.

Many organizations use social media to promote their products, as well as simply share information (Golijan, 2011) as it is an ideal form of communication to reach a large audience as well as specific targeted audience that do not require any financial resources (Pring, 2012). Social media bring an interesting dynamic to the sales and marketing interface at which customers want to voice their concerns and want to be educated on products and services as a move from passive to active presence, (Liu, 2012; Marshall et al., 2012).

Future consumer marketing will largely be carried out in digital settings, particularly social media (Stephen, 2016). With the increased use of social media marketing by several types of brands, it has become highly necessary to quantitatively analyze this phenomenon. Thus, studying the consequences

of social media (Facebook) marketing is the main purpose of this research targeting to spot more light on this new technological marketing communication strategy through investigating the effect of Facebook marketing on brand engagement.

Smartphones have become an inseparable part of our daily lives. Nowadays, smartphones and social media go hand in hand as 92.5% of global browsing social media is through smartphones (Annual Digital Report, 2018). In recent years, mobile devices have taken Facebook marketing to a whole new level as users continually choose to access their networks remotely, via smartphones, tablets, and laptops. Therefore, studying the effect of Facebook marketing on brand engagement among smartphone users in Egypt will enhance marketers' understanding and knowledge about consequences of Facebook marketing and factors affecting this relationship.

2/Literature review and hypothesis development

In the new age of information superhighway and new technologies, the old way of branding and marketing a product is unconventional and outdated (Alkhas, 2011). Traditional, non-targeted advertising via newspapers, magazines, radio, television, and direct mail were the only means of marketing a product where the messages are product focused- one way while they are now required to compete with new marketing strategies on the Web that is centered on interaction, information, education, and choice (Scott, 2007). The Web marketing is different, instead of one-way interruption; it is ab-

out delivering useful content at just the precise moment that a buyer needs it. The feedback from customers has also become vital for businesses because customers are not able to share opinions on the web where other customers can also see this feedback (Alkhas, 2011).

Social media users are involved together in sharing, linking, collaborating, and producing online content using text, photo, audio, and video (Ioakimidis, 2010). Social networks also provide opportunities to marketers including the ability to listen to fans, respond to them, discuss issues, reach common understandings, and in due course, strengthen long-term relationships (Williams & Chinn, 2010). The more an organization or brand has publics talking about how great they are, or trustworthy, or responsible, or insightful, the more the general public may perceive them as credible. These online conversations are called electric-word-of-mouth and are one of the strengths of social media marketing.

Social media marketing has been defined as "a philosophy and a business strategy, supported by a technology platform, business rules, workflow, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment" (Evans, 2010). This definition highlighted that social media marketing has different characteristics from traditional marketing, which ranging from establishment of communication with potential and current consumers, user generated classification, interactivity with consumers; to the

opportunity for consumers to take control of the content of information, communication or other related activities about a brand (Garnyte & De Ávila Pérez, 2009).

Empirical research regarding the specific use of social network sites has described user personalities and motivations for use (Ross et al., 2009); dimensions of uses and gratifications (Bonds-Raacke and Raacke, 2010); and consumers' response to branded communication on the sites in terms of advertiser credibility (Lee et al, 2011), involvement (Muntinga et al, 2011), its effect on spreading investment culture in Egypt (Galal, 2017), and effectiveness (Calder et al, 2009).

Previous studies concerning social media marketing aimed at assessing its usage and effectiveness (Marzouk, 2016 ; Ouoba, 2011), strategies (Chanthinok et al, 2015; Karimi and Naghibi, 2015; Lorenzo-Romero et al, 2013; Gordon, 2017), barriers and measurement (Michaelidou et al, 2011), public opinion formulation (Gazzar, 2013), considerations and implications (Botha, 2014), opportunities and challenges (Abeza, 2012), cultural, ethical and legal considerations (Amin et al, 2017), antecedents and consequences (Somali, 2018), and adoption models and stages (TsitsiChikandiwa et al, 2013). Another stream of studies focused on understanding how social media marketing impacts marketing-related outcomes, such as consumers' purchase intentions (Wang et al, 2012; Hutter et al, 2013), brand perceptions (Naylor et al, 2012), the selling environment (Marshall et al., 2012), company ROI (Fisher, 2009 ; Hoffman & Fodor, 2010), customer equity (Kim & Ko, 2012), brand aw-

areness (Hutter et al, 2013), and brand equity creation (Bruhn et al, 2012). Finally, social media marketing effect on business growth (Aloch, 2017) has been studied.

Although Facebook marketing is considered a new rapidly growing platform for building relationships with customers and forming positive image of brands in their minds, its impact on number of psychological and behavioral consequences is still missed. Brand engagement is a brand aspect that has attracted scholars' and practitioners' attention in the last few years. Nevertheless, how Facebook marketing can result in enhancing this aspect, in other words, Facebook marketing consequences in the terms of brand engagement is yet to be understood.

Brand engagement is increasingly gaining popularity among practitioners and academics as a prominent consumer-brand relationship construct mainly due to its potential to affect consumer behavior (Gambetti & Grafigna, 2010). Consumer brand engagement reflects an intense consumer bonding with a brand and represents a rewarding experience for a consumer that is positive and fulfilling (Dwivedi, 2015). It is **defined** as "the level of a consumer's cognitive, emotional and behavioral investment in specific brand interactions". Further, consumer brand engagement entails sustained interactions between consumers and brands (Hollebeek, 2011), leading to formation of psychological bonds that a consumer is likely to sustain in future. Moreover, a consumer may also refrain from switching to competing offerings (Oliver, 1999), as these may not offer the same rewarding relationship.

It entails that the consumer recommends products/services to others, frequently purchases products/services, provides frequent feedback on product/services issues, participates in product/service design, and is actively involved in online communities or user groups. While there is a stream of studies confirmed that there is a positive relationship between social media marketing and brand engagement (Malhotra et al, 2013; Barwise & Meehan, 2010; Barreda et al, 2015; Chamberlain et al, 2014), there are some researches confirming that there is no relationship between them (LaPointe, 2012; Traphagen, 2015). This contradiction highlights a scientific gap which requires more research and investigation and leads to the following hypothesis:

Hypothesis 1: Facebook marketing significantly affects brand engagement among smartphone users in Egypt.

It is clear from the literature review above that there is a scientific gap concerning the relationship between Facebook marketing and brand engagement; some studies proved that social media marketing affects brand engagement while other proved that there is no effect. Studying the same issue repeatedly will have limited contribution to social media marketing knowledge as the current study results will be added either to supporters or opponents. That pushed the researcher to think of a mediating or a moderating variable, its absence has led to this gap.

Demographics provide descriptive information about who product buyers are. Businesses owners need demographics to identify the ideal consumer for products or services and develop marketing strategies such as product packaging, advertisements, business location and pricing. Hustad & Pessier (1971) suggested that the value of demographic information is primarily in identifying whether a consumer has a basic need for a product and whether he is capable of purchasing it.

Demographic characteristics provide a relatively straightforward and reliable basis for segmentation (Assael, 2004; Engel et al, 2006; Koufaris, 2002; Straughan & Roberts, 1999), moreover, it has been shown to play a significant role in determining the behavior of individuals and web users (Girard et al., 2003; Korgaonkar & Wolin, 1999). Based on the previous argument, in the context of our study, some demographic variables (gender, age, marital status, income, education, and work status) will be examined to determine if they affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt. These demographic characteristics are most popular among researchers (e.g., Girona, 2014; Leung, 2012; Kim & Ko, 2012; Hassan, 2015) and they have a direct influence on consumers' lifestyle and behavior and represent individual consumer differences (Dayan et al, 2017). Therefore, the following hypotheses have been formulated.

Hypothesis 2: Consumers' gender affects the relationship between Facebook marketing and brand en-

gagement among smartphone users in Egypt

Hypothesis 3: Consumers' age affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt

Hypothesis 4: Consumers' marital status affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt

Hypothesis 5: Consumers' income affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt

Hypothesis 6: Consumers' education affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt

Hypothesis 7: Consumers' work status affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Demographic variables alone are generally not "powerful" predictors of individual or household behavior in the marketplace (Bieda and Kassarian, 1971). The limitation of studying demographics alone led to the development of psychographics. The new construct, psychographics -or commonly known as lifestyle- combines the virtues of demographics with the richness and dimensionality of psychological characteristics and depth research.

