

**The Impact of Social Network Applications on Digital  
Transformation of Societies of the MENA Region**

**(Egypt as a Case Study)**

**A Thesis submitted to Middlesex University in partial  
fulfillment of the requirements for the degree of PhD**

**by**

**Heba Sayed**

**ID # 2045670**

**School of Science and Technology**

**Supervisors**

**Dr. George Dafoulas**

**Dr. Noha Saleeb**

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## **Abstract**

Despite the importance of promoting socially responsible citizenship in Internet age with the global massive spread of IT consumption, there is a paucity of research for scrutinizing the impact of ICT tools such as Social Networking Sites on citizens of the Middle East and North Africa region and/or investigating their tendency toward digital transformation. In the information age, Internet and its applications are creating a 'network state' due to the continuous interaction of SNS by people on their daily personal and professional lives; which made it a rich data bank for researchers to analyze and predict people's behavioral, cultural and societal change. This research focused on the digital impact of SNS on various aspects of life in the society of Egypt and the forecast of its subsequent normal progression over time. The research questions were; what are the factors affecting the usage of SNS and its impact on the society of Egypt? In addition to, How SNS usage and IT developments are likely to affect future changes in Egypt's culture and societal behaviors in the arena of human computer interaction and information communication technology? Hence, the research investigated those questions on recent years where there is still not enough complete specialized analysis nor mature socio-technological researches have been developed about the online society of Egypt. In specific, it concerned with studying the interaction of human practices with information network applications and the latter role in changing human cultures and societal behaviors from personal, governmental and business perspectives.

This study is an example of interdisciplinary research, linking cultural theories and social networking phenomena with human-mediated informational technology and communication studies contributing to the emerging field of Internet studies. Therefore, this research's best matching philosophy is interpretivism, the research approach is inductive and the utilized research strategy was grounded theory and surveys through four employed quantitative and qualitative research methods over two phases. Phase one implemented observational study, survey questionnaire and focus group sessions; while interviews were accomplished in phase two. Outcomes are reached through applying descriptive statistics of structural equation modeling via using SPSS 20.0, AMOS 20.0.0, Tableau 10.4, and MS 2010 Excel; in addition to, qualitative content analysis using NVivo 11. Findings of interweaved data collection methods supported

in investigating the research questions and testing the hypotheses of the research proposed SDR model.

Consequently, these research findings deduced that the Egyptian online society is affected by SNS forming a pre-digitalization stage. In addition to the research's major offering of the SDR model, there were four others emerged contributions to knowledge base. One of the main challenges of research in this domain is the dynamic pace of both technological developments and users' preferences. Hence, this research study impacts the growing knowledge repository with five contributions about the significant role of SNS in transforming people's daily activities which can shed lights of more novel questions for other neighboring countries as well as regarding other ICT tools for future studies.

## Thesis' Publications

- Sayed, Heba, Dafoulas, George (2019). "SNS and Digital Communication across Nations". Proceedings in IEEE of the 14th International Conference on Computer Engineering & Systems (ICCES), Egypt December 17-18, 2019.
- Sayed, Heba, Dafoulas, George (2019). "SNS Users Behavioral Typology in Egypt". Proceedings in IEEE of the 14th International Conference on Computer Engineering & Systems (ICCES), Egypt, December 17-18, 2019.
- Sayed, Heba, Dafoulas, George and Saleeb, Noha (2018). "Social Network Sites and Methodological Practices". *International Journal of Advanced Technology and Engineering Exploration (IJATEE)*, 5 (38), 2018.
- Dafoulas, George, Saleeb, Noha and Sayed, Heba (2018). "Introducing a model for assessing the impact of using social networking sites (SNS) on digital transformation of (Egyptian) education". Proceedings of the *10th International Conference on Education and New Learning Technologies EDULEARN*, Spain, 2-4 July, pp: 11226-11232, 2018 (<https://library.iated.org/view/SAYED2018INT>)
- Sayed, Heba, Dafoulas, George (2018). "Role of SNSs in Digital Transformation". Proceedings in IEEE of the *13th International Conference on Computer Engineering & Systems (ICCES)*, Egypt December 18—19th, 2018, pp: 617-623.

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Sincerely,

## Acronyms

Term	Abbreviations
4G	Fourth Generation License
AFNCI	Association of Friends of the National Cancer Institute
AI	Artificial Intelligence
ARPL	Average Revenue per Line
ARPS	Average revenue per subscription
AUC	The American University in Cairo
CAGR	Compound Annual Growth Rate
CAPMAS	The Central Agency for Public Mobilization and Statistics
CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CFA	Confirmatory Factor Analysis
DAN	Dentsu Aegis Network
DAUs	Daily Active Users
Digital ID	Digital Identification
DMI	Daily Medical Information
EDI	Enabling Digitalization Index
EFA	Exploratory Factor Analysis
EGDI	E-Government Development Index
FASNS	Further Another Social Network Services
FB	Facebook
GaWC	Globalization and World Cities index
GDP	Gross Domestic Product
GoE	Government of Egypt
GTM	Ground Theory Method
ICT	Information Communication Technology
IDI	In Depth Interview
IoT	Internet of Things
IPO	Initial Public Offering
IS	Information Systems
ISTE	International Society for Technology in Education
IT	Information Technology
ITU	International Telecommunication Union
KYC	Know You Customer
LTO	Long Term Orientation
MAUs	Monthly Active Users
MCIT	Ministry of Communication Information Technology
MCQ	Multiple Choice Questions
MDX/MU	Middlesex University
MENA	Middle East and North Africa
MMR	Multimethod Research
NETS	National Educational Technology Standards
NGOs	Non-Governmental Organizations

NTRA	National Telecommunication Regulatory Authority
OCED	The Organization for Economic Co-operation and Development
OED	Oxford English Dictionary
OSN	Online Social Network
PC	Privacy Concern
PDI	Power Distance Index
PESTLE	Political, Economic, Social, Technological, Legal and Environmental
PEU	Perceived Ease of Use
PII	Personal Identifying Information
PU	Perceived Usefulness
PUE	People User Experience
ERP Model	Educate, Respect and Protect Model
RMSEA	Root-Mean-Square Error of Approximation
SDR Model	Society Digital Readiness Model
SECs	Social Economic Classes
SEM	Structural Equation Models
SMEs	Small and Medium Enterprises
SNS	Social Networks Sites
SPSS	Statistical Package for the Social Sciences
SWOT/C	Strengths, Weaknesses, Opportunity & Threats/Challenges
TAM	Technology Adoption Model
UAI	Uncertainty Avoidance Index
UGC	User Generated Content
UK	The United Kingdom
UNESCO	The United Nations Educational, Scientific and Cultural Organization
USD	The United States Dollars
USF	Universal Service Fund
WEF	World Economic Forum
YASNS	Yet Another Social Networking Service

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## Chapter One: Introduction

### Objectives of Chapter 1

- To introduce the context of the thesis
- To describe the motivation for research and its beneficiaries
- To discuss the problem statement addressed by the thesis
- To express the aim and objectives of the thesis
- To state the research questions
- To display the research process
- To identify the contribution to knowledge base proposed
- To highlight research limitations and ethical considerations
- To provide the rationale for the organization of the thesis's chapters

Humankind has experienced four types of societal era: (i) chasing, (ii) agriculture, (iii) industrial, (iv) information and communication technology until reaching to the fifth stage of (v) digitalization. As Graham wrote (2013), “the Internet is not an abstract space or digital global village, but rather a network that enables selective connections between people and information”. Nowadays, Internet has imposed itself as one of the essential tools in people’s everyday life. It is important to be online, ‘If you are not online, you do not exist’ as claimed by Snell (2009). From 1990 to 2010, web pages have been transformed from mere one-way information reading conduit to interactive content platforms thanks to the development of Web 2.0 technology. Then the subsequent decade (2010-2020) witnessed the new paradigm of Web 3.0, which can be likened to an artificial intelligence assistant that understands its user and personalizes everything (Techopedia, 2019) i.e. search results tailored to user’s profile. Thus, the greatest phenomena of this age are social networking, followed by self-broadcasting and collaborative content creation. Social Networking Sites (SNS) are web pages with social features. The two important criteria for success and widespread of SNS among internet population are “content sharing and sociability” (Branstzaeg et al, 2010).

The phenomenon of social network sites has appeared globally during 1997 serving intrinsic social communication through SixDegrees.com; however, heavily recognized in the Middle East & North Africa (MENA) region during 2011 onwards with the rise of Arab Spring. Around the globe by 2019, what is happening over an Internet minute?

There are 52 million social activity performed across various SNS brands in 60 seconds aside from basic email sending, online shopping, Google search, and listening to music or watching Netflix (Lewis, L. and Callahan, C., 2019). Eighty percent (80%) alone is ‘messages’ sent over Facebook messenger and WhatsApp followed by (8.6%) YouTube online shares of 4.5 million viewed videos (Lewis, L. and Callahan, C., 2019). Consequently, social networking applications have become a reliant tool in our nowadays lives, there have been a lot of scholarships, surveys and studies about SNS’s usage, features, kinds, impacts as well as the development of its supporting infrastructure technologies. Those extensive constructive debates and global discussions have resulted in shifting investigation about SNS’s impact on societies from the “if” locus to the “How, Why and What is next?” loci. The power of SNS applications in creating a parallel powerful virtual community and changing people’s modes of life as well as sharing in the execution of vital incidences in nations is perplexing. In fact, it provokes in-depth study of the current situation and projection of alteration through constant technological progression.

Precisely, who possesses the influence? Is internet affecting the life of societies or in fact, society is the driver of change and innovation in Internet applications to facilitate a novel way of living? This research scrutinized human interaction with information systems in daily activities and its impact on behavioral change towards society’s digital transformation. Therefore, this intended research area studied the impact of SNS on societies and its implications on changing people’s mode of life to a digital one where Egypt is a case study. The research consisted of three main categories, *research positioning* covered by Chapter 1: Introduction and Chapter 2: Literature review; then *research body* covered throughout Chapter 3: Research Methodology, Chapter 4: Egypt Case Study, Chapter 5: SDR Assessment Model until Chapter 6: Data Collection and Analysis. Last but not the least, *Research Outcomes* section covered in Chapter 7: Discussion and Evaluation of findings followed by Chapter 8: Conclusion and Recommendations.

This introductory chapter provides an overview of the research problem and rationale; also identifies its beneficiaries. Then, it positions the research questions mapped to the study aim and objectives. Next, it illustrates the research process and stresses on its

contribution to knowledge base as well as emphasizes research limitations and ethical considerations. Finally, the chapter advises about the organization of the whole thesis.

## **1.1 Research Problem and Rationale**

One of the phenomenal information and communication technological tools is SNS that can be accessed by various devices at any time and from everywhere and has sociotechnical implications on individuals, businesses and governments. The subject of this thesis is motivated by both the remarkable success of SNS phenomenon in diffusing and influencing people' lives; as well as, the opportunities, that can be attainable if SNS is well utilized. Concurrently, the aim of this study is to fill the research gap in assessing the impact of intense SNS usage on the digital transformation of societies. Most assessment approaches are researching SNS phenomenon and its impact as a standalone IT tool. Others are investigating digital transformation processes and its principal foundations through the creation of conceptual models for a digital ecosystem whether applied on a government, a business or a society. However, they are not directly concerned with assessing the impact due to the association of both themes, i.e. SNS and digital transformation, as a cause and effect reaction nor the factors leading to the digital transformation of a SNS oriented community. Furthermore, most of those approaches did not provide enough study about the MENA region, even though digitization is a global practice that cannot be restricted to a certain region especially with the noticeable role of the people of this region in driving change through SNS usage.

The journey of the research process started by reviewing the data repository of SNS's features, applications and the major affected aspects in life. Then the study proceeded with investigating the digitalization concept and its current global frameworks and conceptual models across various ecosystems in literature. Global digital transformation models developed by non-governmental organizations, academic institutions or business consultants were assessed covering all aspects of life such as governmental, educational, societal, and commercial. This wide spectrum of perspectives provided the researcher with a solid foundation in identifying the main pillars upon which the research's Society Digital Readiness (SDR) model was created. All global models were analysed and their deficiencies were pointed out. By drawing on those models' virtues and concomitantly on IT theories addressing the impact of IT

usage on technology adoption, the research developed the SDR conceptual model of digital transformation of the society of Egypt based on the intense utilization of SNS. Although being one of the principal driver of digital transformation in developing countries, SNS impact is often marginalized because of its mostly social role; however, nowadays, most of businesses are adopting SNS heavily in their marketing and promotional plans. Accordingly, governments should not any longer ignore the use of it after the hype of the Arab spring. Since transformation to a digital society per se does have various pillars that requires a longitudinal investigation, this research is an effort to contribute in the understanding of the impact of the heavy usage of SNS in preparing the society of Egypt towards digital transformation.

The thesis discusses that in order to achieve progress in digital transformation of an online communicating society; stakeholders should realize the influence of SNS and its features as well as the interrelationships of SNS with society's main building blocks: (i) Culture and (ii) Environmental Contexts. The suggested SDR conceptual model of this research included those two dimensions and its subsidiaries constructs: cultural values and beliefs, people behaviors participation, and user experience influence in the Culture block; also, socio-economic, political, governmental and ICT in the Environmental Contexts block. This model was verified by gathering first-hand inputs from the online community in Egypt across various demographics. Then it was generalized through cross-cultural inspection with diverse nationalities subjects. Furthermore, it was endorsed by insights of professionals in the field of digital media in Egypt.

Apart from the visible impact of SNS on the global online community in general and MENA region in specific, Egypt was selected as an appealing environment for the verification of the SDR model due to the following motives:

- Egypt is a substantial human resource country in the MENA region where population is hitting 101 million with 1.36% share of the world population (Worldometer, July 2019). It is a youth rich country with an average age of 24.3 years old (Worldometer, 2019), as 23% of country population is between the age of 18 and 29 (Al Ahram Online, 2018). This age bracket is the innovator, engine and the principle user of SNS worldwide. Further, Internet users in Egypt is about 49

million with penetration rate of 49.5% where Facebook subscribers represent 35-37 million (Internet World Stats, 2018); thus, Egypt is the major contributor on Facebook in the MENA region.

- The progress that Egypt has achieved –primarily by citizens then currently by government- in fostering an environment for digital readiness based on recent governmental initiatives within various sectors such as digital payment, digital education, digital Arabic content, etc. Additionally, Egypt ICT strategy 2030 for achieving a competitive, balanced, diversified and knowledge based digital economy based on latest technology; not to mention, Egyptian people that is the principle driver of SNS practice and diffusion within all societal happenings.
- The population in developing economies differs in most of the key attributes needed to drive the development of the digital economy (Gonzalez, A. et al, 2017) then in developed ones. Since most of the digital transformation researches and studies focused on developed countries, then there is a need for further approaches about the developing countries where Egypt belongs.
- In Cisco “Modelling an Inclusive Digital Future” Research (Tae Yoo et al, 2018), it was found that a country’s level of digital readiness was correlated with a country’s GDP per capita, demonstrating the economic value of digital readiness. Digital readiness score spread within a spectrum from 17.89 to 6.40 passing through three stages: amplify, accelerate and activate. Egypt’s digital readiness score was 10.83 with an ‘accelerate path’. Thus, this research contributed in monitoring the relationship of SNS and the current economic development in Egypt; as well as, the encouragement of business start-up environment transfusing to digital readiness.
- The recognized catalyst role of social networks during the 25 January 2011 revolution was vivid enough to academia as well as Egyptian nonprofessionals to conjure investigating the future impact of SNS in the society of Egypt.

Hence, it concerned with studying the interaction of human practices with information network applications and their role in changing human cultures and societal behaviors from individual, governmental and business perspectives. In specific, the research investigated the recent past years where there is still not enough complete specialized analysis nor mature socio-technological researches have been developed about the online society of Egypt and its digital tendency.

## 1.2 Research Beneficiaries

After emphasizing research motivation, this study is addressed to a number of beneficiaries in Egypt as well as in any other SNS oriented society. Naming just a few of the ‘digital transformation stakeholders’:

- i. ‘Government’ committed to provide its citizens with a best quality of life through implementation of latest technological trends in offering public services;
- ii. ‘Enterprises’ interested in contributing to the inevitable wave of digitization of economies;
- iii. ‘Academia’ eager to keep track of studying SNS mutational impact on people and their cultural changes around the globe;
- iv. ‘People of Social Virtual Communities’ becoming digital natives with massive addiction to SNS around the clock infiltrating their various aspects of lives and unconscious of the gradual cultural behavioral change that is inherently happening which can result in transforming their society into a digital one.