Psychographics are factors that contribute to explaining consumer be-

havior (Myrland et al, 2000; Olsen et al, 2007; Pieniak et al, 2008; Brunsø et al, 2009). They represent the internal influences that affect the consumer's decision-making process and consists of aspects about consumer's personality, buying motives, interests, attitudes, beliefs and values.

According to Engel et al (1990) psychographics are used to develop an in-depth understanding of market segments and therefore used for developing marketing strategies for brands. The purpose of the analysis is to "understand consumer lifestyles of the core consumers in order to communicate more effectively with people in that segment. However, knowledge about the role psychographics play in Facebook marketing usage is still missed. In addition, businesses get consumers' demographic, geographic, psychographic information from their Facebook profiles and target ads individually tailored to consumer (Hoy & Milne, 2010).

In conclusion, psychographics play an important role in consumer decision making process, can affect consumer perception of different marketing aspects, and examining psychographic constructs is extremely important in marketing research (Girona, 2014), but how could they mediate the relationship between Facebook marketing and its possible outcomes is yet uncovered. This argument leads to formation of the following hypothesis:

Hypothesis 8: Consumers' psychographics affect the relationship between Facebook marketing and brand engagement among smart-phone users in Egypt.

3/ Research problem

Facebook marketing is increasingly replacing traditional media marketing, and the buzz about these new marketing opportunities seems unlimited. So many facts can explain why social media (Facebook) is the mainstay of communication between business-to-business and business to consumer endeavors:

- In 2013, engaging through social media became the number one single online activity for individuals (Smith, 2013). More time is spent in social media than on entertainment and shopping combined, the next two largest time-consuming online activities (Experian, 2013).
- Studies showed that 15% of time spent on these devices is in social media (Experian, 2013). Additionally, mobile access has increased by over 60% within two years and older demographics, which some once discounted as individuals who would never adopt social media, have become some of the fastest growing populations on platforms such as Twitter, Facebook and Google+ (Bullas, 2013).
- It took television 13 years to reach 50 million households and internet service providers three years to sign their 50 millionth subscribers. However, it only took Facebook one year to attract 50 million users and Twitter only nine months (Chui et al., 2012).
- By the end of 2012, approximately 67% of all online adults with an online presence used social media sites. Facebook is now the largest social media site in the world, currently

hosting over 1.2 billion users—a number that continues to grow. Each day, Facebook processes 2.7 billion “Likes,” 300 million photos uploads, and 2.5 billion status updates and check-ins (Vance, 2012).

- Over 90% of people reportedly search for local businesses through Facebook and 71% are more likely to purchase from a brand they follow online (Bennett, 2013). Social media sites accounted for 22 per cent of online advertising spending during 2011 and nearly 60 per cent of US marketers and ad agencies planned to increase their spending on social media sites during 2012 (Advertiser Perceptions, 2012).

Although the use of social media sites such as Facebook and twitter by organizational leaders as a marketing communication tool is becoming increasingly a popular tactic (Piskorski, 2011), a significant lack of knowledge persists with respect to social media marketing effectiveness, success and failure factor, possible outcomes. Moreover, some companies are reluctant to join social media sites (Grant Thornton LLP, 2010; Best, 2011) as it is not certain how effective these social marketing and communication efforts are on consumers’ preferences. Marketers and business owners have shifted resources, both capital and human, from traditional marketing modalities to the use of social media without knowledge of its consequences (Bulearca & Bulearca, 2010).

In fact, the companies that have a social network page used to communicate with current and possible customers know the number of persons who

follow them and like their brand(s) or product(s). However, the companies are not able to determine how many of the people who “Like” their products actually purchase them as a result of the online interactions they have with the source. Some questions arose: Does the presence of companies on Facebook have a real impact on consumers? Are Facebook users engaged with the brand because of the presence brand have on Facebook? Do consumers purchase a product from a company because of the engagement they had on Facebook?

The research problem can be stated in the following questions;

- Does the use of Facebook marketing as a communication tool enhance brand engagement among smartphone users in Egypt?
- Do demographics and psychographics affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt?

Providing insight to this issue will help those making marketing decisions better understand the effects that having for example a Facebook brand page or a twitter brand platform might have on brand engagement, and the role of some demographics and psychographics play in these relationships.

4/ Research Objectives

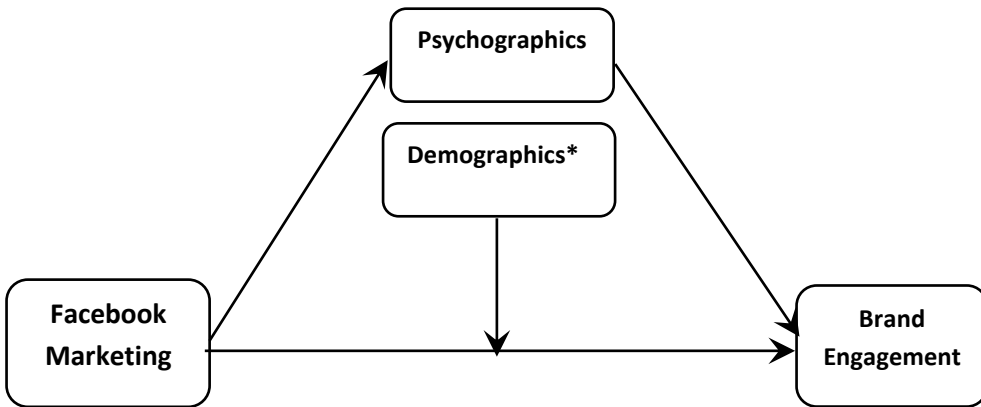
The main objective of this study is to fill the research gap by developing a model for the effect of Facebook marketing on brand engagement and what are the factors affecting these relationships. The main objective can be achieved

ieved through achieving the following sub objectives:

- Determining the effect of Facebook marketing on brand engagement among smartphone users in Egypt.
- Determining the role of some demographics and psychographics in the

relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Figure (1) shows the research proposed model and hypotheses.



* Gender, age, marital status, income, education, and work status.

Figure (1): Research proposed model and hypothesized relationships.

As shown in the figure, demographics role will be tested through moderation analysis as they are not affected by the independent variable (due to its nature; nothing affects gender, age, education, etc.). The role of psychographics will be tested through mediation analysis as they are first affected by the independent variable (consumers' lifestyle can be affected by several factors including Facebook and Facebook marketing) then is supposed to affect the dependent variable.

5/ Research importance

5/1/ Scientific importance

The scientific importance can be presented through several points.

Based on the challenge of how organizations can figure out the results of Facebook marketing (Costa et al, 2018) especially in the light of the scientific gap represented in the contradiction between previous researches' results, this study is among the first to fill the gap through testing the consequences of Facebook marketing in terms of brand engagement among smartphone users in Egypt. Moreover, in a trial to extent the theoretical contribution, the current study different from previous studies, investigated the role of demographics and psychographics in the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

In order to achieve the research objectives and answer its questions, the causal research design has been used as it is the only research design that enables exploring the cause-effect relationships through executing experiment (Sekaran & Bougie, 2016, El-As-si, 2019). Ex-post facto experimental design, different from previous studies, has been chosen to achieve the research objectives. It hasn't been studied in social media marketing context in Egyptian or foreign contexts which will support the causality of the relationships and enhance the scientific contribution of the current study.

Finally, brand engagement among smartphone users in Egypt has almost never been studied before. Although the concept of engagement has had some care in different disciplines such as the sociological, psychological, lately in organization behavior, and human resource management, its importance wasn't properly clarified in the marketing literature. Only recently, some care has been shown to engagement with organizations and brands in the marketing discipline and its top journals.

5/2/ Practical importance

Many researchers disputed that social media have several benefits as they allow the creation and exchange of user-generated content (Kaplan and Haenlein, 2010), and represent a rich context for engagement manifestations, as they foster the creation of strong, interactive consumer relationships (Gummerus et al, 2012), while they permit the proliferation of online consumption and brand communities rich in consumer participation (Zaglia, 2013).

With the modification of social communication brought about by social network sites, companies must adopt and keep on developing strategies that allow them to be closer to the audience they target. Companies have no other option than positioning themselves where their audience is. A Grant Thornton LLP study (2010) reported, "Social media is rapidly becoming 'a must' for business success". As a result, more companies have joined social network without a clear evidence of how this presence may affect brand engagement.

Study results should be valuable from a practical/applied perspective as well. Findings of this study should provide a basic understanding of the direct effect of Facebook marketing on brand engagement among smartphone users in Egypt. Answers to research questions will provide valuable information and guidance for marketing planning and action concerning the necessity of business social media presence and its direct outcomes. Moreover, the moderating role of some demographics and mediating role of psychographics are believed to be useful as managers and marketers of smartphones in Egypt will be able to design marketing plans to communicate effectively with their potential and current target markets and enhance brand engagement. Professional smartphones marketers and advertisers will be able to rely less on high expensive traditional media, make more rational decisions with regard to their promotional budgets, and target their marketing communications mix more effectively.

6/ Methodology

To examine the research hypotheses, the current study adopted a quantitative method. The following methodology has been chosen to achieve the research objectives.

6/1/The research design and method

In order to achieve the research objectives and answer its questions, the causal research design has been used as it is one of the best research designs that enables exploring the cause-effect relationship through executing experiment (Sekaran & Bougie, 2016).

As this study aims at investigating the effect of Facebook marketing on brand engagement, and there is a group of consumers already have been exposed to Facebook marketing and depending on the brand page on Facebook to know about the brand marketing efforts, while there is another group of consumers have not been exposed to Facebook marketing and still depending on traditional media (TV, magazines, ad boards,.. etc.) to learn about the brand marketing efforts, **ex-post facto design** (as one of the quasi-experiment designs) would be the suitable experiment setting. Brand engagement might now be measured for both groups to identify the effect of Facebook marketing.

6/2/Population

A study conducted by AppMaker showed that Egypt occupied the first rank in Africa as the highest prevalence of mobile phones in 2014 with 68.7% smart phones use. Smartphones (opposite to feature phones) and tablets

were the most frequently used devices when accessing the web compared to laptops and desktops. Handheld devices like smartphones and tablets became versatile while also became accessible for most people (Solangaarachchi et al, 2016). A new report issued by Zenith, a unit of the French ad agency, predicted that 75% of the use of the Internet by 2017 is via mobile, a slight increase from the current year, as the growing number of consumers around the world has access to the World Wide Web via smartphones and tablets.

According to the Arab social media report (2015), smartphones are the main mode of access to social media. The majority of respondents (83%) access or use social media via their smartphones most of the time, compared to 11% who use their laptops. The majority (84%) of social media users in Arab World visit Facebook through their smartphones and/ or tablets. To answer the research questions and achieve its objectives, smartphone users have been chosen as a population because smartphones users are not only brand page followers, rather, some of them are traditional marketing followers. Therefore, smartphone users are suitable as population for the purposes and hypotheses of the current study as they consist of consumers that prefer to know about brands through social media and consumers that prefer to know about brands through traditional media.

Social media sites are numerous including Facebook, twitter, Instagram, YouTube, LinkedIn, WhatsApp, etc. According to Arab Social Media Report (2015), Facebook and WhatsApp

are the most used social media channels across the Arab world, while Facebook was the top used social media channel on the aggregate level of the Arab World. This study will be limited to studying the effect of Facebook marketing as representative of social media marketing on brand engagement.

6/3/ Sampling

Sampling process has been through the following steps

6/3/1/ Sample size and type

Krejcie and Morgan (1970) greatly simplified sample size decision by providing a table that ensures a good decision model and provides that generalized scientific guideline for sample size decisions. As long as the population size (smartphone users in Egypt) is approximately 65 million (Appmaker Egypt, 2016) and based on the table, a sample of size 600 respondents is suitable depending on 4% confidence level.

As this research aims at exploring a specific phenomenon within population units through surveying sample units, it is good to use probability sample. Since the researcher desires to use probability sample, there is no population frame, and there are survey maps, it is ideal to use cluster or area samples (Sekaran & Bougie, 2016).

6/3/2/Choosing sample units

Cluster sampling have been done in several stages (multistage cluster sampling) to collect data with maximum accuracy and minimum cost and cover all population units which are widespread all over the nation. Table (1) shows how sample units have been chosen.

First, Egypt governorates are divided into seven regions;

- 1- Cairo region: Cairo, Kaliobia, and Giza.
- 2- Alexandria region: Alexandria, Matrouh, Behera.
- 3- Sues Canal region: North Sinai, South Sinai, Port Said, Sharkeya, Ismailia, and Suez.
- 4- Nile Delta region: Monofia, Gharbeia, Dakahlia, Damietta, and Kafr Elshiekh.
- 5- North Upper Egypt: Beni Suif, Fayoum, and Menia
- 6- Middle Upper Egypt: Asiout, New valley.
- 7- South Upper Egypt: Kena, Sohag, Aswan, Luxor, and Red Sea.

Second: The researcher randomly drew 7 governorates (more than 25% of the governorates) out of the 27 governorates.

Third: The random selection of the governorates has resulted in choosing Cairo, Behera, Asiout, Sohag, Menia, dakahlia, and Sharkeya.

Table (1): Sample units' distribution on selected governorates

Governorate	Population*	% of total population	Sample units
Cairo	9,595,813	22	132
Behera	6,102,422	14	84
Sharkeya	6,790,797	16	93
Dakahlia	6,191,160	14	85
Asiout	4,481,735	10	61
Sohag	4,862,308	11	67
Menia	5,459,795	12	75
Total	43,484,030	100	600

* Data obtained from the annual book (2016) of the Egyptian Central Agency for Public Mobilization and Statistics.

It is shown that all Egypt governorates regions are represented in the sample, where every region is represented by one governorate. The selected governorates population represents more than 39% of total Egypt population. Sample units for each government have been determined according to proportional distribution.

6/3/3/ Sample Units

Sample units are Egyptian smartphone users whether following a brand Facebook page or not. The researcher has tried to survey consumers above 18 years old who are using smartphone for at least six months and for consumers who depend on Facebook marketing, they should have been doing that for at least three months.

As there is no population frame, the researcher has set up several arrangements to ensure the core of randomization (Edrees, 1996); that is data collection from sample units in front of smartphones customer service centers has been done considering the following:

- Random selection of the customer service centers to reduce location bias.
- Intercepting one smartphone user every 20 minutes.
- Intercepting smartphone users during all days of the week to reduce time bias.
- Intercepting smartphone users in several times during day and night of the day to reduce time bias.
- Introducing the researcher herself, introducing title, and some of the objectives of the research.
- Giving respondents full time needed to fill out the instrument.

6/4/Variables and Operationalization

Based on research objectives, research variables are Facebook marketing as an independent variable, brand engagement as dependent variable, demographics are moderating variables, and psychographics are mediating variables. A deeper explanation and discussion about variable and operationalization follow.

-Brand engagement: has been operationally defined through the main three dimensions comprising the brand engagement scale. The three dimensions might be named differently depending on the researcher, but all of the dimensions carry the same meaning: cognitive (immersion-vigor), emotional (passion-dedication-affection) and behavioral (activation-absorption) aspects (Dwivedi, 2015, Wong & Merrilees, 2015, Keller, 2013, Brodie et al., 2011, Hollebeek, 2011).

Many authors have agreed on cognitive (immersion-vigor), affection (emotional-passion-dedication), and activation (behavioral-absorption) engagement as the dimensions of brand engagement (Dessart et al, 2015; Hollebeek, 2011; Dwivedi, 2015; Wong and Merrilees, 2015; Menguc et al, 2013). These three dimensions are mutual among all papers while the number of items vary.

Hollebeek (2014) aimed at developing a valid scale of brand engagement in social media context, moreover it is considered pioneer and many papers depended on her scale. For these reasons, the researcher will use it in the current research.