## 1.3 Research Questions

Therefore, this research aimed to explore, analyze and provide answers to the following research questions:

RQ # 1 *What are the factors affecting the usage of Social Network Sites and its impact on the society of Egypt?*

RQ # 1.1 *To what extent is the impact of SNS in shaping and transforming societies?*

RQ # 1.2 *Does SNS’s usage exhibit a developmental life cycle? Moreover, what are its stages and how each stage affects culture and societal behaviors?*

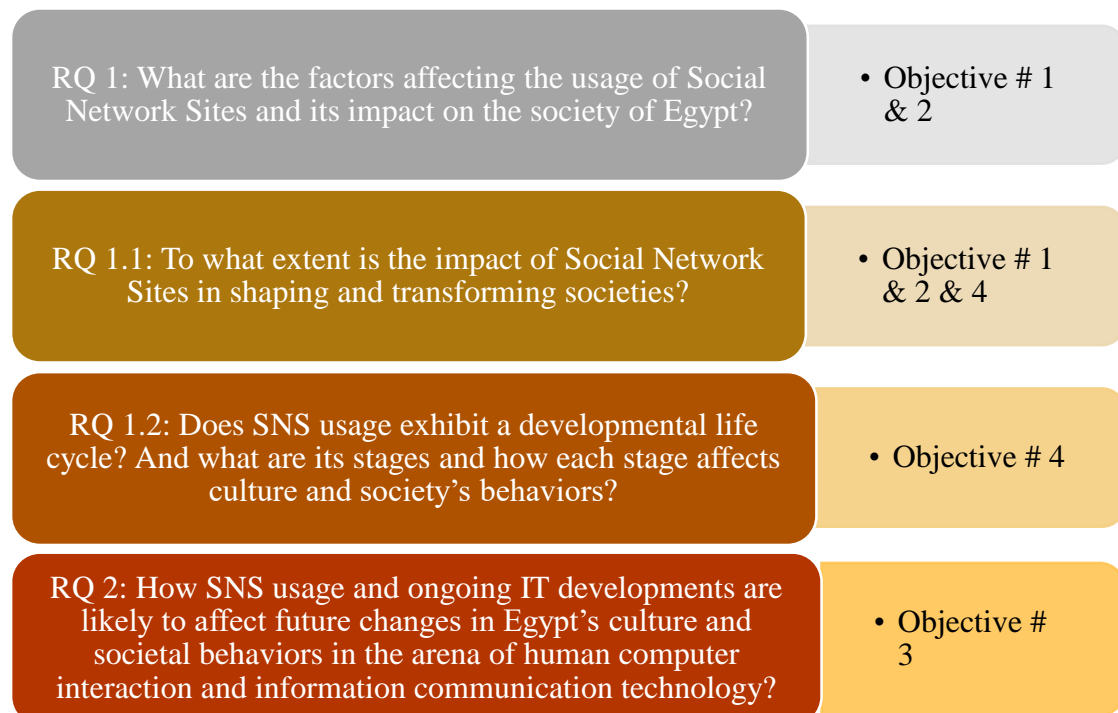
RQ # 2 *How Social Network Sites’ usage and ongoing IT developments are likely to affect future changes in Egypt’s culture and societal behaviors in the arena of human computer interaction and information communication technology?*

## 1.4 Aim and Objectives of the Research

Answering the above listed research questions can be achieved through realizing the following objectives;

1. To investigate the impact of SNS on the society of Egypt including different aspects of everyday life and its critical factors derived from related literature and data collection methods;
2. To assess how SNS's influence societal change as perceived by both novice and experts SNS users;
3. To evaluate the different drivers for future development of SNS with emphasis on applications, supporting IT infrastructure and users' behavioral change;
4. To evaluate the rate of transformation of the Egyptian online society to a digital one as per SNS usage.

### *Mapping Objectives to Research Questions:*



**Figure (1-1): Mapping Research Questions to Objectives**

The above research questions and its objectives urged the researcher to develop an assessment model depicting the specific parameters interacting with SNS along with their suggested interrelationships that have an impact on the behavioral change of a

society. Then the developed model was tested through carrying out empirical fieldwork besides desk research on several cases taken from literature for further validation. Therefore, the research questions, its objectives and suggested model directed the process of choosing the design methodology, approaches, strategies and methods that best catered for valid responses contributing to knowledge base concerning SNS impact in digital transformation of societies.

## **1.5 Research Process and Methods**

Once articulated, the research objectives directed the researcher to the appropriate approaches to be embraced in order to fulfill them. To achieve these objectives, it was necessary to gather a variety of data about different aspects of the problem addressed in the thesis, and to analyze data using the appropriate techniques.

### **1.5.1 Theory Building**

The researcher –like all Egyptians- was astonished of the noticeable contribution of SNS during 2011 revolution in term of how Egyptians were able to maneuver it to achieve a major national change. Onwards, SNS has augmented its manifestation in various aspects of life in Egypt. Therefore, the research groundwork has started with an initial investigation from literature of the impact of SNS globally then zooming to the Middle East region. This drew the attention towards a trend of digitization of people’s lives, which led to undertake a second phase of literature review regarding various assessment of global digitization models in term of their scope, merits, shortcomings and best practices. Although all models discussed in the literature did not precisely explain specific factors affecting digital transformation as per SNS usage, however, they served as a theoretical foundation and guidance in identifying major constructs and their interrelationships. The major identified factors were further scrutinized to develop research suggested SDR model and its verification through analytical findings of empirical data.

### **1.5.2 Empirical Research**

After developing the research proposed model, desk research of data collection methods was conducted for proper planning of the empirical work. The research methods were a mix of quantitative and qualitative techniques matching the identified research

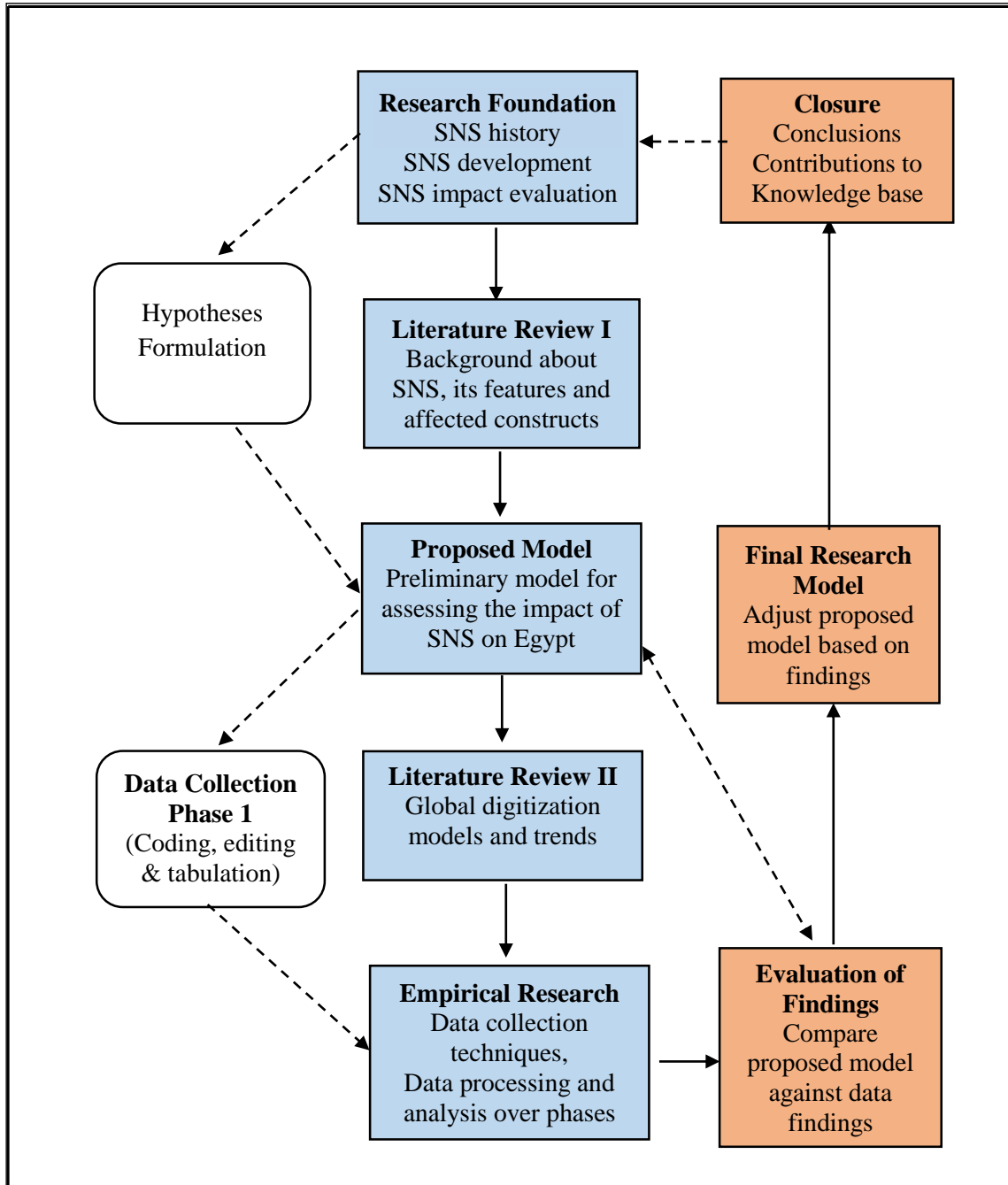


paradigm and methodology. There was mapping of research questions and the model's hypotheses against applied data collection methods respectively to ensure validity and relevancy of findings. In line with Creswell, J. and Plano Clark, V. (2007), the approaches and methods to be adopted will be based on appropriateness for this particular research topic and relevance to the research questions as well as to the researcher's experience and training. Qualitative data collection such as participant observation, focus group, interviews was conducted for elaborative data gathering of timely practical information from online users about recent society's behavioral patterns, crystallized perception and technological innovations. Quantitative data collection was carried out through survey (open and closed questionnaires) to capture statistical measures of the factors affecting SNS usage and behavioral change using general data type correlation analysis within a selected well-defined population sample. The data collection process was iterative where there was ongoing collection and analysis of datasets in order to discover impact of variables and their causal relationships with respect to the proposed model. Both kinds of data are compared for the purpose of triangulation to confirm the validity of acquired findings from the empirical research (Ragin, C., 1987; Yin, 2002; Saunders, M. et al, 2000; Sarker, S. and Lee, A., 2003; Davison, R. et al, 2004; Johnson, R. and Onwuegbuzie, A., 2004).

### **1.5.3 Research Audience Scope**

The research is tackling SNS, which is a widely used ICT application; hence, the data collection samples are covering users' activities of all demographic criteria with the exception of below 18 years old. The figure (1-2) below displays the overall research process that was adopted to fulfill the aim and objectives of the thesis. The foundation for this research was studying SNS's history, features, development and its impact on societies, then assessment of global digital transformation models for the perception of the correlation between SNS and digitization of societies. The research journey started with a literature review about SNS's features and implications on online users, which supported in the formulation of hypotheses for the initial SDR model. For testing the model, the research progressed to the empirical work of data collection on two phases over broad segments of Egyptian online users as well as industry experts. Further, the researcher went the extra mile to generalize the proposed model through verification on UK based SNS users whom was an optimal configuration of multinational SNS users gathered in a one place. Findings of empirical work was tested against the proposed

SDR model for the development of a final modified generic version. The final stage presented the thesis's conclusions, the contribution to knowledge base and recommendations for future studies.



**Figure (1-2): Overall Research Design Process**

The guidelines of the figure (1-2) above are as follows:

Shapes	Definition
Blue axial boxes	represented the research foundation, desk search and empirical work
Transparent boxes on the left side	represented the research's activities
Orange boxes on the right side	represented the recognized outcomes of the desk and practical work
Dotted arrows	signified the iterative nature of the linkages between respective chapters in the research journey

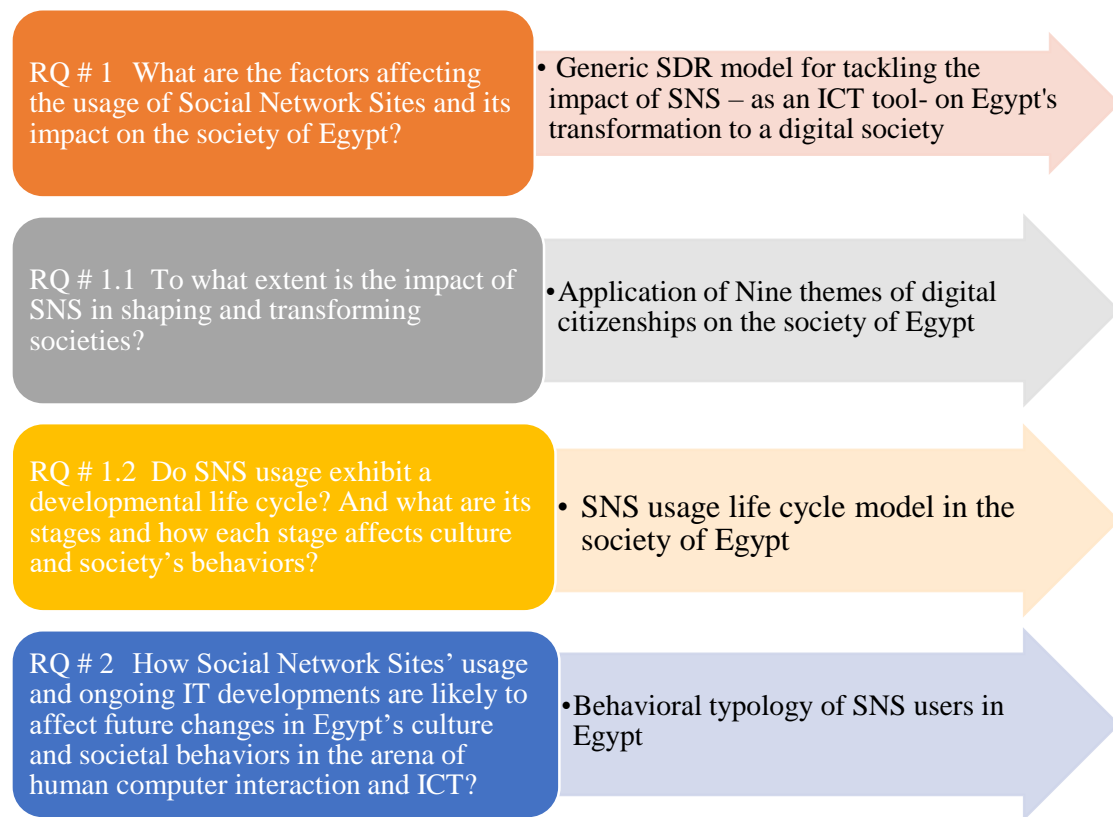
## 1.6 Contributions to Knowledge Base

This research study aimed for the contribution to the growing knowledge of human computer interaction through investigating the prominent role of SNS in transforming people's ways of living and its future impact on the populous country in the MENA region i.e. Egypt Case Study. This research can raise more intriguing questions – whether in Egypt or neighboring countries- for future studies. This study tackled SNS from an IT user interaction perspective instead of the mostly so far approached ones by researchers and academia belonging to the school of Journalism and Media Communication. This scholarship benefited from the amalgamation of social cultural behavioral theories entwined with human computer interaction methodologies to understand the inherent and dynamic role-played and will continue to be played by Internet network applications in society's transformation.

Henceforth, this study adds and contributes to the given body of literature in the vibrant field of human computer interaction with the following insights;

1. Model for tackling the impact of SNS – as an ICT application- on one of the populous countries in the MENA region as Egypt for the transformation to a digital society;
2. Extension of the classification table of the types of SNS beyond 2006 that was earlier developed by Boyd and Ellison (2008);
3. Behavioral typology of SNS users in Egypt;
4. SNS usage life cycle model in the society of Egypt;
5. Application of the nine themes of Mike Ribble for digital citizenships on the society of Egypt.

To follow is a mapping of the study's research questions to contributions to knowledge base as per figure (1-3):



**Figure (1-3): Research Questions mapped to Contributions to Knowledge Base.**

## 1.7 Research Limitations

The study had its associated limitations as any research work does. Limitations derived from time, quality, volume of content, rules and policies, etc.

1. *In observation method*, there was restriction on the volume of extracted data from Facebook sites within a certain timeframe also the size of data was too huge that must be taken on phases base.
2. Then, the researcher proceeded with *survey data collection*, where there was an issue to distribute hard copy surveys in public areas without prior acknowledgement and consent of the management of the place e.g. clubs, malls, etc. Further, getting the adequate number of respondents was a challenge in itself due to the culture of reluctance to provide information in Egypt.