- **Facebook marketing** is the independent variable. The treatment (Facebook marketing) will be measured to make sure that the sampling unit in the experimental group has really been exposed to the treatment. Facebook marketing has been measured using several diverse scales reflecting the respondents' perception of the Facebook marketing activities by companies.

Mägi (2003) and Tsiros et al (2004) measured firm created social media communication by 3 items scale. According to Soh et al (2009), the perceptions of social media marketing were divided into trust and global perceptions (33 items). The trust measures were created by sixteen items construct the four sets of AD-trust composite measures. The items measured participants' perceptions of reliability, usefulness, effect of social media marketing, and willingness to rely on social media marketing. Participants' global perceptions of social media marketing advertising and virtual brand communities were also assessed (Cheng et al. 2009). Of specific interest were their evaluations of the extent to which social media marketing was informative, entertaining, and irritating.

Kim & Ko (2012) measured perceived social media marketing activities through several dimensions reflecting entertainment, interaction, trendiness, customization, and word of mouth. The scale was adopted from previous studies. Finally, Sheth (2013) measured social media marketing by three dimensions (information sharing, peer pressure, and entertainment) which were borrowed from several previous

studies (Smock et al, 2011; Himberg, 1996; Peslak, 2011).

The current study will use the scale developed by Kim & Ko (2012) to measure Facebook marketing as it is the most comprehensive one and has been lately validated (Yadav & Rahman, 2017).

- **Demographic** characteristics include age, gender, marital status, income, work status, and education as they have a direct influence on consumers' lifestyle and behavior.
- **Psychographics** consists of three dimensions; activities; how consumers spend their times, interest; what preferences consumers have, and opinions; how consumers stand on social issues, products, or a variety of other issues. Psychographics scale (the AIO statements) adapted from Wells & Tigert (1971), Sun et al (2004), and Swinyard & Smith (2003) is too long consisting of 52 statements. Mitchell (1983) developed AIO scale and added the concept of value. He explained that a mixture of personal life and perceived value determines consumer behavior, while a perceived value is a synthesis of individual beliefs, attitudes, hopes, and demands. Yu (2011) operationalized e-lifestyle by employing four constructs of e-activities, e-opinions, e-interests, and e-values. This research will use the scale developed in the work of Yu (2011) to conceptualize e-lifestyle construct.

6/5/ Questionnaire

The instrument development has gone through several stages starting from designing the questionnaire, vali-

dating, editing, ending with reliability test. These stages are presented below in more details.

6/5/1/ Questionnaire design

the questionnaire consists of 52 statements. Respondents were first asked about the smartphone brand they own, duration of this ownership, and have been asked if they have more than one brand to choose one and answer the questionnaire about it. Statement 1 to 12 was used to measure brand engagement. Statements from 13 to 40 are used to measure respondents' psychographics. Statements from 41 to 52 are used to measure perceived Facebook marketing activities. Facebook marketing and psychographics statements will be answered by brand page followers only as experimental group members. Finally, 6 questions at the end of the instrument were added to explore respondents' demographic features.

A panel of judges has attested to the content validity of the instrument. This panel consists of 14 university professors from several universities such as Cairo, Ain Shams, Tanta, Mansoura, Alexandria, and Zagazig.

6/5/2/ Goodness of fit

The test of goodness of fit is established through validity and reliability of the measures (Sekaran & Bougie, 2013). More details are as follows:

- **Validity** of the measures was approved through pilot study conducted on a convenience sample which comprised of 50 smartphone users in Egypt from the chosen governorates.

Confirmatory factor analysis was used to examine the research variables' dimensionality (As shown in table 2). The analysis was performed with AMOS 24 and IBM SPSS 24.

Following Hair et al (2010) to evaluate construct validity, convergent validity was assessed by calculating the standardized factor loadings which are ideal when greater than 0.3 (Guilford, 1961, Brown, 2014). Several indicators have been used to evaluate the goodness of fit (GFI) of the model. χ^2 to df ratio (ideal when <5.0); comparative fit index (CFI ideal when close to 0.9 or 1.0), goodness of fit indicator (GFI ideal when close to 0.9 or 1.0), normed fit

index (NFI ideal when close to 0.9 or 1.0) and the robustness of mean squared error approximation (RMSEA ideal when lower than 0.08), and Tucker–Lewis Index (TLI ideal when > 0.90) have all been used (Hair et al., 2010).

- **Reliability:** The most popular test of consistency reliability is the Cronbach's coefficient alpha (Cronbach's alpha; Cronbach, 1946), which is used for multipoint-scaled items. It has been calculated for each variable as a whole and for each sub dimension as shown in table (2).

Table (2): Instrument validity (standardized confirmatory factor-analysis) and reliability (cronbach' alpha)

		Cronbach' s Alpha	Standardized loadings	t-value	P value
Brand engagement					
	Cognitive engagement				
		I feel very positive when I use my smartphone brand.	.756 ^a	---	.000
		I am proud of my smartphone brand	.845	13.010	.000
	I feel happy when I am interacting with my smartphone brand	.686	10.549	.000	
	I feel good when I use my smartphone brand.	.811	12.563	.000	
	Cognitive engagement alpha	.857			
Affection engagement					
	Using my smartphone brand stimulates my interest to learn more about it.	.695 ^a	---		
	Whenever I'm using smartphones, I usually use my smartphone brand.	.607	7.663	.000	
	When I am using my smartphone brand, I forget everything else	.485	6.342	.000	
	When I get up in the morning, I feel like using my smartphone brand.	.453	6.001	.000	
	Affection engagement alpha	.708			
activation engagement					
	Time flies when I am interacting with my smartphone brand.	.675 ^a	---		
	It is difficult to detach myself when I am using my smartphone brand.	.690	8.104	.000	
	I spend a lot of time using my smartphone brand.	.658	7.903	.000	
	I would like to stick with my smartphone brand despite some problems with it	.504	6.461	.000	
	Activation engagement alpha	.732			
Model fit indicators: $\chi^2/df = 2.598$, NFI = .889, TLI = .902, CFI = .928, RMSEA = .80					
Psychographics (e-lifestyle)					
e-activities					
	I frequently use the Internet on my mobile to Play games or listen to online music	.467 ^a	---		
	Shop for products/services.	.364	4.028	.000	
	Share my opinions within network communities (e.g., Facebook, Twitter, etc.)	.476	4.793	.000	
	Chat with my friends or colleagues/classmates.	.418	4.421	.000	
	Arrange trips by booking flight/bus tickets, accommodation, etc.	.443	4.600	.000	
	Participate in social events.	.471	4.782	.000	
Read news or get data.	.503	4.955	.000		
Download or watch movie online.	.474	6.124	.000		
		.704			

		Cronbach's Alpha	Standardized loadings	t-value	P value
E-interests	e-activities I use the Internet services on my mobile because I am very interested in discovering new things online. I would like to stay updated with the latest electronic development. I feel happy to use the newest technology. I like gaining knowledge through online. I like to participate in the network of social communities. I like browsing and searching on the Web. I enjoy online shopping.	.873	.747 ^a	---	
			.667	10.220	.000
			.717	11.041	.000
			.736	11.336	.000
			.718	11.051	.000
			.714	10.987	.000
			.639	9.772	.000
e-opinions	Continued development of Internet services on mobile is Positive for our society. Positive for our culture. Positive for our education system. Positive for our economy. Bringing more happiness to our daily life. Very important to know about the vulnerable people and situations.	.836	.984	28.936	.000
			.458	7.879	.000
			.571	10.470	.000
			.329	6.829	.000
			.491	8.231	.000
			.632 ^a	---	
E-values	e-opinion I believe that using the internet on the phone Enhances the convenience in my life. Improves my job efficiency. Expands my circle of friends. Enhances interaction among people. Decreases face-to-face emotional interaction among people. Provides the learning environment that I have benefited from the impact. Provides more new knowledge.	.891	.948 ^a	---	
			.397	7.129	.000
			.497	8.466	.000
			.643	6.118	.000
			.932	16.530	.000
			.932	7.193	.000
e-values			.475	8.438	.000
Model fit indicators: $\chi^2/df = 2.253$, NFI = .831, TLI = .885, CFI = .879, RMSEA = .071					
Social media marketing					
Entertainment	Using my smartphone Facebook page is fun.	.765			
	Contents shown in my smartphone Facebook page seem interesting.				

		Cronbach's Alpha	Standardized loadings	t-value	P value
Interaction	Entertainment				
	my smartphone Facebook page enables information sharing with others.				
	Conversation or opinion exchange with others is possible through my smartphone Facebook page.				
	It is easy to deliver my opinion through my smartphone Facebook page.				
Trendiness	Interaction	.784			
	Contents shown in my smartphone Facebook page is the newest information.				
	Using my smartphone Facebook page is very trendy.				
	my smartphone Facebook page is characterized by quick response to comments and complaints				
Customization	Trendiness	.714			
	My smartphone Facebook page provides customized service.				
	My smartphone Facebook page offers customized information search.				
Word of mouth	Customization	.764			
	I would like to pass along information on brand, product, or services from my smartphone Facebook page to my friends.				
	I would like to upload contents from my smartphone Facebook page on my blog or micro blog.				
	Word of mouth	.731			

Confirmatory factor analysis has not been applied to social media marketing scale as it consists to two dimensions with less than 3 statements.

Note: ^aFixed parameters.

P value is significant at less than 0.001

It is obvious from table (2) that all construct items had standardized factor loadings above 0.3, T values were significant at 0.01, Cronbach alphas recorded more than .07 for the scale items, and model fit indicators are satisfactory. In general, these results suggest that the theoretical model used was valid.

Personal interview, online questionnaire, and self-administered questionnaire were employed to collect primary data from targeted respondents. The researcher has collected the required data during the period March 2018 until June 2018. The data collection plan was achieved and response rates from each governorate are shown in table (3).

Table (3): Response rates

Governorate	Target Sample units	Valid Instruments	Response Rate (%)
Cairo	132	125	0.94
Behera	84	69	0.93
Sharkeya	93	85	0.88
Dakahlia	85	77	0.98
Asiout	61	49	0.92
Sohag	67	49	0.94
Menia	75	48	0.87
Total	600	502	83.67
	Exp group 300	Exp group 251	
	Con group 300	Con group 251	

As shown in table (3), the researcher stopped collecting data after reaching satisfactory response rates from each governorate and an overall response rate. The experimental group consists of 251 respondents of smartphone users in Egypt and so does the control group.

7/ Sample description statistics

The sample of the current research constitutes of 502 respondents of smartphone users in Egypt divided into two groups; experimental group (sm-

artphone users who follow their brands page on Facebook) and control group (smartphone users who don't follow their brand pages on Facebook) of 251 respondents each. Follows in table (4) is the experimental and control group demographic descriptive statistics and other descriptive data such as smartphone brand used and period of acquisition.

Table (4): Descriptive statistics of sample respondents (N=502)

Item	Details	Experimental group		Control group	
		Frequency	%	Frequency	%
Smartphone brand	iPhone	33	13.1	32	12.7
	Samsung	104	41.4	94	37.5
	Huawei	55	21.9	48	19.1
	Oppo	18	7.2	39	15.5
	Other	41	16.3	38	15.1
	Total	251	100.0	251	100.0
Period of acquisition	Less than a year	58	23.1	44	17.5
	From 1 year- 18 months	43	17.1	59	23.5
	More than 18 - 2 years	101	40.2	98	39.0
	More than 2 years	49	19.5	50	19.9
	Total	251	100.0	251	100.0
Gender	Male	128	51	129	51.4
	Female	123	49	122	48.6
	Total	251	100	251	100

Table (4): Descriptive statistics of sample respondents (N=502) (continued)

Item	Details	Experimental group		Control group	
		Frequency	%	Frequency	%
Age	Less than 20	51	20.3	43	17.1
	From 20 to < 30	50	19.9	62	24.7
	From 30 to < 40	54	21.5	52	20.7
	From 40 to < 50	46	18.3	48	19.1
	More than 50	50	19.9	46	18.3
	Total	251	100.0	251	100.0
Marital status	Single	75	29.9	76	30.3
	Married	86	34.3	62	24.7
	Married with children	60	23.9	92	36.7
	Divorced/widow	30	12.0	21	8.4
	Total	251	100.0	251	100.0
Income Pounds/ Month	Less than 3000	61	24.3	95	37.8
	3000 to < 5000	81	32.3	68	27.1
	5000 to < 10000	48	19.1	53	21.1
	More than 10000	61	24.3	35	13.9
	Total	251	100.0	251	100.0
Education	Moderate education	91	36.3	40	15.9
	Bachelor's degree	79	31.5	158	62.9
	Post bachelor's degree	81	32.3	53	21.1
	Total	251	100.0	251	100.0
Work status	Work full time	70	27.9	143	57.0
	Don't work	123	49.0	59	23.5
	Work partial time	58	23.1	49	19.5
	Total	251	100.0	251	100.0

As shown in table (4), respondents were using several smartphone brands where the majority used Samsung (41.4% of the experimental group and 37.5% of the control group). Concerning periods of acquisition, 40.2% of respondents of the experimental group and 39.0% of the control group were using the mobile brand for more than 18 months-2 years. Of the experimental group, 51% were male and 49% were females while 51.4% were males and 48.6% were females in the control group.

Moreover, most respondents of the experimental group (21.5%) were between 30-40 years old most of the control group (24.7%) were between 20-30 years old. Most respondents of the experimental group (34.3%) were married while the majority (36.7%) of the control group respondents was marr-

ied with children. The majority of respondents of the experimental group (32.3%) were gaining monthly income by Egyptian Pound 3000-5000 while 37.8% of the control group were gaining monthly income by Egyptian Pound less than 3000. The majority of respondents of the experimental group (36.3%) had moderate education while 62.9% of the control group had bachelor's degrees. The majority of respondents of the experimental group (49%) don't work while the majority of the of the control group (57%) were working full time.

8/ Descriptive statistics

The mean, standard deviation, and coefficient of variation have been calculated for each of the variables and for each sub-dimension of the variables. Table (5) shows variables' descriptive statistics.

Table (5): Variables' descriptive statistics (n= 251 for each group)

Variables	Experimental group			Control group		
	Mean	Standard Deviation	Variation	Mean	Standard Deviation	Variation
Cognitive engagement	3.7211	.87029	.757	3.3855	.68526	.470
Affection engagement	3.5558	.86999	.757	3.2251	.68017	.463
Activation engagement	3.7739	.75062	.563	3.3426	.63885	.408
Brand engagement	3.6836	.65065	.423	2.2035	.39679	.157
E-Activities	3.7141	.67004	.449	---	---	---
E-Interests	4.0262	.67658	.458	---	---	---
E- Opinions	4.2231	.63493	.403	---	---	---
E-Values	4.0085	.64016	.410	---	---	---
Psychographics	3.9748	.51379	.264	---	---	---
Entertainment	3.6275	.88073	.776	---	---	---
Interaction	3.7052	.89235	.796	---	---	---
Trendiness	3.5963	.82619	.683	---	---	---
Customization	3.6892	.82767	.685	---	---	---
Word of Mouth	3.2829	1.1196	1.254	---	---	---
Facebook marketing	3.5920	.69784	.487	---	---	---

As shown in table (5), respondents of the experimental group indicated

high levels of mean score for Facebook marketing (mean=3.5920, SD=.69784) and high mean score for brand engagement (mean=3.6836, SD=.65065) compared with the control group brand engagement (mean = 2.2035, SD =.39679).

Activation brand engagement of experimental group respondents recorded the highest among brand engagement dimensions (mean=3.7739, SD=.75062) while affection brand engagement recorded the lowest among en-

gagement dimensions (mean=3.5558, SD=.86999) which reflects that time flies when respondents are interacting with their smartphone brand and it is difficult to detach their selves when they are using their smartphone brand. Interaction recorded the highest among Facebook marketing dimensions (mean=3.7052, SD=.89235) followed by customization (mean= 3.6892 , SD=.82767).

Next, a correlation matrix of all variables has been developed and used to test the hypothesis and the results are shown in table (6).