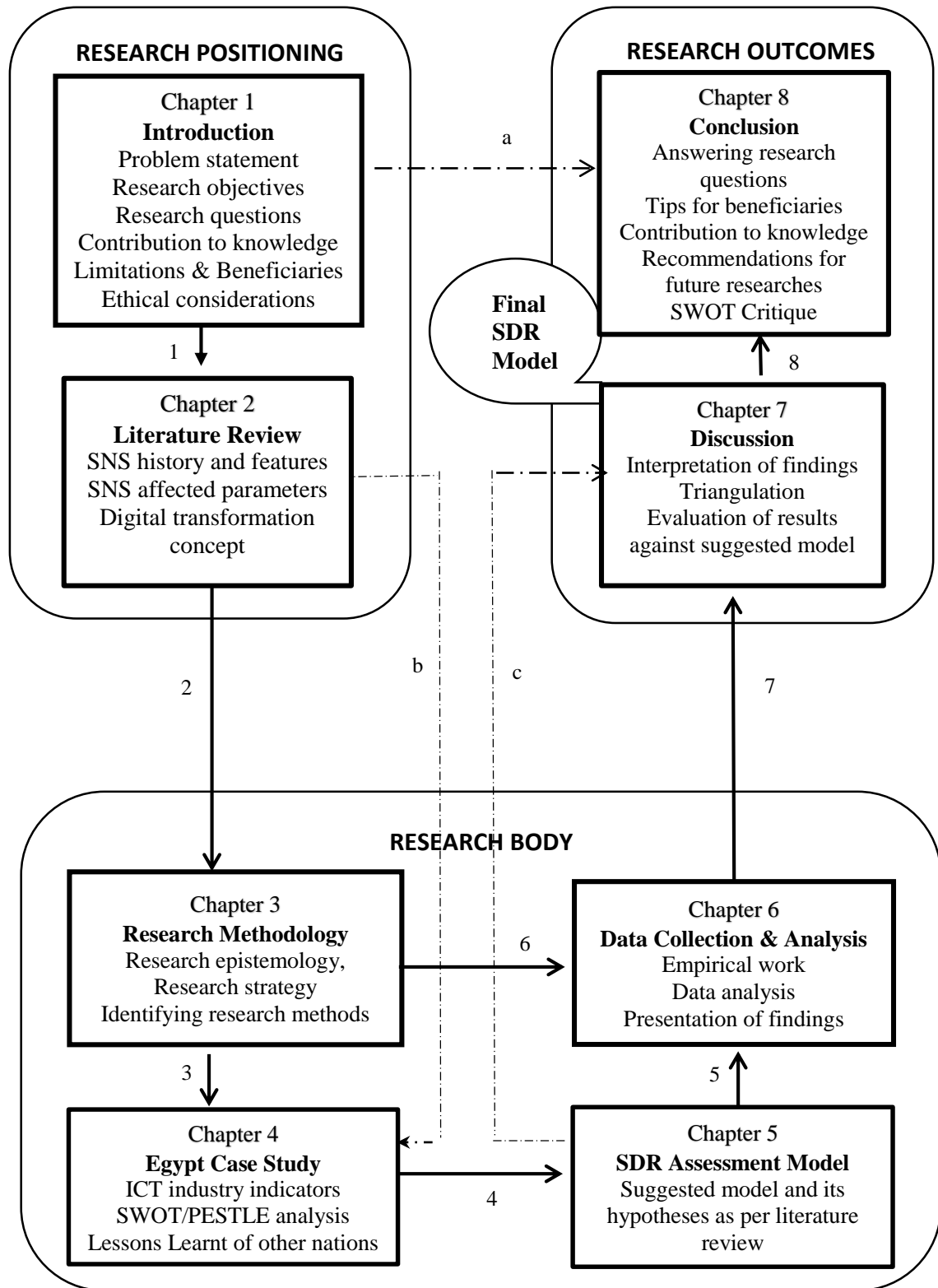
3. *Concerning focus group method*, the online session was a solution to address the limitation of time to get people together to discuss the research topic.
4. *During Semi Structured Interviews*, the researcher has -from time to time- to redirect interviewees to the essence of the discussion to make sure that the required data is realized.

Hence, the researcher attempted to develop conclusions from multiple data collection and analysis methods as much as possible.

## **1.8 Ethical Considerations**

The researcher followed Middlesex University (MU) Code of Practice for Research with the appropriate considerations to ethical issues regarding all information such as framework, forms, procedures and guidance documents. The data collection process has started after receiving MU ethical approval letters. The researcher applied ethical considerations throughout the various stages: preparatory phase e.g. handed debriefing sheet, completed participation sheet, signed consent form; then through data collection implementation phases e.g. verbal briefing, respect and trust of participants' views; lastly, during data processing phase e.g. text coding and confidentiality of participants' information. Much like electronic data, paper documents such as consent forms, printouts, or case tracking sheets that contain Personal Identifying Information (PII) must be stored securely in locked file cabinets when not in use (Princeton University, 2019). Therefore, all research papers and confidential data are stored on more than one location over transportable media such as external drives and securely kept.

## 1.9 Rationale of the Organization of Chapters of the Thesis



**Figure (1-4): Thesis's Organization**

## Keys of Thesis Organization Graph

### 1. Identification of arrows

#### a. Straight arrow: Direct relationship between sequence of chapters

S.N.	Identification
# 1	Flow from chapter 1- Introduction to chapter 2- Literature review of SNS and global digital transformation models
# 2	Moving from chapter 2- Literature Review to chapter 3 evaluation of methodological approaches, strategy and methods matching this research topic
# 3	Before applying methodological approaches and methods on the practical world, chapter 4 illustrated Egypt ICT industry and infrastructure i.e. the field of study.
# 4	After understanding Egypt ICT environment, the research discussed the proposed Society Digital Readiness (SDR) Model for the society of Egypt in chapter 5.
# 5	Moving toward the verification of the SDR model through the empirical work in chapter 6 of applied data collection methods and analysis techniques
# 6	Implementation of appropriate data collection methods and relevant analytical tools in chapter 6 required direct reference to academic narration of research strategy and methods.
# 7	After applying data collection methods and their respective analytical tools, it is time for discussion of findings and triangulation of results across qualitative and quantitative methods in chapter 7.
# 8	Finally reaching conclusion with associated contributions to knowledge base, SWOC critique and recommendations for future studies.

#### b. Dotted arrow: Indirect and iterative relationship between intermittent chapters

S. N.	Identification
# a	Chapter 1 Introduction is revisited at chapter 8 Conclusion for confirmation of outcomes e.g. research questions are answered, objectives are met, and contributions to knowledge are deduced.
# b	Narration of SNS in chapter 2 is pursued in chapter 4 while profiling SNS in Egypt as well as supporting IT industry background.

# c | The proposed SDR model in chapter 5 is verified in accordance to findings and discussion of analyzed gathered data in chapter 7.

## 2. Callout

Chapter 7 has a Callout to highlight the research's main output, which is the development of a final verified version of the proposed "Society Digital Readiness (SDR)" Model.

### **Summary**

This introductory chapter presented an outline of the whole thesis starting by the research rational and motivation then indicated its beneficiaries. Afterwards, it positioned the research problem statement, its associated research questions mapped to research's aim and objectives. Next, it illustrated the research process and discussed its contribution to knowledge repository as well as emphasized research limitations and considered ethical implications. Finally, it demonstrated the rationale of the organization of the eight (8) chapters of the thesis. Saying that, the next chapter, chapter Two: Literature Review, discusses in detail how SNS has started and developed across the globe, then identifies the main interacting variables with SNS in the surrounding environment as well as highlights digitalization concept during the current era.

"We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction."

Bill Gates's Quote



## Chapter 2: Literature Review

### Objectives of the Chapter

- To comprehend the history of SNS: Classifications and features of SNS as well as worries or concerns from SNS
- To describe users of SNS
- To study cultural models and digital citizenship global theme
- To frame SNS used technology and its evolution across time
- To identify the environmental contexts shaping the usage of SNS
- To deliberate on the concept of digital transformation and its associated global transformation models

As Internet increases in size, mode, and diversity, exploring web content -particularly social media- and transforming such content into concepts have become a challenge to researchers, business practitioners, and policymakers (Lai, L. & To, W., 2015). In particular, social networking sites, online forums, instant messaging services, and mobile smart platforms have grown exponentially, resulting in the widespread use of social media (Lai, L. and To, W., 2015). Social media enabled communication and collaboration among individuals at a massive scale without geographical, time, and system constraints (Hinchcliffe, D., 2008; Lai, L. and Turban, E., 2008). It has affected values, beliefs and perceptions of people that is reflected on their attitudes and behaviors. Meanwhile, business organizations then governments are using it to reach out for customers and engage with citizens respectively for informed decisions.

The significant role of analyzing social media and networks to advance our understanding of information sharing, communication (Averya, E. et al, 2010; Chiu, C. et al, 2006; Turri, A. et al, 2013), opinion formation, and dissemination has been already recognized (Abrahams et al, 2012; Airoidi et al, 2006; Bai, X., 2011; Jansen, B. et al, 2011; Lane, P. et al, 2012). Therefore, converting social media content into information, key concepts, and themes is crucial for generating knowledge and formulating strategies (Lai, L. & To, W., 2015). Using the information obtained from social media, researchers can gain valuable insights into the beliefs, values, attitudes, and perceptions of social media users with regard to the utility of user-generated content and trust

formation (Karimov, F. et al, 2011; Kim, C. et al, 2012; Wang, X. & Li, Y., 2014) which has an impact on societal transformation.

The following sections focus on reviewing the history of social networks sites, its classifications, features and concerns as per literature reviews. Next, the chapter examined the variables interacting with SNS as deduced from literature and surroundings which can be grouped into People, Culture, Technology and Environmental Contexts with a critical analysis pinpointing to the gap that the study aimed to address through its research questions. Further, the chapter conferred the global trend of digitization concept and its fundamentals. Therefore, this literature review tracks the following sequence:

- 2.1 History of SNS
- 2.2 People of SNS
- 2.3 Culture and SNS
- 2.4 Technology of SNS
- 2.5 Environmental contexts and SNS
- 2.6 Digitalization concept

## **2.1 History of SNS**

Social networking is relatively an old concept where Garton, L. et al. (1997) has defined as “a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange”. In addition, Wellman stated computer systems have become “inherently social” connecting people and organizations (2001, p. 2031), reflecting Castells' observation that we are shifting from group-based societies to networked societies (1996).

In literature, there are several scholars in this area where their contributions were the foundation for further studies about SNS, such as Boyd, D., 2007, Donath, J., 2007, Ellison, N. et al., 2007, Golder, S. et al., 2007, Lampe, C. et al., 2007, Boyd, D. and Ellison N., 2008 then Stienfield C., et al 2012, Skirky C., 2012, etc. The most famous SNS exertions was that of Boyd and Ellison (2008) to define SNS as “a web-based services that allow individuals to: (1) construct a public or semi-public profile with a bounded system, (2) articulate a list of their users with whom they share a

connection, (3) view and traverse their list of connection and those made by others within a system”. According to Kaplan, A. and Haenlein, M. (2010), social media was defined as “a group of internet-based applications and technological foundations of web 2.0 that allow the creation and exchange of UGC”; UGC stands for user-generated content. Later, Kane, G. et al (2014) have updated this widely used SNS definition to highlight four features shared by many social media technologies, which are digital profile, relational ties, search and privacy as well as network transparency. Thus, the fourth essential feature to be added to Boyd and Ellison (2008 and 2013) earlier mentioned SNS definition was (4) access digital content through and protect it from various search mechanisms provided by the platform. It is worth mentioning that those four features have differentiated the current social network technologies from web 1.0 generation applications such as e-mail and electronic discussion board. This differentiation is due to the presence of profile identity creation, list of connections, real-time interaction environment and digital content access facilitation as well as protection measures which is the spur for digital transformation of any society.

There are various terms and definitions given for SNS; the table (2-1) below is provides a compilation of the common used terminologies from literature;

**Table (2-1): SNS’s Terms and Definition from Literature Review**

<b>Term</b>	<b>Author</b>	<b>Definition</b>
Social networking service – SNS	Adamic and Adar, 2005	Social networking services gather information on users’ social contacts, construct a large interconnected social network, and reveal to users how they are connected to others in the network;
Social network sites – SNSs	Boyd and Ellison, 2008	As mentioned in the above paragraph.
Online social network – OSN	Schneider, F. et al, 2009	OSNs form online communities among people with common interests, activities, backgrounds, and/or friendships. Most OSNs are Web-based and allow users to upload profiles (text, images, and videos) and interact with others in numerous ways.

Gradually, social media and user-generated content (UGC) phenomena grow. Websites focused on media sharing begin implementing SNS features and becoming SNS

themselves (Boyd, D., 2008). The term social media technologies have been used to apply to variety of technologies, including wikis, blogs, micro-blogs, social networks sites, virtual worlds and video-sharing sites just to name a few (Kaplan, A. and Haenlein, M., 2010). On the other hand, social networking is an act of engagement where groups of people with common interests, or like-minds, associate together on social networking sites and invest in relationships through community (Hartshorn, S., 2010). Currently, the two terms are being used interchangeably by people due to their proximity in meaning; however, this research used the term SNS where the software applications in its broader term and the act of engagement are the focus of this study while mentioning social media as a subset or as per context in accordance to literature referencing.

### **2.1.1 Classification of SNS**

The first SNS was launched during 1997 under the name of SixDegree.com; nowadays there are globally 200+ SNS with tremendous development in sites' objectives, features, application types, medium of interaction, usage patterns, target groups, as well as implications on people's life. SNS can be categorized into three main categories based on users' objective: (1) personal socialization oriented e.g. Facebook and Google Plus, Twitter (2) information search oriented e.g. Amazon owned –Goodreads, Pinterest, (3) professional network oriented e.g. LinkedIn, Visible Path, Xing (formerly openBC). Further, in 2007, two types of SNSs were dominant: profile-centric sites, like LinkedIn and MySpace, and media-centric sites like LiveJournal, Flickr, and YouTube; also, location-focused SNS services like Dodgeball—were still primarily the domain of early adopters in urban centers (Ellison, N. & Boyd, D., 2013). To follow are classifications of SNS based on two major outlooks supporting the topic under study, which are time factor and level of interaction.

#### *2.1.1.1 Time Period*

According to Boyd and Ellison (2008), SNS's creation has passed through three developmental phases as illustrated in the following table (2-2). As Boyd has conducted this analysis back on 2008, still more studies need to investigate SNS' classification onwards especially with the emergence of massive specialized ones such as Pinterest, Google+, Tumblr, Instagram, and others.

**Table (2-2): SNS's Classification by Time Period**

SNS Phases	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	YASNS*	Researcher's Contribution
<b>Duration</b>	1997-2000	2001-2002	2003 –2006	2007-2019
<b>SNS Launched</b>	Six degrees, Live Journal, Asian Avenue, Black Planet, LunarStorm, MiGente	Cyworld, Ryze, Fotolog, Friendster, Skyblog	Couchsurfing, LinkedIn, MySpace, Tribe.net, Open BC/Xing, Last.FM, Hi5,Orkut, Flickr, DodgeBall, Catster, Hyves, yahoo 360, Facebook, Bebo, Cyworld, YouTube, Windows Live Spaces, Twitter, etc.	Tumblr, Fuelmyblog, Mastodon, Pinterest, Google+, The Sphere, Stage 32, Science Stage, Influenster, Friendica, del.icio.us, digg.com, Quora, Reddit, Spot.IM
<b>Enabling Features/Purposes</b>	Basic Profile creation, listing of friends, then surfing friends list.	Leveraging on business relationships; personal and professional related objectives; arising of technical difficulties and social collisions, rupture of trust between users and the site (Boyd, 2006b).	Addition of features and introduction of user generated media content sharing, and mobile based applications	Blogging & Micro blogging platform (real time updates), Visual discovery tool, specialized interest group, personalized services & functionalities, collaborative work, online product sampling, social tagging, stories, bookmarking, Open source

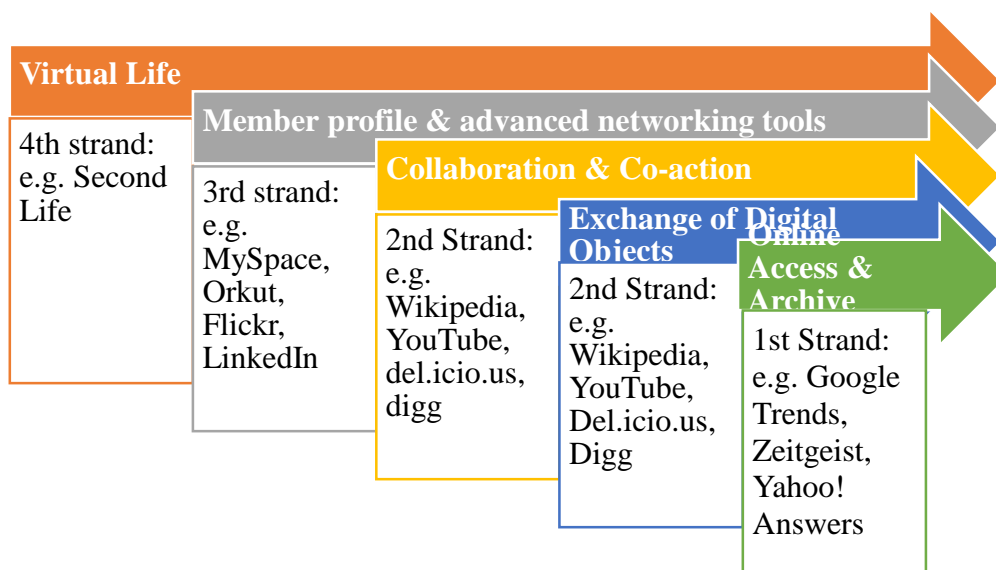
Source: Boyd and Ellison (2008),  
 \*YASNS is Clay Shirky's term (2003)

From the above table (2-2), the researcher articulated and added a fourth column shaded in orange as an attempt to extend Boyd's work ended on 2006 and resume classifying SNS till present time where those 10 years' time frame have witnessed an ample of SNS with voluminous features. This extension supported the research in investigating

the evolution of SNS beyond 2006, its added types with differentiated features and the developmental curve of some SNS in continuously adapting “know your customer” concept to fulfill users’ needs and wishes. The researcher analyzed newly introduced SNS and their differentiated features such as micro bogging, virtual collaboration, personalized services, micro specialized interest group, social tagging as well as open source. In addition, the current urge of security and privacy of information, which are the focus nowadays based on users’ changing concerns and desires. The experience gained from this investigation guided in the structuring of data collection instruments to better understand and reflect on online users’ perception and behavioral pattern.