Table (6): Correlation Matrix of research variables

Variables		Mean	SD	1	2	3
1	Facebook marketing	3.5920	.69784	1		
2	Brand engagement	3.6836	.65065	.605**	1	
3	Psychographics	3.9748	.51379	.674**	.751**	1

**Correlation is significant at the 0.01 level (2-tailed).

Note: Numbers 1-3 in the top row represent the variables as mentioned in the first column.

As shown in table (6), Pearson correlation coefficients have been used to measure how strong the relationship is between the research variables. Correlation coefficients for Facebook marketing and brand engagement and psychographics recorded .605** and .674** respectively (p<.01).

Next, the researcher calculated several statistical techniques to test the research hypotheses as follows.

9/ Hypothesis testing results

This research aimed at testing 8 hypotheses; following is the procedures undertaken to test these hypotheses, then results are discussed.

9/1/ The effect of Facebook marketing on brand engagement

The first hypothesis has been tested after executing two steps; (1) comparing the mean scores of brand engagement for the two groups (experimental and control), and (2) regression analysis.

9/1/1 Independent-samples t-test

The Independent Samples t-test compares the means of the experimental

and control group in order to determine whether there is statistical evidence that the associated population means (brand engagement) are significantly dif-

ferent. Table (7) shows the results of the independent-samples t-tests.

Table (7): Independent-samples t-test results

Variable	T	df	Means		Sig p value
			Experiment	Control	
Brand engagement	30.769	500	3.6836	2.2035	0.000

As shown in table (7), p value is lower than the required cut-off of .05 for the brand engagement; ($t=30.769$), thus, it is indicated that there is a statistically significant difference in the mean of brand engagement among smartphone users in Egypt scores between experimental group and control group. This difference is for the Facebook marketing group. Brand engagement of the experimental group rec

orded 3.6836 while the control group's recorded 2.2035.

9/1/2/ Regression Analysis

Regression analysis has been conducted to ensure the previously shown results (independent samples t-test) that Facebook marketing significantly affects brand engagement among smartphone users in Egypt. Table (8) shows simple regression analysis results.

Table (8): Simple regression analysis results of the effect of Facebook marketing on brand engagement

Items	Value
Beta	.605
C.R. (T)	12.017
Sig	.000
R ²	.366
S.E.	0.047

As shown in table (8), Facebook marketing has a significant effect on brand engagement ($\beta=.605$, C.R.= 12.017, sig=.00). In other words, Facebook marketing explains 36% of the variances in brand engagement among smartphone users in Egypt.

In sum, the current research results showed that **Facebook marketing significantly affects brand engagement among smartphone users in Egypt** as there is a significant difference

between means of brand engagement of experimental and control group as well as the significant regression coef

ficients for Facebook marketing and brand engagement among smartphone users in Egypt. It is concluded that Facebook marketing has significantly affected brand engagement among smartphone users in Egypt.

As there is still a debate about the effect of Facebook marketing on br-

and engagement between the two sides (opponents and supporters), the role of some demographics and psychographics will be tested to clarify this debate.

9/2/ The effect of demographics

To test the hypotheses 2-7, multi group analysis using SPSS Amos 24 has been employed. The samples were splitted into subsamples according to demographic features (e.g., males versus females, age groups., etc) to ensure within-group homogeneity and betw-

een group heterogeneity. The subgroup method is a commonly preferred technique for detecting moderating effects and has been extensively used in the literature (e.g., Wulf et al., 2001; Homburg and Giering, 2001; Brockman and Morgan, 2006; Khan & Rahman, 2016; Karikari, Osei-Frimpong, & Owusu-Frimpong, 2017).

9/2/1/ The effect of Gender

Table (9) shows the effect of gender on the relationship between Facebook marketing and brand engagement among smartphone users in Egypt).

Table (9): The effect of gender on the relationship between Facebook marketing and brand engagement.

	Gender	R ²	S.E.	β	C.R.	Sig	Critical ratio of difference [#]
Facebook marketing on brand engagement	Female	.338	.072	.581	7.88	.000	-.070
	Male	.396	.062	.630	9.13	.000	

[#]Absolute critical ratios less than 1.96 are insignificant. Absolute critical ratios more than 1.96 are significant.

As shown in table (9), coefficients of determination between Facebook marketing and brand engagement are more for males (R²=.396) than females (R²=.338). This implies that male respondents depend more on Facebook marketing than female respondents and Facebook marketing is more correlated with brand engagement for male group than female respondents.

It is also shown in table (9) that the critical ratio for differences between males and females are lower than 1.96 (-.070 for the relationship between Facebook marketing and brand engagement) which means that Facebook

marketing effect on brand engagement for male respondents is the same as female respondents. It is concluded that, although correlation and regression coefficients varied between males and females, multi group analysis showed that gender does not affect the relationship between Facebook marketing and brand engagement.

9/2/2/ The effect of Age

Table (10) shows the effect of age on the relationship between Facebook marketing and brand engagement.

Table (10): The effect of age on the relationship between Facebook marketing and brand engagement.

Age	R ²	S.E.	β	C.R.	Sig	Critical ratio of difference [#]				
						(1)	(2)	(3)	(4)	(5)
(1)	.127	.113	.357	2.701	.007	---				
(2)	.044	.144	.211	1.509	.131	-.478	---			
(3)	.001	.138	-.023	-.166	.686	-1.839	-1.205	---		
(4)	.011	.121	-.105	-.709	.478	-2.361	-1.612	-.342	---	
(5)	.155	.098	.394	2.99	.003	-.089	.427	1.864	2.431	---
(1) Less than 20 years old					(2) 20-30 years old					
(3) 30-40 years old					(4) 40-50 years old					
(5) More than 50 years old										

[#]Absolute critical ratios less than 1.96 are insignificant.
Absolute critical ratios more than 1.96 are significant.

As shown in table (10), respondents more than 50 years old recorded the highest coefficients ($R^2=.155$, $\beta =.394$) followed by respondents less than 20 years old ($R^2=.127$, $\beta=.357$). Other age groups surprisingly recorded insignificant coefficients of determinations. This implies that respondents less than 20 and more than 50 years old depend more on Facebook marketing than elder respondents. However, the researcher cannot deduce a general trend of age concerning the effect of Facebook marketing and brand engagement as coefficients of determination are fluctuating.

As shown in table (10), some of the critical ratios for differences among age groups are significant while others aren't. Respondents who are less than 20 years old are significantly different

from respondents who are 40-50 years old (C.R.= -2.361), respondents who are between 40-50 years old are significantly different from respondents who are more than 50 years old (C.R. = 2.431), which means that Facebook marketing effect on brand engagement is significantly different across age groups. It is concluded that age does affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

9/2/3/ The effect of Marital status

Table (11) shows the effect of marital status on the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Table (11): The effect of marital status on the relationship between Facebook marketing and brand engagement

	R ²	S.E.	β	C.R.	sig	Critical ratio of difference#			
						Single	Married	Married with children	Widow/divorced
Single	.347	.092	.589	6.258	.00	---			
Married	.396	.071	.629	7.446	.00	-.394	---		
Married with children	.321	.099	.567	5.287	.00	-.378	-.043	---	
Widow/divorced	.438	.143	.662	4.800	.00	.644	.973	.924	---

Absolute critical ratios less than 1.96 are insignificant.
Absolute critical ratios more than 1.96 are significant.

As shown in table (11), Facebook marketing and brand engagement coefficients of determination for divorced/widow respondents recorded the highest coefficients ($R^2=.438$, $\beta=.662$) followed by married respondents ($R^2=.396$, $\beta=.629$) and coefficients for married with children recorded the lowest ($R^2=.321$, $\beta=.567$). Coefficients of determination dropped when children are added to families because they consume more time and effort from parents than before which negatively affects the available time for Facebook marketing and reduces their smartphones' engagement. Coefficient of determination rose again for widow/divorced respondents as there are much more available time to Facebook and smartphone brand page.