### 2.1.1.2 Level of Interaction

There is another classification of SNS based on the level of interaction and socialization. As per Cachia, R. et al (2007), there were four strands of online services as illustrated in figure (2-1). The first strand (e.g. Google Trends) gave access to massive amounts of information and knowledge but contributed less to the socializing aspect. Then, the extended second strand networks had a lot in common with OSNs, since they offered the sharing of digital objects and collaboration towards a common goal (e.g., Wikipedia, YouTube, del.icio.us) but they did not offer socialization between members as one of their main objectives. Next, came networks in the third strand (e.g. MySpace, Orkut, LinkedIn, Flickr) which were the core group of OSNs that provided deeper socialization; finally, the fourth strand (e.g. Second Life) where virtual communities have emerged.



**Figure (2-1): SNS’s Classification by Level of Interaction (Cachia R. et al., 2007)**

Therefore, those were illustrations of the most famous examples of classifications of SNS in literature with respect to time interval and level of people interaction. Both classifications have helped in understanding types and functions of SNS for developing the appropriate data collection process within the society of Egypt. Further, the time interval taxonomy by Boyd and Ellison (2008) has inspired the researcher to add a contribution to knowledge column beyond 2006.

### 2.1.2 Features of SNS

Profiles are unique pages which one can “type oneself into being” (Sunden, J., 2003, p.3). Upon joining SNS, users are requested to complete their virtual profile through answering a set of predefined questions about oneself, in addition to uploading a picture for ease of recognition by others. Some sites encourage users to add multimedia content and lately options to add various applications. Afterwards, users start their journey within cyberspace searching for friends, family members or acquaintances called “friends, followers, fans, etc.” as per SNS brand. Cachia, R. et al (2007) identified OSNs characteristics in term of their large memberships, huge range of thematic topics, diversified demographic structure, new modalities of large-scale interaction and free access to some public data about users and their behaviors.

#### 2.1.2.1 General Features

There are general common features among SNS. Table (2-3) is an illustrative summary of SNS in term of shared features such as purposes, profiling, friending, service cost, real versus virtual world and audiences as well as the respective activities.

**Table (2-3): Summary of SNS Features**

Feature	Description
Purpose	Networking, socializing, or navigation
A profile page with basic personal information	Common to all sites
Public friending with public friends List	Common to all sites but friending not reciprocal in some sites (e.g. LiveJournal)
Costs of service	Core services always free; “professional” features require extra payment in some (e.g. LiveJournal,

	LinkedIn, etc.); micropayments for additional services (Gaia Online, Cyworld)
Public commenting on friends' profiles	Common to all sites but with different names (e.g., wall posts, comments, testimonials)
Real/virtual world	Sites like Gaia Online explicitly set up a virtual world for an alternative identity
Audience	Orientation on children, youth, adults; specific languages or community groups
Activities	<p><i>Blogs</i>, core to some sites (e.g. LiveJournal), optional in others (e.g. MySpace, Facebook)</p> <p><i>Photoblogs or online photographs</i>, popular facility in some sites (e.g. Facebook, Cyworld)</p> <p><i>Private messaging</i>, common to all sites</p> <p><i>Instant messaging</i>, tends to be offered in socializing SNS like Facebook and MySpace</p> <p><i>Groups or discussion groups</i>, popular in Facebook and community sites such as BlackPlanet</p> <p><i>Gift giving</i>, supported in sites, including Cyworld, LiveJournal, Facebook via payments</p> <p><i>Additional services</i>, music playing, videos, photo hosting, games</p>

Source : Zaphiris, P. & Ang, C. (2010)

As per Kane, G. et al (2014) social sites features may be technical (e.g. capabilities provided by the platform), normative (e.g. policies and rules of the platform) or economic (e.g. incentives for certain types of users' behaviors). SNS has various technical features however the most distinctive ones are the creation of digital profiles and social ties theory among system users. Reference to Ellison, N. et al. (2010), the technical features built into SNS serve to reduce the costs that individuals face in building a larger and more heterogeneous network of strong and weak ties. Users interact differently towards those features which results in variation of performance patterns among cultures. SNS has inspired many scholarships in various disciplines whether technological, sociological, and economical to dig further into two related concepts such as "social ties and social capital".



### 2.1.2.2 Social Ties Feature

“*Social ties or Theory of ties*”, there have been many scholarships investigating the relationship between social ties and SNS functioning. In sociology, weak ties are loose acquaintances that can help generate creative ideas, find a job, and transfer knowledge; while strong ties are trusted friends and family who can affect emotional health and often join together to lead organizations through times of crisis (Granovetter, M., 1973). Table (2-4) illustrated how SNS supports a richer range of possible ties.

**Table (2-4): Types of Dyadic Phenomena**

Name	Proximities	Social Relations	Interactions	Flows
<b>Description</b>	Shared space/ time	Relational states	Relational events	What moves between nodes
<b>Examples</b>	Living in same city	Friends; boss	Talking; sending email	Goods; information
<b>Social Media</b>	Being on the same platform or in same group; location-based services (e.g. Foursquare)	Facebook friends, LinkedIn connections, Twitter followers	Messaging, email, discussion boards	Twitter trends and retweeted content, social bookmarking systems

Source : Kane, G. et al (2014).

For traditional social network research, the four types of the above ties represent a continuum, such that each serves as the foundation for the next (Atkin, R., 1977). These four ties are already practiced among the member of most SNS online community without any firm distinction. These relational types of SNS assisted in understanding the different nature of networked community and the associated flow between nodes for data collection process. In Egypt, information represents the majority of flow between nodes of the virtual networks.

### 2.1.2.3 Social Capital Feature

Stemming from SNS’s social ties concept aroused “*Social Capital*”. Human beings by nature are social creatures that are “socially networked” by one way or another since the creation on planet earth. The term social capital has been widely used to refer to the

accumulated resources derived from the relationships among people within a specific social context or network (Coleman, J., 1988; Bourdieu, P., 2001a, Lin, S., 2001; Portes, A., 1998; Putnam, R., 2000). Later work by Putnam, R. (2000) conceptualized two distinct forms of social capital - the first emanating from weak ties that he called *bridging social capital* i.e. LinkedIn acquaintances and the second is derived from strong or intimate ties like family relations, called *bonding social capital* i.e. Facebook friends page. Social ties and social capital features assisted the research in understanding the relationship between SNS and its users “people” and how relationships are represented in the virtual world.

### **2.1.3 Concerns from SNS**

On the other hand, there are many concerns from SNS usage that may intensify due to the inflation of customer base, leakage in technical features and lack of regulating polices. As per Christian Fuchs (2013), issues of participation, surveillance/privacy, and labor exploitations receive substantial attention. With these and other related themes enfolded periodically into a larger discussion of the degree to which social media is truly social (in the sense of being representative, accessible, and participatory), and the degree to which its sociality is problematized by corporate interests, unethical practices, and class inequalities (O'Neill, D., 2015). Further, Fuchs explained the complexity of the techno-social system of Internet, whereby human activity is both enabled and constrained, and the effects of which are anything but straightforward (2013). In addition, Fuchs argued that Internet is required to evolve towards the continued accumulation of capital, often through the exploitation of its users (Fuchs, C., 2013).

Hence, privacy, which is one of SNS’s nowadays anxieties across the globe, should be tackled in depth. Privacy has become a more significant issue as the adoption of SNS has grown (Gross, R. and Acquisti, A., 2005; Brandtzaeg, P. et al, 2010). More specifically to SNS, privacy has been defined as the individual's ability to control the use of personal information (Westin, A., 1967; Stigler, G., 1980; Hui, K. and Png, I., 2006) that is related to different aspects of life (Lessig, L., 1999) for example, government and regulation (Milberg et al., 2000; Westin, A., 2003), consumer and price discrimination (Varian, H., 1985), and health (Heikkila, E., 2011). SNS has created a

lot of standing philosophical debates about whether privacy should be defined in terms of control over information (Elgesem, D., 1996), restricting access to information (Tavani, H., 2007) or contextual integrity (Nissenbaum, M., 2004). All must now be re-examined in the light of current privacy concerns related to SNS such as the famous case of Facebook's dissemination of accounts during the last US presidential elections (2017). As incidents of intrusion of privacy escalated, SNS users become increasingly concerned about the safety of their information (Bulgurcu, B. et al. 2010). Accordingly, IT organizations and international institutions lobby for setting governing rules by service and platform providers for safeguarding user's information safety.

Despite all of the privacy concerns that accompany the use of SNS, the available researches argued that without the information disclosures in profiles and through other activities of SNS (including status updates, comments, and the display of one's network of connections) users are less likely to accrue benefits (Gross, R. & Acquisti, A., 2005; Acquisti, A. & Gross, R., 2006; Lenhart, A. & Madden, M., 2007). Accordingly, users have to balance between their desire for self-disclosure and socialization. Through controlling their online visibility by intelligent selection of type, time, intensity of shared personal information as well as applying the adequate protection measures such as awareness of privacy settings, changing password, hiding email address, disability location identification, etc.

In summary of SNS section, primarily it is important to understand effusively SNS's history, purposes, classifications, features as well as associated concerns such as privacy issues before scrutinizing its impact on the society of Egypt. The research supported the notion that SNS through its brands bestowed the four discussed relational ties. Further, SNS features contributed in the formation and maintenance of both forms of social capital. Those involving connections to a larger heterogeneous network of weak ties that can be a conduit for information diffusion, and those involving connections to stronger ties that can provide emotional and material support where bridging is stronger than bonding social capital (Steinfeld, C. et al, 2012). This bonding and bridging social capital is fostered in this research through SNS utility variable that has an impact on shaping relationships among online users thus altering cultural behavior of a certain closed community over time. In addition, the research deduced

SNS's credibility variable from privacy and trust concerns through investigating users' perceptions of their informational security and awareness of protection measures.

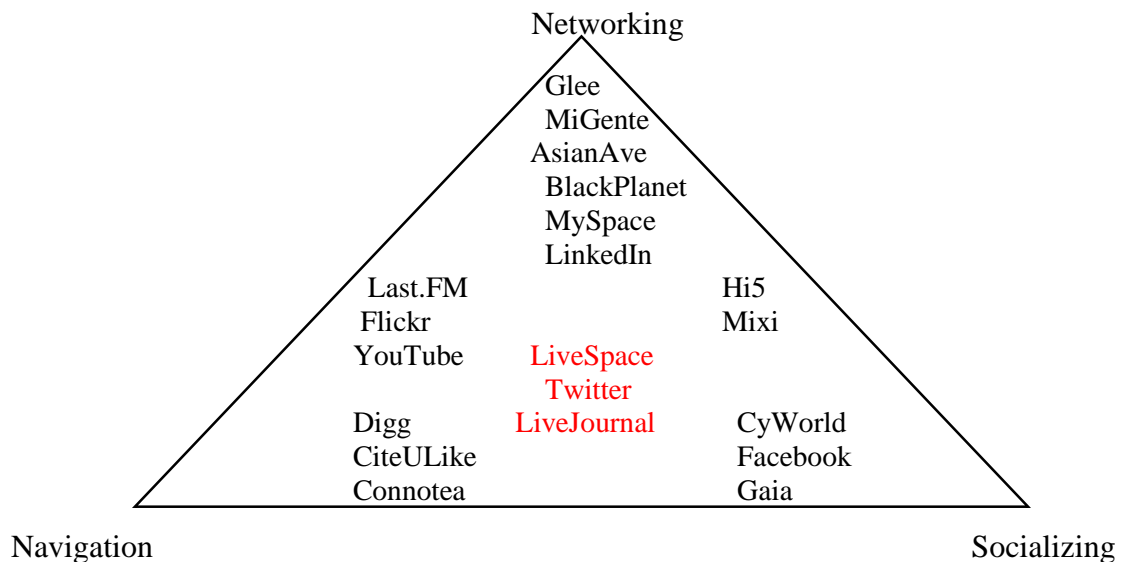
Next, the research assembled literature related to variables interacting with SNS over time to scrutinize its impact on them. Thus, to follow will be a discussion of the four external dimensions deduced from literature review, practical experience and researcher's observations which are composed of users of SNS e.g. *People*, their driving motives and inherited values e.g. *Culture*, their technical supporting infrastructure e.g. *Technology* and their affected surrounding contexts e.g. *Environmental Contexts*. Those four dimensions are the pillars for the development of the suggested research model and its hypotheses.

## 2.2 People Using SNS

The Internet has evolved from hosting information to hosting social interactions (Whitworth, B. & De Moor, A., 2009). The premise is that technology is not a "given", but something people create for their use, so technology should work for us, not vice-versa (Whitworth, B. & De Moor, A., 2009). From less than 1 percent of the world connected to Internet back in 1995, to around 56.8 percent of the world population i.e. 4.1 billion internet users are currently connected by March 2019 (Internet World Stats, 2019). SNS expanded the concept of community by allowing people from different corners of the world to communicate and reciprocate in real-time at an affordable cost through the use of multimodal channels, including text and audio-visual material (Cachia, R. et al, 2007); thanks to 2.6 percent increase in mobile users' year over year to reach 5.1 billion (We Are Social, 2019). Approximately 3.5 billion people access social network sites, whom represents 45 percent of the world population or 85 percent of total internet subscribers, with up to 6.1 percent growth rate year-over-year (We Are Social and Hootsuite, 2019). Currently, the percentage of mobile SNS users is almost the same as regular SNS users which is 45 percent indicating that mobile is the prime device for SNS access replacing PCs, tablets, etc. with a faster growing curve of 11 percent year over year (We Are Social and Hootsuite, 2019).

### 2.2.1 Purpose for Using SNS

In line with the ever-evolving nature of human needs, SNS purposes have been changing over time since its launch during 1997. Below is Thelwall (2008) typology of SNS's usage, which was an attempt to map SNS with respect to basic people's needs such as networking, socializing and navigation. SNSs serving the same objective were grouped at one of the three corners of the pyramid. That has to say, networking purpose was fulfilled through Glee, MiGente, MySpace, LinkedIn, etc. Of course, there are some SNSs serving more than one purpose. LiveSpace, Twitter and Live Journal offered navigation, networking and socialization; therefore, were situated in the middle of Thelwall's pyramid. For the Middle East & North Africa (MENA) region and in specific Egypt, Facebook attends the three listed purposes mentioned by Thelwall.



**Figure (2-2): Typology of SNS Usage Pyramid (Thelwall, M., 2008)**

Further, the following table (2-5) summarized more purposes for SNS usage by people globally as mentioned along literature.

**Table (2-5): Purposes of SNS Usage from Literature**

Purpose Name	Description	References
1. Maintain and enhance relationships	With all people even those whom they had a strong offline connection including close family members, high-school and college friends and co-workers ;	Ellison, N. et al (2007); Ito, M. et al (2009).

2. Self-construction	Users providing information on their own profile and co-construction while others adding information about users (e.g. on their message board);	Larsen, M. (2007)
3. Contacts management	Maintaining personal contacts by means of OSNs;	Vom Brocke, J. et al (2009)
4. Collaborative production	Like articles development on Wikipedia that may or may not include interpersonal interaction;	Kane, G. and Fichman, R. (2009)
5. Information dissemination and shared awareness	Especially in social movements, “it is an efficient and cheap way to give members information; to transfer skills and news; also it conveys to members the highly motivating realization that they have big numbers”;	Rosenberg, T. (2012) & Shirky, C. (2012).
6. Economic purposes	Organizations which can harness this innate human ability to manage knowledge via electronic social networking will be able to lower transactions costs and become more profitable;	Van Zyl, A. (2009)
7. Educational and learning purposes	Second Life, an online virtual community, has been used for educational purposes such as uploading personal opinions, participating in team work, as well as sharing knowledge and information;	Selwyn, N. (2007)
8. Self-promotion and public relations	LinkedIn professional network;	Nadkarni, A. and Hofmann, S. (2012)
9. Community social support in Crisis situation	An illustrative example was Haiti Earthquake 2010 where a digital campaign that allowed people to text a number for donation to the Red Cross that raised over 3 million dollars in just 48 hours;	Sheedy, C. (2011)

10. Provision of unlimited sense of freedom	SNS represented a fertile ground for Arab youth to break down restrictions (e.g. a lot of cultural, social, religious, moral and political) even if it was behind fake names driven by their human needs of self-presentation, social interaction, freedom of speech and expression.	Angeli (2009); Marshall, B. et al, (2008); Yoo, S. & Huang, W. (2011), Al Omoush, K. et al, (2012).
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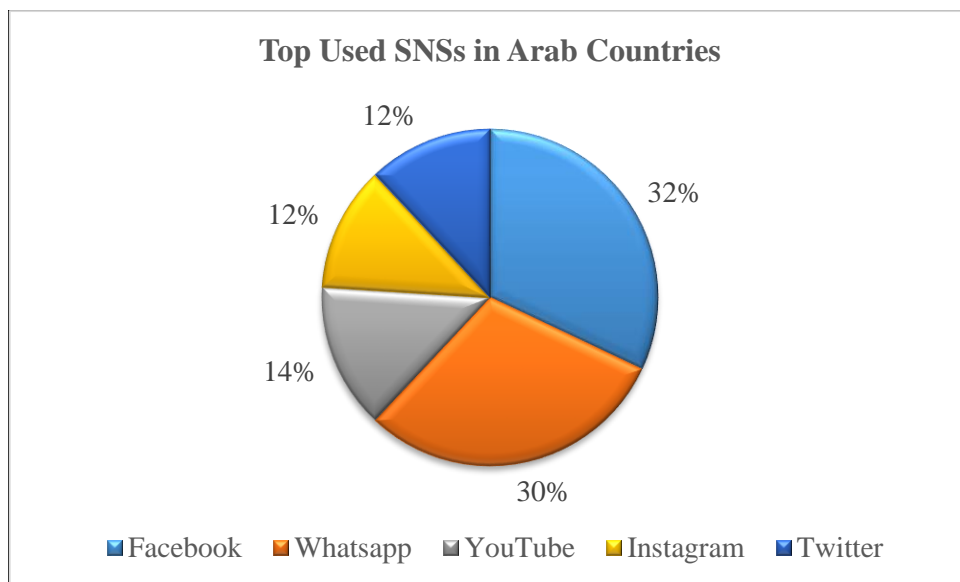
### 2.2.2 SNS Users and Usage Trends in the MENA Region

Middle East and North Africa (MENA) region comprises of 22 countries with around 421 million Arabic speaking people, making it the fifth globally most spoken language (Istizada, 2018). As per Statista (2019), internet penetration rate of MENA region is 67.2 percent that is higher than global average of 56.5 percent; accordingly representing 5 percent of world internet users. Egypt comprises 27 percent of the total internet users in the MENA region. As Egyptian internet users account for 49 million with a 49.5 percent penetration rate over both fixed and mobile. This indicates that the MENA region is a lucrative market for SNS practice. By the beginning of the 21st century, SNS such as blogs, Facebook, YouTube, and Twitter became global phenomena not only in western countries with advanced communication technology but also in Arab countries with relatively limited online media access (Chung, C. & Sung Ho, C., 2013). All newspapers started to report SNS issues in the Middle East since 2004; where Facebook, Twitter, and YouTube have led to an increase in online civic activism in the Middle East during 2011 and onwards (Chung, C. & Sung Ho, C., 2013).

As part of Arab Spring 2011, Egypt has experienced a major political instability during January 25<sup>th</sup> revolution against the regime that has ruled for the past three decades as the activists were protesting against poverty, unemployment, government corruption and social justice. After the revolution, the Supreme Council of the Armed Forces ruled until the issuance of new constitution followed by presidential and parliamentary elections. This instability as per Khamis, S. and Vaughn, K. (2011) has spurred a wave of scholarly and media articles and commentaries linking street protests to cyber activism, seen as a tool for encouraging civic engagement and providing a new platform for political expressions. Social media facilitated activists in spreading the word, share ideas and even arrange practical actions such as requesting blood donations (Idle, N. &

Nunn, A., 2011). Those media also helped activists not only link up with Arabs in diaspora, but also international media and organizations, thereby creating a virtual global public sphere (Khamis, S. & Vaughn, K., 2011).

Below Figure (2-3), displays the commonly used SNS among Arab countries as per research house TNS Global (2015). On a closer look of the most famous SNS within the MENA region especially with the introduction of its Arabic version in 2009, it was Facebook. Facebook has the highest number of users with 195.5 million (World Internet Stats, Dec 2018) where Egypt standalone has 37 million Facebook users representing 23% of overall MENA users. Thus the below figure (2-3) displayed the dominating role of Facebook and its owned tools WhatsApp and Instagram summing up to around 74 percent of total used SNS channels in the region.



**Figure (2-3): Top Used SNS among Arab Countries (TNS Global, 2015)**

Researchers have claimed that social media has promoted a more open ideology (Gitelman, L. & Pingree, G., 2003), a strong social and political bond (Warren, A. et al (2014), served as a means of communication and exchange of ideas (Luna, E., 2011) and as a platform facilitating political dialogue (Ghazi, J., 2011) across the Arab world. Therefore, TNS Global (2015) has classified the Arab SNS users into five main clusters based on their attitudes and behaviors towards social media;



**Table (2-6): Arab SNS Users' Classification**

<b>Cluster Name</b>	<b>Definition</b>	<b>Desired Benefits of Social Media</b>
<b>Social Butterflies</b>	Highly sociable people	Communication & Entertainment
<b>Explorers</b>	People with Constant quest for novelty	Gaining Knowledge an discovery
<b>Achievers</b>	Leaders, Social, intellectual or professional people	Achievements in knowledge building and gaining opportunities
<b>Escapists</b>	People longing for sociability	Communication enabler
<b>Pragmatics</b>	People with minimal usage, necessity usage	Communication & Gaining knowledge

*Source: The ASMIS Social Media MENA Report, TNS Global, 2015*

The research applied this classification on the Egyptians' SNS users through one of its data collection methods, which guided in developing SNS lifecycle in Egypt at the end of the research. Despite the phenomenal growth in the adoption and use of online social media in recent years across countries, perceptions and adoption behaviors vary from one place to another and from one demographic to the next (Arno, C., 2012; Monty, S., 2011; Van Belleghem, S., 2011) based on culture. Therefore, there is a notable difference between the West and the Arab world whereas more than 50% of the western Facebook users (e.g. USA, UK, Canada, Australia, etc.) are female on the average, there is 36% females of Arab Facebook members (Al Omoush, K. et al, 2012). The majority of Facebook users (55%) in the Arab world lies in the age range between 13 to 24 years old; on the contrary, with the West where the majority of them lies in the range between 25 to 60 years old and older (Al Omoush, K. et al, 2012). Hence, understanding people's behaviors, motivational use and user experience are considered as important constructs in studying SNS impact on a society.

### **2.3 Culture and SNS**

Long ago, Edward T. Hall (1959) stated that Culture is Communication, and Communication is Culture. Thus, any alteration or transformation in means of communication from face to face to a virtual one definitely influences the culture of a community. Trompenaars and Hampden-Turner (1998) depicted it as the manner in which a group of people solves problems and reconciles dilemmas. For Dimmock, C. and Walker, A. (2000), culture meant "the values, customs, traditions, and ways of

living which distinguish one group of people from another”. This definition aligns with that of Hofstede (1991/2005), who defined culture as “patterns of thinking, feeling, and acting underpinning the collective programming of the mind which distinguishes the members of one group or category of people from another”. Culture dimensions are defined as core axes around which significant sets of values, beliefs, and practices clustered (Dimmock, C. and Walker, A., 2000). Although culture is abstract, it does have definite characteristics that are observable and amenable to empirical description (Strauss, C. and Quinn, N., 1992; Rohner, R., 1984). Primarily, it is the *sharing* that distinguishes cultural phenomenon from individual phenomenon (McCort, D. and Malhotra, N., 1993). Secondly, it is manifested in *learned behavior* acquired through socialization (Ward, S. et al, 1987). Therefore, humans learn norms through imitation or by observing the process of reward and punishment in a society of members who adhere to or deviate from the group's norms (Engel, J. et al., 1995). Both Hofstede and Hall seemed to assume that “culture” is synonymous with national identities, thus ignoring internal ethnic and linguistic diversities (Ess, C. and Sudweeks, F., 2006).

Researches frequently refer to national culture as a profound influential determinant that greatly affects the adoption of IT (e.g. Loch, K. et al, 2003; Park, J. et al, 2007; Srite, M. & Karahanna, E., 2006; Straub, D. et al, 2001). One may conceive of culture in terms of its parts, components, functional segments or institutions, such as the economic system, the family, education, religion, government and social control, language and communication, and transformation and technology (Baligh, H., 1994; Chanlat, A. and Bedard, R., 1991; Culpan, R., 1991; Ferraro, G., 1990; Hall, E. and Hall, M., 1990). Van Belleghem (2011) found that the population of countries in emerging markets like Brazil, China and India had higher awareness, participated in more networks and had higher daily usage rates than those from many countries in Western Europe. Nowadays, many users of SNS are active content generators and critics, rather than merely being passive content consumers (Stump, R. & Gong, W., 2015) which is emerging in the Arab world due to the urge for Arabic content.

Peters and Waterman (1982) argued that Middle Eastern cultures are considered to be strong and coherent because they are infused with a system of values, beliefs, and ideals that are well understood and adhered to by all members of society. Those cultures feature high level of social interaction. Hence, ever since human existence, culture is

developed because of people interaction together however the method of this interaction changes over time as per technological development until reaching our current age of digital communication. The future of information technology applications lies in harmonizing people’s social requirements with technical systems in innovative ways to change global humanity. Thus, it is crucial for IT researchers to comprehend the logic and manners of social interactions among people through studying their culture including its values, rituals, beliefs and models.

### 2.3.1 Overview of Cultural Models

Primarily it was important to identify various models or theories of culture and its developed dimensions before considering culture as a parameter. To follow are the most famous cultural models arranged chronologically with their associated dimensions;

**Table (2-7): Comparison of Cultural Models**

Model Name	Year	# of Dimensions	Dimensions
Hall	1990	5	Space, Material goods, Time, Friendship, Agreement
Hofstede	1991/2001/2005	6	Power distance, Masculinity, Individualism, Uncertainty, Long term orientation, Indulgence
Lewis	1992	1	Time; Monochromic vs. polychromic culture
Trompenaas	1993	7	Universalism, Collectivism, Emotional, Specific, Status, Sequential, Inner directed
Lessem	1994	4	Pragmatism, Rationalism, Idealism, Humanism
Peter Dahlgren	2003	6	Values, Affinity, Knowledge, Practices, Identities, Discussion. By 2009 affinity become trust and discussion become spaces

Source: Dafoulas, G. & Macaulary, L. (2001).

On an effort to expand beyond the above table (2-7) of classical cultural models, researchers have scrutinized Hall and Hofstede’s work to develop alternative frameworks for analyzing cultural dimensions of online communication;

**Table (2-8): Comparison of Cultural Models through Online Intercultural Communication**

<b>Model Name</b>	<b>Year</b>	<b># of Dimensions</b>	<b>Dimensions</b>
Triandis	2001	5	Space, Material goods, Time, Friendship, Agreement
Lee and Choi	2005	2	Expanding the notion of Individualism into two dimensions (vertical and horizontal)
Andre Brock	2005	--	Critical techno cultural discourse analysis (CTDA)
Anthony Faiola & Sorin Matei	2005	5	Cultural Cognition theory Format, Imagery, color, information architecture and system interaction
Hewling Framework	2006	--	Critical Discourse analysis “third culture”

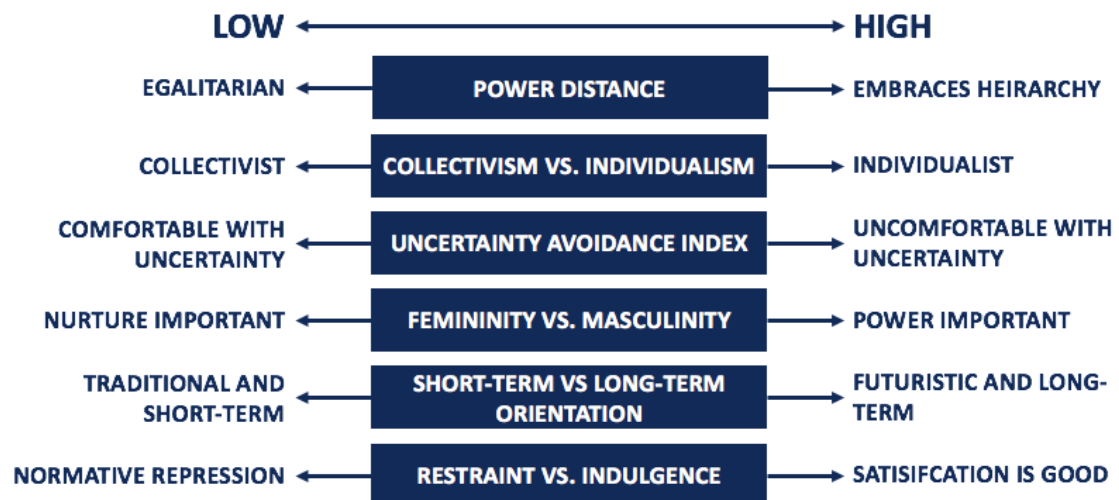
*Source: Ess, C. & Sudweeks, F. (2006).*

Here quoting Scollon and Wong-Scollon (2001), “cultures do not talk to each other; individuals do” (p. 138). Accordingly, thanks to the communicative possibilities provided by Internet and the web as global media, more and more people become cultural hybrids or “third identities” that entail operating from at least two national cultures precisely through their distinctive engagements online (Ess, C. & Sudweeks, F., 2006). Thus, there are new endeavors to study online intercultural communication that is based on Hofstede’s simple polarities but go beyond toward various specialization as required. Therefore, the next section discusses Hofstede cultural framework in depth and its application on literature then on the Egyptian society to deduce the relationship between SNS and culture.

### 2.3.2 Hofstede Cultural Framework

Hofstede's framework (1980, 2001) has established a set of universal dimensions of national culture on which all societies can be positioned, it allows for intercultural comparisons (Beugelsdijk, S., et al, 2015). Hofstede (1991) defined national culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another"; later on, Hofstede (2001: 12) described culture as "the crystallization of history in the minds, hearts, and hands of the present generation". Hofstede (1980) culture framework was constructed from data collected in attitudinal surveys conducted in subsidiaries of IBM in 72 countries from 1967 until 1973. This IBM study's dimensions of culture represented a well-validated operationalization of differences between cultures as manifested in dominant value systems (Hofstede, G. and McCrae, R., 2016). Hofstede (1980) original conceptualization has identified four dimensions of national culture, which are Individualism/Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity/Femininity and provided ratings on these dimensions for many countries (The Hofstede Center, 2013). In addition to these four dimensions, by 1991, Hofstede model has added a fifth cultural dimension called long-term orientation or "Confucian dynamism" (Hofstede, G. and Bond, M., 1998). In 2010, the sixth cultural dimension about indulgence versus restraint was added to the model. Those added fifth and sixth dimensions had not yet enough cultural applications implemented on countries. Hofstede (1980) subsequently was one of the first researchers to use factor analysis and reduce cross-national cultural diversity to country scores on a limited number of dimensions.

Although competing frameworks and dimensions of national culture have appeared since then such as Schwartz, S., 1994; Trompenaars, F., 1993; House, R. et al, 2004 (Global Project), none was able to compete with Hofstede's framework popularity in the field of IT research. To follow is a quick listing of Hofstede cultural dimensions that is tackled later on in details for the Arab region and specifically on the Egyptian society's adoption of SNS;



**Figure (2-4): Hofstede's Six Cultural Dimensions**

Source: <http://www.geerthofstede.com/dimensions-of-national-cultures>

1. *Power distance Index (PDI)*; it is construed as the extent to which members of a society accept that power in institutions and organizations is distributed unequally (Hofstede, G., 1991) and is related to conservatism and maintaining the status quo (Steenkamp 2001). Yenyurt, S. and Townsend, J. (2003) have reported that power distance has a significant negative impact on the acceptance rates of internet, cellular phones and PCs. On the opposite, Dwyer, S. et al. (2005) found evidence that power distance had a positive influence on diffusion rates in a study of technological product innovation across 13 countries.

2. *Individualism-Collectivism (IDV)*; describes the relation between the group and the individual in term of a loosely knit versus tightly knit society, which has been widely studied in cross-cultural research (Gudykunst, W., 1997; Triandis, H., 1989; Triandis, H. et al., 1988; Zhang and Gelb, 1996). According to findings of Lorenzo-Romero, C. et al. (2011) at the individual level revealed that trust affects positively and directly on attitudes towards SNWs adoption and perceived risk influences negatively users' intentions to use them. While people in individualist cultures seem to have more freedom to try new things and more likely to use SNWs for self-expression than those in collectivistic societies; members from collectivistic societies may be more inclined to join and participate in SNWs to gain a sense of belonging, fulfill group obligations and achieve group harmony (Gong, W. et al, 2014). In addition, the extant research distinguishes between innovation and imitation as two processes that explain diffusion, with individualistic countries being quicker to adopt in the early stages, whereas

collectivistic countries have adoption rates greater in the second stage, when enough of a critical mass of adopters exist (Gong, W. et al 2014).

3. *Masculinity-Femininity (MAS)*; this third dimension addresses the extent to which a society is characterized by assertiveness versus nurturance and is closely related to societal expectations of gender roles (Gong, W. et al, 2014). Although technological innovations can be of assistance and would therefore be applauded in masculine cultures where material things and career advancement are highly valued, the social dimension of SNWs can be expected to be appreciated by the feminine cultures, where the nurturing of personal relationships is highly cherished (Ribiere, V. et al, 2010).

4. *Uncertainty Avoidance Index (UAI)*; it is the degree to which societies can tolerate uncertainty and ambiguity (Hofstede, 1980). It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations (Hofstede and McCrae, 2016) such as risk tolerance in willingness to practice novel unusual matters or situations. Several studies have found evidence of a negative relationship between countries' degree of uncertainty avoidance and the penetration rate of Internet and other technological innovations (La Ferle, C. et al., 2002; Lynn, M. and Gelb, B., 1996; Yenyurt, S. and Townsend, J., 2003).

5. *Long Term Orientation (LTO)*; according to Hofstede (2001), cultures with a long-term orientation are characterized by values such as persistence, adaptations of traditions to new circumstances, perseverance toward slow results, and the idea that most important events in life will occur in the future. Since technological innovations generally represent a revolution, big or small in people's lives, respect for traditional paradigms or supporting values of perseverance and the belief that most important events in life will occur in the future may influence the adoption of innovations such as SNWs (Ribiere, V. et al, 2010).