As shown in table (11), all the critical ratios for differences among marital status groups are insignificant which means that single respondents are equal to married, married with children, and widow/divorced respondents. In other words, Facebook marketing effect on brand engagement is insignificantly different across marital status groups. It is concluded that marital status doesn't affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

9/2/4/ The effect of Income

Table (12) shows the effect of income on the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Table (12): The effect of income on the relationship between Facebook marketing and brand engagement

	R ²	S.E.	β	C.R.	sig	Critical ratio of difference#			
						Less than 3000	3000-5000	5000-10000	More than 10000
Less than 3000	.181	.095	.426	3.646	.00	---			
3000-5000	.002	.118	-.04	-.335	.722	-2.565	---		
5000-10000	.000	.139	.012	.081	.936	-1.989	.291	---	
More than 10000	.115	.095	.339	2.794	.005	-.592	2.034	1.513	---

Absolute critical ratios less than 1.96 are insignificant.
Absolute critical ratios more than 1.96 are significant.

As shown in table (12), coefficients of determination recorded the highest for respondents who earn less than 3000 pounds monthly ($R^2=.181$ and $\beta=.426$), followed by respondents who earn more than 10000 monthly pounds ($R^2=.115$ and $\beta=.339$). Facebook marketing and brand engagement are insignificantly correlated for other respondents. As shown in table (12), some of the critical ratios for differences among income groups are significant while others are not. Respondents with income less than 3000 L.E. are significantly different from those with 3000-5000 L.E. (C.R.= -2.565) and different from 5000-10000 L.E. (C.R.= -1.989). respondent with

3000-5000 L.E. are different from respondents with more than 10000 L.E. (C.R.= -2.034). It is implied that Facebook marketing effect on brand engagement is significantly different across income groups. It is concluded that age affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

9/2/5/ The effect of Education

Table (13) shows the effect of education on the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Table (13): The effect of education on the relationship between Facebook marketing and brand engagement

	R ²	S.E.	β	C.R.	sig	Critical ratio of difference#		
						Moderate	University degree	Higher than university
Moderate	.272	.077	.521	5.793	.000	000		
University degree	.003	.109	.055	.490	.624	-2.947	000	
Higher than university	.085	.090	.291	2.722	.006	1.701	1.356	000

Absolute critical ratios less than 1.96 are insignificant.

Absolute critical ratios more than 1.96 are significant.

As shown in table (13), coefficients of determination of Facebook marketing and brand engagement are partially significant and varied greatly across income groups. It is noted that coefficients of determination of Facebook marketing and brand engagement is the highest for respondents with moderate education (R²=.272, β=.521), lowest for higher than university groups (R²=.085, β= .291), insignificant for the university degree holders.

As shown in table (13), some of the critical ratios for differences among education groups are significant while other are insignificant. Respondents with moderate education are signify

cantly different from respondents with university degree (C.R.=-2.947). In other words, Facebook marketing effect on brand engagement is significantly different across education groups.

Based on multi group analysis, it is concluded that education affects the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

9/2/6/ The effect of Work status

Table (14) shows the effect of work status on the relationship between Facebook marketing and brand engagement among smartphone users in Egypt.

Table (14): The effect of work status on the relationship between Facebook marketing and brand engagement

	R ²	S.E.	β	C.R.	sig	Critical ratio of difference		
						Work full time	Don't work	Work partially
Work full time	.397	.094	.630	6.753	.000	---		
Don't work	.309	.068	.556	7.375	.000	-1.117	---	
Work partially	.450	.087	.671	6.852	.000	-.306	.819	---

Absolute critical ratios less than 1.96 are insignificant.

Absolute critical ratios more than 1.96 are significant.

As shown in table (14), coefficients of determination of Facebook marketing and brand engagement are significant and varied across work status groups. It is noted that coefficients of determination of Facebook marketing and brand engagement is the highest for respondents who work partial time ($R^2=.450, \beta=.671$), lowest for higher than university groups ($R^2=.309, \beta=.556$). As shown in table (14), all the critical ratios for differences among work status groups are insignificant which means that respondents who work full time are equal to respondents who don't work or who work partial time. In other words, Facebook marketing effect on brand engagement is insignificantly different across work status groups. It is concluded that there are no differences among work status groups, therefore work status doesn't affect the relationship between Facebook marketing and brand engagement.

It is obvious from the previous results that some of the demographics (**age, income, and education**) affect the relationship between Facebook ma-

rketing and brand engagement while others don't (**gender, marital status, and work status**). Therefore, hypotheses 3, 5, and 6 are accepted while hypotheses 2, 4, and 7 are rejected.

9/3/The role of psychographics:

The role of psychographics has been explored through a test of path analysis for the direct and indirect relationships between Facebook marketing and brand engagement among smartphone users in Egypt. Amos and IBM SPSS 22 have been used. After showing the analysis results, a discussion is presented.

Path analysis was employed to test the research hypothesis no.3 which states that **psychographics affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt**. Figure (2) shows the results. The overall fit of the structural model to the data was highly acceptable ($\chi^2/df = --, CFI = 1, NFI = 1, TLI = --, RMSEA = --$).

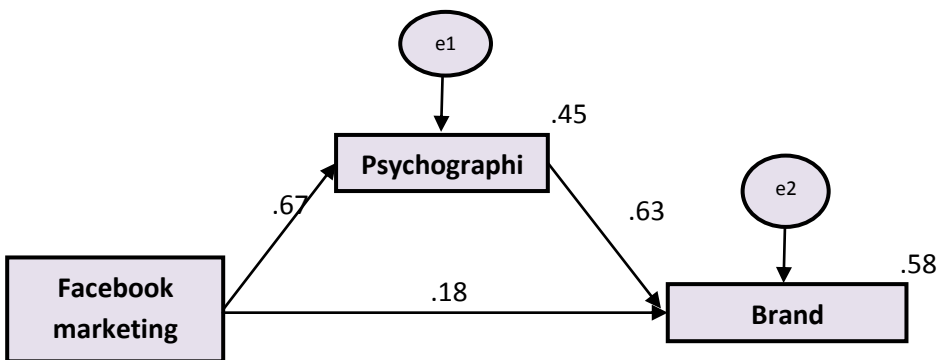


Figure (2): The role of psychographics in the relationship between Facebook marketing and brand engagement

It is obvious from figure (2) that the indirect effect of Facebook marketing on brand engagement through psychographics is stronger than the direct effect. As shown in figure (2), Facebook marketing direct effect recorded .17 while the indirect effect through psychographics recorded .34.

This indicates that psychographics enhanced the relationship between Facebook marketing and brand engagement among smartphone users in Egypt by more than 30%. Table (15) shows the hypothesis testing and path analysis results.

Table (15): Results of hypothesis testing and path analysis

Paths	β	Estimate	S.E.	C.R.	P(sig)
Facebook Marketing ---> Brand Engagement	.181	.169	.052	3.271	.001
Facebook Marketing ---> Psychographics	.674	1.158	.080	14.423	.000
Psychographics ---> Brand Engagement	.629	.342	.030	11.375	.000

* Facebook Marketing.

It is obvious from table (15) that the indirect relationship between Facebook Marketing and brand engagement is significant as regression weight estimate (CR) values for the path are more than 2.54. Moreover, the p value (.000) indicates that the regression weight for Facebook marketing in the prediction

of brand engagement is significantly different from zero at the 0.001 level (two-tailed). Therefore, psychographics significantly affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt. Accordingly, hypothesis 8 is accepted.

Table (16) shows summary of hypotheses testing results

Table (16): Summary of hypotheses testing results

No.	Hypothesis	Decision
1	Facebook Marketing ---> Brand Engagement	Accepted
2	Gender effect	Denied
3	Age effect	Accepted
4	Marital status effect	Denied
5	Income effect	Accepted
6	Education effect	Accepted
7	Work status effect	Denied
8	Psychographics affect the relationship between Facebook Marketing and Brand Engagement	Accepted

10/ Discussion and conclusions

The current research results showed that **Facebook marketing significantly affects brand engagement among smartphone users in Egypt** as there is a significant difference between means of brand engagement of experimental and control group as well as the significant regression coefficients for Facebook marketing and brand engagement among smartphone users in Egypt. The current research results concerning the effect of Facebook marketing and brand engagement are consistent with Malhotra et al (2013), Barwise & Meehan (2010), Barreda et al (2015), and Chamberlain et al (2014). **However**, the current research opposed the results of LaPointe (2012) and Traphagen (2015).

Several factors can interpret this result. **First**, one of the main online brand-related activities is entrainment (Vale & Fernandes, 2018), smartphone users in Egypt found their brand platforms entertaining as the mean of entertainment recorded 3.6275. Smartphone brand owners made their interactions creative & funny to attract browser's attention, increase traffic, and increase exposure which finally enhanced their engagement with their smartphone brand.

Second, interaction as a dimension of Facebook marketing has significantly influenced smartphone users' engagement as its mean recorded 3.7052. Social media has created a totally new level of interaction between brands and consumers and consumers themselves. Conversations and talk between the two sides have enabled brand owners

to build instant relationship and have the unique opportunity to communicate on a personal level with their customers which finally helped businesses to effectively engage their followers on social media; pushing them to search for the mobile first when they get up, forget everything while using it, and be proud of having such a brand.

Third, in an ever changing and updated world, trendiness (mean=3.5963) has forced itself and played a significant role nowadays where smartphone users found their brand pages continuously updated and respond to their feedback in a timely manner which finally enhanced brand engagement. Often, customers are taking on social media about complaints where 78.5 % people expressed their sentiments or views (e.g. satisfaction, happiness, disapproval, anger, etc.) when using social media (Arab Social Media Report, 2017), therefore, mobile brands had a plan to respond to complaints in the right way and on the right time.

Fourth, information seeking is one of the main activities of Facebook users when browsing their brand pages. Customization mean recorded 3.6892 which means that Facebook marketing of smartphone brands provided consumers with information and instructional manuals and enabled smartphone brands to create more engaging, participative, interesting applications, and contents on social media to draw their customers' attentions and provide customized services.

Fifth, smartphone brands Facebook marketing has created a whole new level of word of mouth. Social media had been best used to reach consumers directly; certainly, those consumers

can also reach other consumers, which create electronic word of mouth on which consumers rely because peer recommendations are credible and trustworthy, which has been finally enhanced smartphone brands engagement.

Results showed that psychographics significantly affect the relationship between Facebook marketing and brand engagement among smartphone users in Egypt. Several factors can interpret this result. Psychographics pertain to people's lifestyle (activities, interests, opinions and values). Lifestyle is viewed as a summary concept that offers the possibility of new insights, unusual conclusions, and provides "a broader, more three-dimensional view of the consumers" (Hawes, 1978). These are a key to understanding motivations and *why* people do what they do.

Smartphone brands owners were able to understand these kinds of psychographic differences and as a result, Facebook marketing tools made psychographic insights actionable in a way that was nearly impossible before. Using psychographics allowed marketers to do smarter keyword targeting—for example, targeting one message about the new smartphone with specific features to browsers who recently searched for smartphones with this feature and another message to consumers complaints from smartphones without this feature.

Facebook marketing enabled smartphone brands owners to explore browsers' activities, interests, opinions, and values, design marketing messages suitable for each lifestyle category, target these messages for each category easily and effectively. Moreover, Facebook marketing made the-

se kinds of psychographic differences much more apparent and relevant to both consumers and marketers alike. Social media have changed the relative importance of psychographics to marketers in three key ways: by making psychographics more actionable, by making psychographic differences more important, and by making psychographic insight easier to access. Furthermore, Facebook presence enabled marketers to influence consumers' lifestyle ($\beta=1.16, P<.01$). As mentioned before, marketers can now easily explore fans' lifestyles and tailor marketing efforts to better suit specific categories and even more it enabled marketers to make shifts in consumers' activities and cut consumers' time to newly new activities that had never been done before; share opinions within network communities, chat with friends or colleagues/classmates, participate in social events, or read news or get data.

Moreover, Facebook marketing has made a shift in consumers' interests from tangible world to virtual settings; consumers would like now to stay updated with the latest electronic development, like gaining knowledge through online, like to participate in the network of social communities, and enjoy online shopping. Furthermore, Facebook marketing has reversed consumers' opinions from resisting the new mobile technology to believe now that continued development of internet services on mobile is positive for society, culture, economy, and brings happiness to daily life. Finally, Facebook marketing has transferred consumers' values to the favor of internet applications and made them believe that using the internet

on the phone enhances the convenience in consumers' life, enhances interaction among people, and provides more new knowledge.

All the previous shifts in consumers' psychographics accompanied with Facebook marketing have all enhanced consumers brand engagement among smartphone users in Egypt. It is now concluded that psychographics affects the relationship between Facebook marketing and brand engagement.

In sum, research hypotheses have been all tested and results have been discussed. It is concluded that most of the research hypotheses are supported and the research gap concerning the ambiguity of the relationship between Facebook marketing and brand engagement has been almost clarified by the supported role of demographics and psychographics.

11/Practical implication

The main purpose is to help managers to understand the benefits of social media (Facebook) and how they can have an impactful social marketing method and strategy. Therefore, the following practical implications have been made clear.

The current study's investigation of the increasing utilization of social media marketing offers valuable insights on the relative influence of this media on brand engagement compared to traditional media of marketing. Facebook marketing has the same advantages and benefits and more as offline or the traditional media such as the vast reach, low cost and popularity of Facebook which are prompting all brand managers to take advantage of such characteristics. The findings in this study underpin the relevance of

social media for brand management. While managers may still doubt the usefulness of social media involvements, this study highlighted Facebook as an important and integral part of the marketing communication strategy. Taking into consideration the creation and management of interaction between brand owners and customers and customers each other can significantly enhance consumers brand engagement.

Facebook marketing through the creation of positive word of mouth and the management of negative word of mouth will significantly enhance consumers brand engagement and awareness. When the contents shown in smartphone brand on Facebook page is the newest information and when the page is characterized by quick response to comments and complaints (trendiness), brand owners will definitely achieve greater engagement of smartphone users in Egypt. Surprisingly; if the brand page is providing entertaining content and customized services, enhancing brand engagement among smartphone users in Egypt is not assured. It is not enough for marketing managers to simply measure and enhance brand engagement among smartphone users in Egypt through Facebook marketing in isolation from demographics.

Targeting Facebook marketing messages with the final aim of enhancing brand engagement among smartphone users in Egypt to specific groups based on their age, income, and education makes marketers work more efficiently. It is not sufficient for marketing managers to simply measure and enhance brand engagement through Facebook marketing in isolation from psychographics. Targeting Facebook marketing messages with the final aim of en-

hancing brand engagement to specific smartphone users' groups based on their activities, interests, opinions, and values makes marketers work more efficient.

The strategic implementation of Facebook marketing offers marketers an added advantage in being relatively low in investment costs compared to traditional marketing communication instruments such as TV. Smartphone brands owners can use social media activities mostly as means to gather information, learn about consumers and their attitude towards the products and the brand, and can have positive economic effects for the brand and the company.

12/limitations and Future research

In spite of the importance of the current research results, there are some limitations. Based on these limitations, several future research areas are suggested. **First**, the current research had focused on brand engagement as a consequence of Facebook marketing in smartphones industries context, however, other contexts should be examined such as food industries, home appliances and electronics, cars and motors. **Second**, the current research had focused on consequences of Facebook marketing such as brand engagement, however, other consumer-brand relationships that have never been studied in Egyptian context should be examined such as brand involvement, attachment, defense, love, identification, loyalty, awareness, and image.

Third, the current research had focused on consequences of Facebook marketing (brand engagement), however, another customers-related marketing concepts such as trust, delight, purchase intention, and commitment should be studied. **Fourth**, antecedents of Facebook marketing or what could enhance organizations' presence on social media should be examined too (factors which could influence organizations Facebook marketing efforts) such as customers' personality traits and browsing motives. **Fifth**, this study had focused on Facebook marketing consequences from customers' viewpoints, however, Facebook marketing financial consequences such as return on investment, return on equity, and earnings are suggested for future research. **Sixth**, this study has been limited on Facebook as one of the most famous social media, however other social media platforms differ in browsing and sharing styles, studying the effect of social media marketing executed on twitter, youtube, and Instagram is suggested. **Seventh**, this study has been executed through ex-post facto design which is a quasi-experiment design which may affect the causality of the relationships among the research variables, therefore, other true experiment designs are recommended to be used for better cause-effect relationships.

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