6. Lastly added, *Recently Indulgence –Restraint (IND)*; this new dimension identifies Indulgent societies that tend to allow relatively free gratification of natural human desires related to enjoying life and having fun whereas Restrained societies are more likely to believe that such gratification needs to be curbed and regulated by strict norms (Hofstede, 2010). It was added by 2010 so there still no enough application on societies' culture due to the subjective meaning of happiness. Indulgence versus Restraint would seem to have an impact on generational differences such as the impact

of technology on younger generations would suggest that the need for instant gratification is more prevalent but more research is still needed (MacLachlan, M., 2013).

Even though, the fifth and sixth dimensions were recently introduced with no solid application within Hofstede's work; however, the study used them to consider additional aspects in the analysis of social groups and their respective views especially in dealing with different age generations and nationalities in interview instrument at data collection phase two.

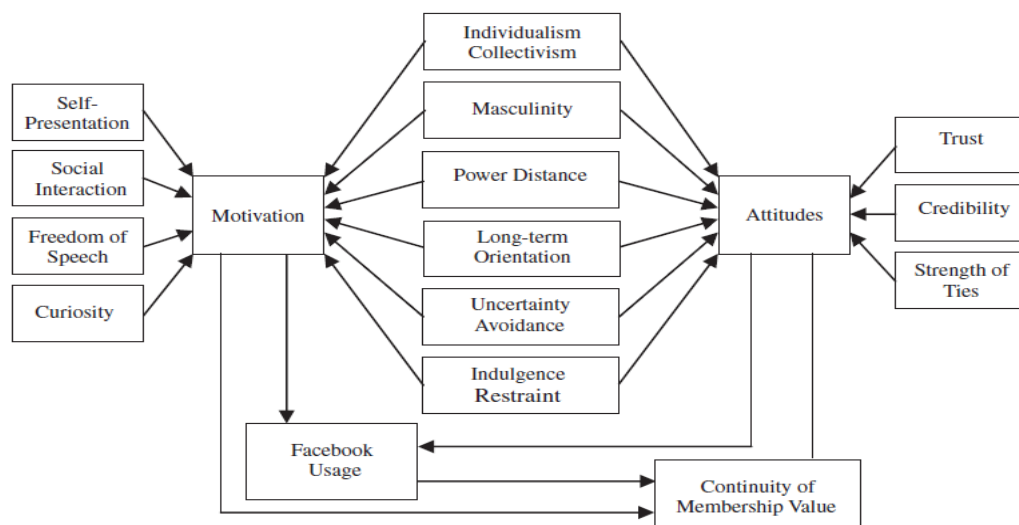
### **2.3.3 Application of Hofstede Framework in Literature**

In recent years, numerous studies have employed Hofstede's framework (e.g. Dwyer, S. et al, 2005; Ganesh, J. et al, 1997; Kumar, V. and Krishnan, T., 2002; La Ferle, C. et al, 2002; Tellis, G. et al, 2003; Van Everdingen, Y. and Waarts, E., 2003; Yenyurt, S. and Townsend, J., 2003). There were numerous studies carried out to study the impact of culture on IT adoption using Hofstede model; where the two cultural dimensions – Individualism vs. collectivism and femininity vs. masculinity, have indicated to be relevant to users' online communication behaviors (e.g. Goodricha, K. and De Mooij, M., 2013; Rosen, D. et al, 2010). Further, House et al (2004) contended that uncertainty avoidance is the cultural dimension that most strongly correlates with technology adoption. While uncertainty-avoiding cultures may tend to resist change, this does not necessarily imply that they are averse to adopting new technologies (Barron, A. and Schneckenberg, D., 2012), but it does appear to influence timing. That has to say, when and how long the adoption process takes before a significant penetration level is achieved (Stump, R. and Gong, W., 2015). Pew Internet & American Life Project (2012) reported that women have been significantly more likely to use SNS than men since 2009 (Brenner, 2012). Hargittai, E. (2007) found that women were not only more likely to use SNS than men but also more likely to embrace different online services such as Facebook, MySpace, and Friendster. Further, the outcome of Yenyurt and Townsend study (2003) suggested a strong association between cultural dimensions and the penetration rates of new high-tech products (the internet, cellular phones and PCs), which is moderated by social-economic variables.



A considerable stream of researches (e.g. Ali & Lee, 2010; Dotan, A. & Zaphiris, P. & Ang, C., 2010; Marshall, B. et al., 2008) claimed that cultural differences are mitigated in virtual spaces, especially with SNS. Loch, K. et al. (2003) investigated the diffusion of Internet in the Arab world focusing on the impact of social norms and cultural values. In the virtual world of SNS, the lack of direct social cues regulating self-presentation online (Angeli, 2009), has led to a conceptualization of SNS as a medium with the power of liberating individuals from cultural restrictions and influences among the Arab world (Al Omoush, K. et al, 2012).

Here is an illustration of one of the comprehensive framework carried out by Al Omoush, K. et al (2012) in studying the usage of Facebook among 14 Arab countries and the continuity of membership value in relation to Hofstede’s Six (6) cultural dimensions. Al Omoush, K. et al (2012) framework combined Hofstede’s cultural model together with people’s motivation of use and attitudes toward SNS in Arab countries.



**Figure (2-5): Model of Cultural Impact on SNS**  
*Source : Al Omoush, K. et al (2012)*

Hence, Al Omoush, K. et al (2012) findings of 749 Facebook users from 14 Arab countries revealed that a significant effect of *masculinity and long-term orientation* cultural dimensions on motivation of Facebook membership; however, individualism, power distance, uncertainty avoidance, and indulgence cultural dimensions did not have a significant effect on Facebook members’ motivations. This framework supported the research with respect to two parameters: one addressing SNS’s earlier mentioned

features e.g. trust, credibility and strength of ties, which determine people’s attitude toward SNS; secondly, application of Hofstede cultural 6-Ds and its relationship to MENA people usage of Facebook and continuity of membership value. On the other hand, the left side motivation’s four variables were beyond the current scope of this research’s objective. Hence, the researcher found Hofstede’s cultural model is useful in studying Egyptian culture due to its popularity and practical manifestation on the Middle East region including Egypt. Whereas, the study focused on investigating the impact of cultural characteristics on using SNS.

***Egyptian Culture through the Lens of Hofstede 6-Ds Model***

According to Hofstede’s typology (1980), the Arab countries were classified as having high power distance, high uncertainty avoidance, low individualism and high masculinity. Hofstede 6-dimensional model analysis of the Arab region- including Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia and United Arab Emirates- revealed identical findings among the seven nations due to sharing of the same history, language and religion. This below table from Hofstede analysis displayed the Arab countries scoring across the five dimensions compared to Hofstede’s world average.

**Table (2-9): Arab Countries Index Score versus World Average**

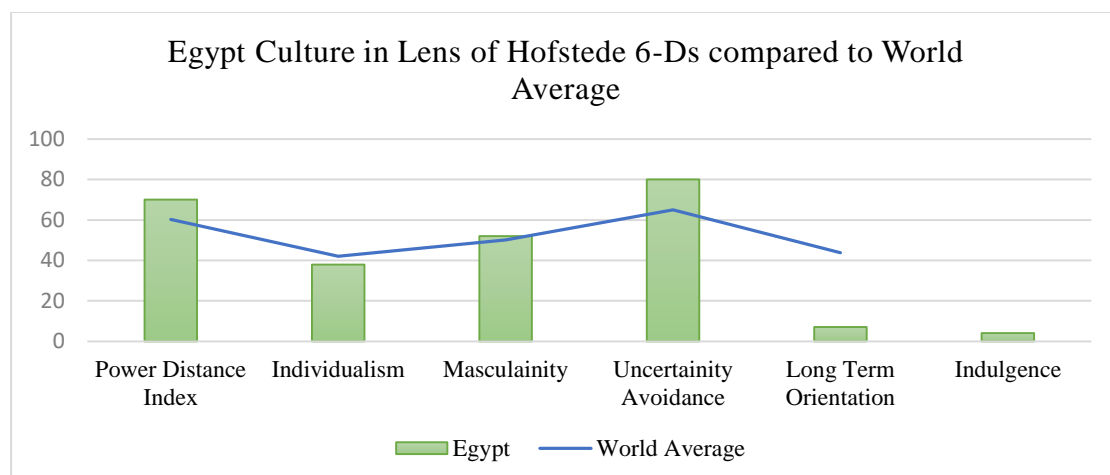
Country	Power Distance		Uncertainty Avoidance		Individualism		Masculinity		Long-Term Orientation	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Arab Countries (Egypt)	80	7	68	27	38	27-27	53	23	7	---
World Average	60.2	--	65	--	64	--	50.2	--	43.8	--

Source: Hofstede, G. (2001, 2002, 2015)

The predominant cultural characteristics of Egypt are high power distance (80) and uncertainty avoidance (68). Egyptian community is authoritarian where leaders have virtually ultimate power and authority supported by developed laws and policies. High Power Distance (PDI) is an indication of acceptance of hierarchy and inequality of

power and wealth among society’s members. The high Uncertainty Avoidance Index (UAI) signifies the low level of tolerance for uncertainty among society’s members; so strict rules, laws and policies are implemented and acceptance of change is minimal. Masculinity index (MAS) is perceived at 53, which is slightly higher than the 50.2 average for all countries included in the Hofstede dimensions (The Hofstede Insights site, 2013). This implied limited rights and freedom for women versus men. Furthermore, cultures with a high level of masculinity are ego-oriented, ambitious and keen on a good performance (Chan, A. & Cheung, H., 2012; Gong, W. et al, 2014). At a modest ranking is Individualism (IDV) at 38, compared to a world average ranking of 64 (The Hofstede Insights) since Egypt is a collectivist society which “is manifested in a close long-term commitment to the member 'group', that being a family, extended family, or extended relationships” (Taylor, S., 2019). This feature served socialization activity that is highly practiced by Egyptians over SNS virtual networks.

The lowest dimensions are Long-term orientation and Indulgence. The LTO has scored 7 which implied that culture is normative as people greatly respect traditions and norms while viewing societal change with suspicion. Similarly, the low score of Indulgence signified that Egyptian society is a very restrained one where people’s behaviors and actions are controlled by dictated social norms and the feeling of indulgence is perceived as wrong. Thus, SNS is perceived as a window to express desires and impulses apart from offline community’s constraints. The figure (2-6) below summarized the above section about Egypt culture through the lens of Hofstede 6-D model in contrast to the world average.



**Figure (2-6): Egyptian Culture Relative to Hofstede World Average**

Source : <https://www.hofstede-insights.com/country/egypt/>

Although Hofstede's dimensions originally had nothing to do with technology adoption, some researchers have applied them to understand cultural presence on IT interfaces (Downey, S. et al, 2005; Marcus, A. & Gould, E., 2000; Robbins, S. & Stylianou, A., 2002, 2003; Zahedi, F. et al, 2001). Therefore, it is worthwhile scrutinizing the influence of those Six (6) dimensional characteristics on the evaluation of SNS usage among online community in Egypt.

**Table (2-10): SNS Usage associated with Hofstede's Dimensions**

Dimension	Associated SNS Usage Elements
Power Distance ( <b>High</b> )	As per Stump and Gong (2015), the role of power distance on the adoption of SNS remains equivocal. Concerning Egypt- that has a high power distance- had shifted to social networks sites adoption during the critical time of 2011 revolution as the ruling regime collapsed i.e. in absence of higher authority to follow.
Uncertainty Avoidance ( <b>High</b> )	Cultures with a high level of uncertainty avoidance prefer to look at online websites to obtain a great amount of knowledge and in return, to share these new insights with their online community (Kim, H. et al., 2009). Information seeking and reading comes hand in hand with the viewing of online ratings and reviews, which in return lowers the perception of taking on risks or uncertainties (Muntinga, D. et al., 2011). In addition, it is said that information seeking is an important feature of social media, in order to have more control (Lee, H. et al, 2014) especially in situations of chaos. Therefore, Egypt's society reached out for social networks for information gathering and attaining knowledge to reduce the perceived uncertainty of the future.
Individualism/ <b>Collectivism</b>	Collectivists tend to use social media to look after each other and show affection (Hofstede, G., 1983; Rice, R. et al, 1998). Maintaining existing relationships by satisfying sociability needs are further characteristics of social media motivations (Griffiths, M. et al., 2018; Lee, H. et al., 2014). These attributes can once again be linked to collectivist cultures in terms of the great importance of interpersonal relationships (Rice, R. et al, 1998). In addition, collectivist cultures engage in

	<p>social comparison by socializing with the in-group (Lee, H. et al, 2014).</p> <p>As Egypt is a collectivist culture that is focused on networking and information sharing, social media is used as a preferred communication tool (Kidd, D. &amp; McIntosh, K., 2016; Lin, J. et al., 2017).</p>
<b>Masculinity/Femininity</b>	<p>The assumption arises that masculine cultures are interested in using social media for the purpose of showing off (Hofmann, 2018) and self-representation. Although SNS can serve utilitarian purpose and foster commercial pursuits, which is likely to be aligned with masculine cultures where material things and career advancement are highly valued; however, the social aspects of SNS can be expected to be more germane in feminine cultures where the nurturing of personal relationships is more cherished (Ribiere, V. et al, 2010; Singh, S., 2006).</p> <p>As for Egypt, that is a high masculine culture, both gender tend to use social networks fairly equal. Further, the impact of masculinity appeared in behavior over SNS such as more profile images of men or nature versus minimal images of women due to culture of conservatism.</p>
<b>Long Term Orientation/ Short Term Orientation</b>	<p>While long-term oriented cultures are thought to be more open to new ideas and more adaptive, the emphasis on fulfilling social obligations is in short-term oriented societies (Hofstede, G., 2001; Minkov, M., 2011) may foster the adoption of SNS. Since it is a medium that enables the conveyance of richer, more nuanced messages beyond the verbal or written word (Stump, R. &amp; Gong, W., 2015). Thus, SNS adoption in Egypt has happened but at a later stage and under certain political circumstances than in long-term orientation cultures.</p>
<b>Indulgence/Restraint</b>	<p>Indulgence versus Restraint would seem to have an impact on generational differences such as the impact of technology on younger generations would suggest that the need for instant gratification is more prevalent but more research is still needed (MacLachlan, M., 2013). Teens and young adults have been consistently reported to have highest wireless and SNS usage rates (Pew Research Center, 2013).</p>

	Therefore, even if Egypt’s culture is denoted as a restrained one; however, the 23.6% of youth population (CAPMAS, 2017) is the main driver of change with the use of social networks.
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*\*Note: Bold dimensions are those applied on Egyptian culture.*

In summary, Hofstede’s six (6) dimensions cultural model revealed that Egypt societal culture is characterized by high Power Distance, high Uncertainty Avoidance, high value of in-group collectivism, and high masculinity or high performance orientation. A low emphasis is on humane long-term orientation and it is a somehow restrained community where acknowledged norms and values are adhered. On a small note, Hofstede dimensions nor subsequent international cultural models did not measure the impact of religion upon people’s cultural behaviors. However, in Egypt as well as Arab countries, religion plays a fundamental role in people’s lives. Thus some Arab cultural models were developed starting with Ibn Khaldun, 788 H, 1377 G passing through Hammad et al., 1999 and Malik Ibn Nabi, 2000 until reaching Salem and Agil, 2012 (Najm, A., 2015), mostly revolving about the influence of two concepts which are the Arabic language and religion. Thus, more studies that are specialized need to address the role of religion, especially for Arab countries, on new technology adoption, which is beyond the scope of this study. However, this research kept attentive to the influence of religion – as a cultural component- in investigating the impact of SNS in addition to the manifestation of Hofstede studied six dimensions upon the society of Egypt.

### **2.3.4 Digital Culture**

Some people think that ICT diffusion helps create a new type of technology adopter called “digital citizen” (Katz, J. & Aspden, P., 1997). ICT provides the platform to enable citizens’ participation in the transformation and democratization process as well as mobilization of resources, debating issues, influencing decisions and leveraging civic engagement, all contributing to minimizing the digital divide (Bennett, D. & Fielding, P., 1997; Gilbreth, C. & Otero, G., 2001; Norris, P., 2001; Weber, L. et al, 2003). In “DigEuLit” project, Martin, A. and Grudziecki, J. (2006) have defined digital literacy as “the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize

digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action and to reflect upon this process". During 2004, the term digital citizenship was discussed in the United States through Mike Ribble's work with ISTE's National Educational Technology Standards (NETS); based on the latter urge for standards of technology use among the education environmental system. It is not narrowly defined as just having technological access to Internet but also having online educational competencies (Mossberger, K. et al, 2007).

Therefore, Mossberger, K. et al (2012) defined 'Digital citizenship' as the ability to participate in society online; however, requires regular access to Internet, with devices and speeds that can accommodate such activities. This included technical competence to use the necessary hardware and software, as well as the information literacy needed to find, comprehend, evaluate, and apply the online information. Digital citizenship is not just about recognizing and dealing with online hazards; but also it is about building safe spaces and communities, understanding how to manage personal information and about being internet savvy in using your online presence to grow and shape your world in a safe, creative way and inspiring others to do the same (Digizen.org, 2010). As per Kim and Choi (2018), digital citizenship education should become a new identity card for the citizens of digital era who are demonstrating their capabilities such as appropriate responsibilities and codes of conduct relating to the use of technology through a reasonable approach (Miles, D., 2011) of interactive online activities (Ribble, M., 2015). This should be combined with the ability to be productive with a sense of responsibility and criticism about technology (Farmer, L., 2011). The capabilities to use technologies that extend from theoretical context to the social context (Nosko, A. & Wood, E., 2011); and competence for young citizens to make reasonable and wise choices in a variety of online environments and situations in a comprehensive way (Farmer, L., 2011; Kassam, A., 2013; Miles, D., 2011, Ribble, M., 2015). There have been couples of recent endeavors about the components of digital citizenships scale as per below table (2-11).

**Table (2-11): List of Digital Citizenships Frameworks**

<b>Researcher/Institution</b>	<b>Contents/ Factors</b>	<b>Target Subjects</b>	<b>Limitations</b>
Ribble (2011)	9 factors	Mainly technology leaders and teachers	Some elements are beyond the scope of individual student responsibilities (i.e., rights, communication, education, and access).
ISTE Brichacek (2014)	9 factors	Teachers and students (All Grades)	It presents the digital citizenship competencies required of the students, but mainly focuses on skills, attitudes, and lacks of knowledge.
iKeepshape ( <a href="http://www.ikeepsafe.org/">http://www.ikeepsafe.org/</a> )	6 factors	Students (All Grades)	It focuses on skills and attitudes, and lacks identity factors.
Isman & Gungoren (2014)	9 factors	College students	It merely confirms Ribble’s research from the viewpoint of college students.
Jones & Mitchell (2015)	2 factors	Students (11-17)	It includes digital citizenship scale for adolescents, but is limited to ethics and participation in online.
Choi, Glassman, & Cristol (2017)	5 factors	Adult (over college students)	It is limited to the participation of adults in the Internet-centric community.

*Source: Kim, C. & Choi, D. (2018)*

Based on the aforementioned digital citizens’ frameworks, Mike Ribble (2011) have created nine theme of digital citizenships defining it as an “appropriate responsible behavior with regard to technology use”. Those nine themes are grouped into three categories as follows: Educate, Respect and Protect which are demarcated in the below table (2-12) and were the foundation of some of the above-mentioned frameworks.



**Table (2-12): Mike Ribble’s Nine Themes of Digital Citizenship (ERP)**

<b>Educate yourself /connect to others</b>	<b>Respect yourself/ Respect other</b>	<b>Protect yourself/ Protect others</b>
Digital Literacy, teaching process of technology use	Digital <i>Etiquette</i> , electronic standards of conduct	Digital rights and responsibilities, one’s freedom in digital world.
Digital communication, e-exchange of information	Digital <i>Access</i> , full e-participation in society	Digital Health and Wellness, physical and psychological well-being in digital world
Digital Commerce, e-buying and selling of goods and services	Digital <i>Law</i> , e-responsibility for actions	Digital Security, e-precautions to guarantee one’s safety

Source: Ribble, M. (2011)

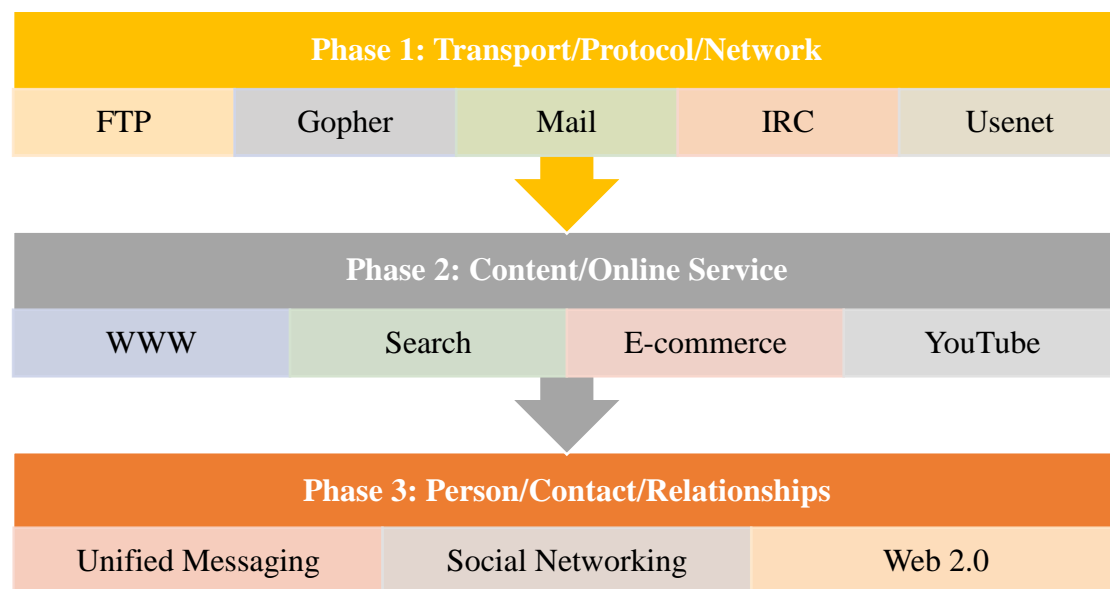
Therefore, the ERP themes of digital citizenship are grounded on a learning process of educating how to use technology positively in the same time respect and protect one’s rights and surroundings. It was added to K-12 USA curriculum to teach young people the good use of technology in order to be a good digital citizen in the real and virtual worlds. Whereas, online activities are considered as a measure of digital citizenship (Mossberger, K. et al, 2014), likewise, youngsters in Egypt are consuming a lot of time over Internet, specifically over SNS. Hence, the research endeavored to apply Mike Ripple (2011) digital citizenships themes upon the online society of Egypt and measure the percentage of fulfillment respectively. It was selected because it went beyond the scope of individual students, more inclusion themes and was the foundation for other research work as indicated in table (2-11). Hence, culture is an influential construct in studying SNS impact on digital transformation of societies.

This elaborative discussion of culture and cultural models with the rise of digital culture definitely has enhanced the conceptualization of the impact of culture on the usage of SNS by the society of Egypt. This understanding guided to an adequate consideration and representation of culture in the proposed research model then across the collection methods. The following sections displayed the investigation of technological infrastructure then environmental factors, which encompassed socio-economic

conditions, governmental initiatives and political circumstances as possible constructs interacting with SNS.

## 2.4 Technology

While technology can help shape social relations; social relations also shape how technology is developed and deployed (Warschauer, M., 2003). Below is an illustration of Chapman, C. & Lahav, M. (2008) evolution of internet services model, where each phase did not replace the previous, but built on and redefined it. Thus, the foci of technological development differed over time from transport to content then to users /people and their relationships.



**Figure (2-7): Evolution of Internet Services Concepts**

*Source: Chapman, C. & Lahav, M., (2008)*

In Egypt, all those three technological stages displayed in figure (2-7) above are fully practiced over fixed and mobile broadband. As per Kathleen McNutt (2014), the public engagement activities have shifted from “broadcast paradigm” associated with Web 1.0 towards “communicative paradigm” that is associated with Web 2.0. Some of the major SNS (Zaphiris, P. & Ang, C., 2010) have enhanced the potential of SNS as portals and hybrid services with the introduction of application platforms. So, understanding how the workload of social networks in re-shaping Internet traffic is valuable in designing the next-generation Internet infrastructure and content distribution systems (Pujol, J. et

al, 2010, Krishnamurthy, B., 2009). As noted by Dutta and Bilbao-Osorio (2012), the world has become increasingly “hyper-connected” fueled by the exponential growth of mobile devices, big data and social media. To understand the available infrastructure that enables digital activities, factors such as fixed and mobile broadband, Internet bandwidth, firewall applications, networking services, and IT spend forecasts must be premeditated by concerned stakeholders. Infrastructure is the foundation for digital connections and activities; without the right level of infrastructure, countries are not able to advance in their digital journey (Tae Yoo et al, 2018).

In nutshell, technology is no longer an off the shelf software product; however, human interaction and participation are the driving force for the development and sustainability of technological innovations. Therefore, the concomitant widespread adoption of broadband technologies coupled by the rapid development in Internet applications played an important role in accelerating the growth of SNS community in Egypt. Saying this, technology as an enabler infrastructure is considered a construct in studying SNS impact.

## **2.5 Environmental Contexts**

SNS’s principle characteristic is sharing digital content with the purpose of communication and socialization leading to collaborative intelligence of a group of participants and forming virtual social networks even within businesses and governments. Collective and collaborative intelligence emerges from the collaboration and competition of many individuals, where the resulting intelligence is larger than the sum of individual contributions (Bloom, H., 2000). SNS is a big professional yield for businesses and governments if well utilized. Social media use in the public sector can be informational, interactional, participatory, or collaborative in nature (Brainard, L. & McNutt, J., 2010; Sandoval-Almazan, R. & Gil-Garcia, J., 2012). Harnessing the potential power of social media is more than simply creating a Facebook page or uploading content to YouTube; thus, if governments do not use these tools in an interactive and participatory spirit in which they were designed, then organizational social media activities will inevitably be ineffective (McNutt, K., 2014). Still, there are major challenges associated with public sector implementation including normative contexts, standardized operating procedures, and established schemas all of which

shape bureaucratic behavior and the extent to which objective technology is institutionalized into complex organizations (Macnamara, J., 2010).

From a business perspective, social media is a major influencer on consumers' purchasing habits, with 36% of US internet users saying social networks have become as important as other information sources for making product choices, up from 27% in 2015 (Keyes, D., 2019). During 2012, McKinsey estimates that the economic impact of social media on business could exceed \$1 trillion, most of which is gained from more efficient communication and collaboration within and across organizations (Chui, M. et al., 2012). As per eMarketer Report (2017), digital spending will see double-digit growth each year of the forecast, soaring from \$83.00 billion in 2017 to \$129.23 billion in 2021; which represents 36.7% of total media advertisement spending in 2016 and will account for around the half by 2021. Mobile will be the main driver of this growth, comprising 70.3% of digital spend in 2017 (eMarketer, 2017).

On local scale, there was a research conducted about Web 2.0 adoption by Egyptian entrepreneurs which revealed that Web 2.0 is affected by three main factors: age of entrepreneur, date of establishment of the company, and nature of the business: traditional or virtual (Azab & Khalifa, 2013). Web 2.0 is currently used by Egyptian business sector mostly for a one-way communication Facebook pages and twitter accounts to reach out for customers and promote products and services' details with limited spaces for customers' reviews.

Lastly, in all nations, the socioeconomic, regulatory and political conditions affect and are affected by SNS practices among society's members. Social media is increasingly influencing sociopolitical transformation across the globe (Attia, A. et al, 2011). The technological innovations of social media alter the structure and content of political discourse in the Middle East (McCauliff, K., 2011). Saying this, environmental contexts encompassing socio-economic conditions, political issues, and governmental initiatives are considered a growing field for manipulating SNS, especially nowadays across the MENA region. Accordingly, this study considered environmental contexts as an influential dimension in studying SNS impact in the society of Egypt.

After discussing the possible parameters that interact with SNS around the clock, it is time to pinpoint the possible impact of that continuous interaction on changing people's styles of life. Thus, next section tackles digital transformation concept.

## 2.6 Digitalization Concept

The Oxford English Dictionary (OED) traced the first uses of the terms 'digitization' and digitalization in conjunction with computers to the mid-1950s (Brennen, S. & Kriess, D., 2014). The two terms are used interchangeably; however, they are distinct but in the same time interrelated. **Digitization** refers to the process of converting different forms of information and this might include sounds, images, texts, etc. into codes, which can then be stored, delivered, received in digital form (Hand, M., 2008). In contrast to the technical process of converting analog data streams into digital bits of 1s and 0s; there is **digitalization**, that is the way in which many domains of social life are restructured around digital communication and media infrastructures (Brennen, S. & Kriess, D., 2014). For the sake of this study, it discussed digitization with the purpose to achieve digitalization of "new economy, society, and culture..." (Castells, M., 2010).

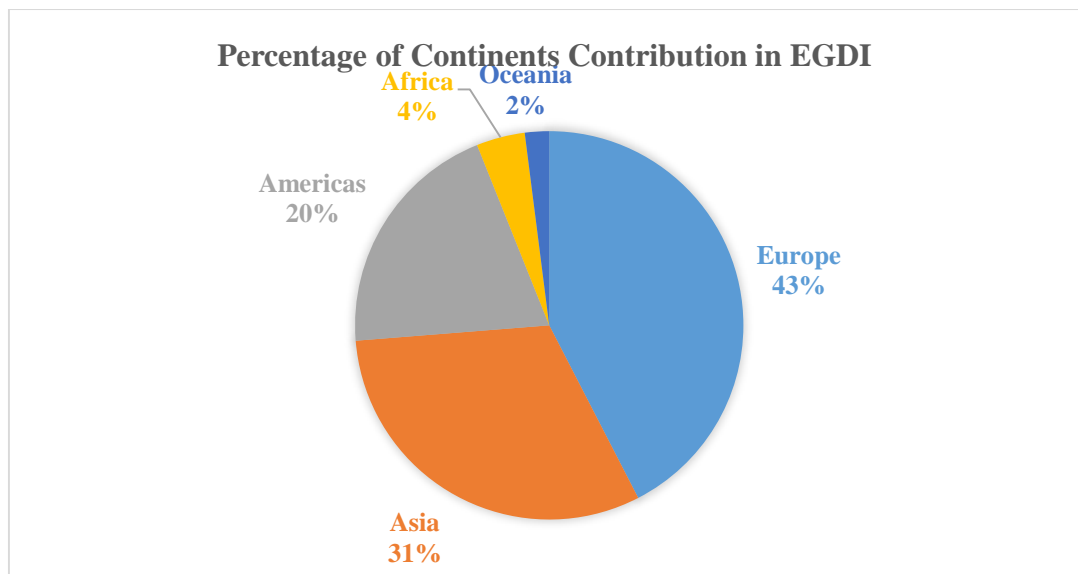
Further, the diffusion literature showed that adoption of SNS are influenced by variety of socioeconomic factors as well as the economic and technological infrastructure of a country may have a concrete and direct manifestation of a culture's impact on consumer behavior (Yeniyurt, S. and Townsend, J., 2003). For technology adoption, the general demand for digital products and services was assessed by considering factors such as mobile device penetration, actual Internet usage, and forecasts of IT spend for trendy services including cloud services. The amount of technology demand, utilization, and adoption reflects a country's current level of digital readiness (Tae Yoo et al, 2018). Gradually the concept migrated from basic technical definition to its implications on people's life. Therefore, Brennen, S. and Kreiss, D. (2014) based their definition of digitalization on *social life* – in other words, how people interact - as such interactions moved away from analog technologies (snail mail, telephone calls) to digital ones (email, chat, social media), both work and leisure domains become digitalized. Then a further step toward people's professional life. Subsequently, Gartner's definition is thus

quite different from the academics', focusing on changing business models rather than social interactions. According to Gartner's glossary, digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; consequently, it is the process of moving to a digital business (Gartner, 2003).

Digital transformation means that advances in digital technology and data utilization drastically changes aspects of society including private lives, public administration, industrial structure, and employment (Keidanren, 2019). Continuous utilization of data through digital technologies such as artificial intelligence (AI), Internet of Things (IoT), robotics, block chains, as well as biotechnologies will open up many new possibilities; so the important question is what to use these technologies for (Keidanren, 2019). Digital technologies and data should be utilized to create a society where people smoothly lead diverse lifestyles and pursue happiness in their own ways.

The potential benefits of digital transformation for both society and industry can be boosted through collaboration to align societal value and market forces. Digitization will enable countries to maintain global competitiveness, increase GDP, foster innovation, and create new jobs (Tae Yoo et al, 2018). Concerning the attention given to digitization lately is because most organizations believe that half of their revenue will come from digital channels by 2020 (Samuels, M., 2018). Furthermore, the World Economic Forum (WEF, 2016) estimated that the overall economic value of digital transformation to business and society would top \$100 trillion by 2025. Since four industries (automotive, consumer, electricity and logistics) have the potential to create \$8.4 trillion in value for industry and \$12.7 trillion in value for society between 2016 and 2025 (WEF, 2016).

As per UN E- Government Surveys (2018), all 193-member states of the United Nations had national portals and back-end systems to automate core administrative tasks, while 140 states provided at least one transactional service online. The trend of improvement in transactional online services is strong and consistent in all assessed categories with the three most commonly used services being payment for utilities in 140 countries, submitting income taxes in 139 countries, and registration of new business in 126 countries (UN E-government Surveys, 2018).



**Figure (2-8): Global Contribution in E-Government Development Index (EGDI)**  
*Source: The United Nation Report (2018)*

Hence, there is a disparity in e-government development level among developed and developing countries whereas 51% of countries is above the world average of 0.55 in E-government development index, 43% of this ratio is represented by European countries. E- Government is one of the patterns of digitalization. In fact, it is commonly the initial step toward ‘energizing digital acceptance through a holistic integrated approach’ drove by the government for promoting digital infrastructures, developing digital regulations and fostering digital trust for adoption of digital financial transactions ‘that will boast overall productivity, social inclusion and upgraded living standards’ (Gonzalez, A. et al, 2017) for country’s natives.

Digitization has its privacy concerns as any ICT application. As per study conducted by Royakkers et al (2018), the new wave of digitalization is putting pressure on the public values. This studied has concluded that the main task ahead is to effectively safeguard these widely acknowledged public values in new digital society everyday practices (Royakkers, L. et al, 2018).

This section shed lights about how the digital diffusion commences across countries, which is represented primarily through e-governments implementation in support toward digital transformation of nations’ ecosystems. Those applied cases channeled the research in investigating the impact of heavy usage of IT applications in digitization of the broader scenery i.e. ‘societies’.

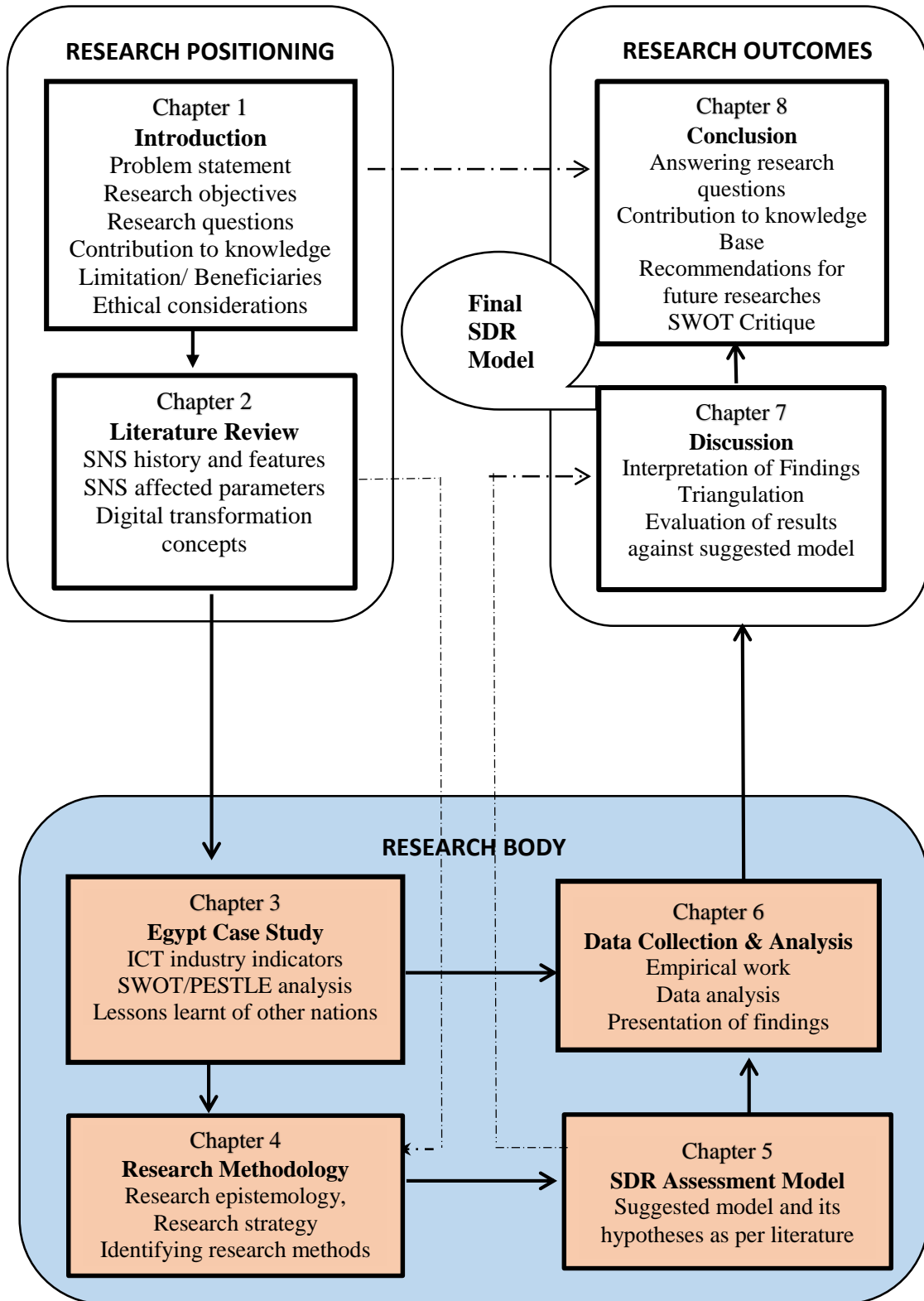
## Summary

The Arab spring during the period of 2010-2015 has shed lights to the noticeable role of SNS as a real-time tool for communication, collaboration, expression of opinion, sharing of up-to-date information, mobilization for change and transformation of nowadays various aspects of life in the MENA region. All previous accomplished researches have proven that SNS has contributed with an impact on societies, cultural attitudes and behavioral change as well as on communities' identity across nations. Thus, literature presented in this chapter was certainly useful as a foundation for answering the research's proposed problem statement especially in an ever-evolving dynamic topic like SNS and its impact on societies as well as in the preparation phase of data collection methods. The issues tackled were SNS and its correlated elements in life. First, the study comprehended SNS's biography, features, classification and privacy concerns. Privacy measures should be highly considered in the digital world whereas adequate security measures and applicable regulations must be enforced. Then investigated people of SNS in respect of their purposes for using SNS and types of users with focus on MENA region. Thirdly, culture was examined through comparing cultural models from literature as well as tackling the concept of digital citizenship due to technology use. This derived the study to dig in the history of SNS's enabled technological infrastructure. Fifth, environmental contexts, where governments and enterprises are using SNS for interaction with citizens and approaching customers as well as its impact on socioeconomic, regulatory and political conditions, seemed to be important for the development of a total perspective of SNS impact on a society. Finally, the study felt the need to discuss digitization phenomenon across the globe, which is the expected outcome from practicing IT applications among citizens.

Aside from those factors interacting and affected by SNS within a society; there is a subsequent chapter profiling Egypt ICT industry. So, the next chapter highlights Egypt country profile, which is the case study of the research to verify the suggested research model before diving into data collection implementation and analysis chapters.



**Blue Shaded Section is the Next Step in the Thesis's Organization Plan**



## **Chapter Three: Egypt ICT Profile (A Case Study)**

### **Objectives of the chapter**

- To provide a background about Egypt country indicators
- To demonstrate Egypt ICT market indicators
- To compare Egypt to the MENA region
- To develop Egypt SWOT analysis for digitalization
- To generate Egypt PESTLE analysis
- To share lessons learnt from developing nations in digitalization process

By the end of chapter two, the researcher sensed the need to dedicate a chapter for clarifying the venue where the model is developed for. Therefore, this chapter is a case study of Egypt profile (as a representation of MENA) where data collection, analysis and application of the suggested research model took place with the exception of UK based group interviews. The chapter highlights Egypt country indicators, then emphasizes on related ICT industry's measures. Next, the chapter explains the reason for selecting Egypt specifically from the MENA region through a comparison between Egypt and the surrounding neighboring countries. Also, the chapter presents a SWOT/C analysis of ICT in Egypt, complemented with PESTLE analysis for adequately understanding the current technological standing of Egypt. Finally, the chapter shares lessons learnt of digital IDs implementation from other developing countries.

### **3.1 Egypt Country Indicators**

Egypt is a transcontinental country that connects Northeast Africa with Southwest Asia through Sinai Peninsula. Egypt is the most populous country in the MENA region. As per World Population Review (2019), the estimated population is 101.280 million which ranks Egypt as the 14th in the world representing 1.3 percent of the world 7.7 billion population. As per Worldometer (2019), Egypt has a population density of 102 P/Km<sup>2</sup> that experiences 1.80 percent annual growth rate. It is a youth country with an average age of 24.8 years old (Worldometer, 2019). As per CAPMAS, 23.6 percent of country population is between the ages of 18 and 29; where 51 percent of youth is males and 49 percent is females (2018). This age bracket is the innovator, engine and the

principle users of SNS worldwide as well as in Egypt. Urbanization in Egypt accounts for 45.37 percent versus 54.63 percent of rural population.

Concerning Egypt economy, it is the third largest in the Arab world after Saudi Arabia (683.83 billion US) and United Arab of Emirates (382.58 billion US dollars). The gross domestic product (GDP) was worth 235.37 billion USD in 2017 with an annual growth rate of 5.3% that represents 0.38% of the world economy (Trading Economy, 2019). Although still high, inflation has begun to ease over the past 18 months, slowing from a record 33 percent in mid-2017 to 12.7 percent in January 2019 (The World Bank, 2019). Egypt is working heavily to expand its industrial base and value added services, where agriculture accounting for 11.49 percent of gross domestic product (GDP), industry for 33.75 percent and services sector contributed by 53.02 percent as of 2017 (Statista, 2019). Services sector is mainly represented by tourism, trade, banking, shipping services (Suez Canal) as well as the communication and information telecommunication (ICT) sector. Egypt telecommunication's sector witnessed a growth rate of 16.4 percent during the second quarter of the fiscal year 2018/2019, which is one of the highest among the entire Egyptian economy sectors in the contribution to GDP reaching 8 percent (Egypt Independent, 2019).

### **3.2 Egypt ICT Industry Indicators**

#### *ICT Industry Background*

Although computing started in Egypt in the 1960s, it was only in 1985 that the active role played by the government caused a change in the way information technology was perceived as a vehicle for socioeconomic development and a tool to improve the decision-making process (Kamel, S., 1999). In Egypt, since 1985, the driving force for the diffusion of information technology has been the government private sector partnership (Kamel, S., 2004). The sector has been overseen at the central government level by IDSC until the establishment of the Ministry of Communications and Information Technology (MCIT) in 1999. The law regulating telecommunication in Egypt is Law No 10 of 2003, which is known as Telecommunication Regulation Law upon which The National Telecommunication Regulatory Authority (NTRA) was established with the responsibilities to safeguarding national security in the telecommunication sector. Moreover, there are other supporting specialized arms under

the supervision of MCIT, which are Information Technology Industry Development Agency (ITIDA), National Telecommunication Institute (NTI), Information Technology Institute (ITI), Silicon Valley, Technology Innovation and Entrepreneurship center (TIEC) and CultNet. Those specialized arms exercise various functions ranging from marketing and investment, educational, entrepreneurial as well as cultural mandates respectively.

Between 1985 and 2007, the government announced nine major policy initiatives to promote the development of Egypt's information society (Kamel, S., 2010). Gradual liberalization during 1990s and 2000s opened the market to more competition, bringing major international telecoms companies in particular Cisco Corporate, Microsoft, IBM, Oracle, Vodafone, Orange, etc. Below is a chronological narration of information communication development in Egypt until 2007 as per Kamel (2010); then the researcher updated it until 2019.

**Table (3-1): Chronological Listing of the Development of the Information Society in Egypt**

<b>Program/ Initiative</b>	<b>Year</b>
Open Door Policy	1974
Economic Reform Program	1985
Information Project Cabinet of Ministers (IPCOM)	1985
Information and Decision Support Center (IDSC)	1986
National Information and Administrative Reform Initiative	1989
Egypt's Information Highway	1994
Ministry of Communications and Information Technology (MCIT)	1999
National Information and Communications Technology Master Plan	2000
Egypt Information Society Initiative (EISI)	2003
Egypt ICT Strategy 2007-2010	2007
eMisr national broadband plan	2011
Egypt ICT Strategy 2014-2017	2013
Digital Arabic Content National Strategy	2014
The Egyptian Government Cloud (EG-Cloud) Strategy	2014
The National Free and Open Source Software (FOSS)	2014
LTE tender for Unified 4G license	2016
ICT strategy 2030	2017
The National Cybersecurity Strategy 2017-2021	2017
National e-Commerce Strategy	2018

*Source: Kamel, S. (2010) for the first shaded part contribution until 2007.*

On 2011, NTRA has launched a \$2.4 billion national broadband initiative called “eMisr” with a 10-year plan aiming at achieving 40 percent subscription base of Egyptian fixed broadband households and 15 percent of mobile broadband by 2021. “eMisr” was an initial step to prepare Egypt for the digital communication environment. *Egypt ICT Strategy 2014-2017* is a reflection of the ICT sector’s interest to adopt the democratic revolution witnessed by the Egyptian society with all its targets. The strategy aimed at investing in Egyptian potentials, with new perspectives regarding effective society participation and good penetration tackling ways of achieving the digital citizenship through innovative technology applications (MCIT, 2019).

Then 2014 witnessed numerous accomplishments such as the development of *digital Arabic content* in order to catch the ‘knowledge train’ by developing a rich and value-added digital Arabic content. Then, the *Egyptian Government Cloud (EG-Cloud)* strategy sought to improve the efficiency and performance of the government. The cloud model supports governmental agencies grappling with the need to provide highly rapid reliable and innovative services despite resource constraints. Next, the *National Free and Open Source Software (FOSS) Strategy* addresses Egypt’s challenges in relation with the market uptake, awareness, education and business know-how for FOSS start-up companies. It unleashes the innovative potential of young people and empowers ICT industry.

Later in 2017, as a part of Egypt’s *ICT 2030 Strategy*, MCIT has put forward five “Strategic Business Plans” based on government cloud, social responsibility, digital Arabic content and open source software strategies (Global Data, 2017). *ICT Strategy 2030* has three main pillars with various dimensions:

- a. Social ( social justice, Heathcare, Education/Training, Culture)
- b. Economic (Economic development in energy, Knowledge, Innovation and scientific resarch, Transperancy and efficiency of governmental institutions)
- c. Environmental (Environment and Urban Development)

There are numerous indicators with strategic targets to achieve in each of the above dimensions; however, presented here those of relevance and interest to our research scope in investigating digitization of the Egyptian society.

**Table (3-2): Key Performance Indicators of ICT Strategy 2030**

S.N.	Indicator	Current Value	2020 Target	2030 Target
<b>Economic: Economic Development</b>				
1.	Real GDP growth rate (%)	4.2	10	12
2.	GDP per capita (USD)	3436.3	4000	10000
<b>Economic: Knowledge, Innovation, Scientific Research</b>				
1.	Global Innovation Index (rank)	99	85	60
2.	Innovation efficiency ratio	0.8	0.85	1
3.	Information and communications technology sub-index of the global innovation index (rank)	73	50	30
4.	Digital creativity sub-index of the global innovation index (rank)	74	60	30
<b>Social: Education</b>				
1.	Egypt's rank in the World Bank's Index for Technical Education	2/4	3/4	3/4
<b>Environmental: Urban Development</b>				
1.	Egypt's rank in global connectedness index	99/140	65	50
2.	Number of Egyptian cities in Globalization and World Cities index (GaWC)	1 (Cairo)	5	9

Source : National ICT Strategy (2012-2017),

<http://www.mcit.gov.eg/Upcont/Documents/ICT%20Strategy%202012-2017.pdf>

The economic development of any country is a prerequisite for the digitization of community services. Hence, the strategy started its objectives with an ambitious target of the increase of Egypt's GDP growth rate from 4.2 percent up to 12 percent by 2030. Then the strategy aims to develop and restructure the knowledge and innovation system through adopting comprehensive program to promote knowledge culture and stimulate creative activities by SMEs. This culture targets to raise Egypt global innovation index from 99 to 60 rank among countries of the world within 10 years. Regarding the technical education, it plans to uplift Egypt's world ranking from two out of four towards three out of four through a number of educational reform policies. Further, within urban development, the strategy aspires to raise Egypt's rank in global connectedness index from 99 out of 140 to 50 out of 140. Consequentially increases the number of Egyptian cities in globalization world cities index from being Cairo the only city in Egypt to nine (9) cities by 2030.

As per Article (31) of the Egyptian Constitution (Jan 2014), “the security of cyberspace is an integral part of the economic system and national security. The State shall take the necessary measures to preserve it as regulated by Law.” Therefore, the Egyptian Supreme Cybersecurity Council (ESCC) - reporting to the Cabinet of Ministers, and chaired by the MCIT- has launched the *National Cybersecurity Strategy (2017-2021)*. This strategy objective was “to confront cyber threats and enhance confidence and security of ICT infrastructure, and its applications and services in various critical sectors, in order to create a safe, reliable, and trusted digital environment for the Egyptian society” (MCIT, 2019).

Last but not the least, the *National E-Commerce Strategy* was launched in early 2018, in cooperation with the United Nations Conference on Trade and Development (UNCTAD). Compared to its region, e-commerce penetration in Egypt is relatively low; however, growth rate is above the average (Statista, 2019). Although there are not many commercial SNS, international e-commerce stores are frequently used such as Amazon/souq, ebay, Jumia, etc. supported by the presence of various delivery providers i.e. DHL, FedEx, UPS, etc. as well as different payment methods: credit, debit cards and cash upon delivery. E-commerce low penetration rate due to mistrust of online sales by many Egyptians; however, this situation is changing with governmental e-strategies and people’s intense online practices on established virtual platforms.

### **3.2.1 Key ICT Market Players**

For decades the telecom sector was dominated by Telecom Egypt (TE), the fixed-line, state-owned enterprise that traces its roots back to telegraph connection established between Cairo and Alexandria in 1854. In 1957, TE was nationalized, then became a joint-stock company in 1998 (Oxford Business Group, 2019). By 2005, TE has undertaken an IPO with 20% offering for private investment. In 2016, Telecom Egypt has signed a deal of EGP 7.08 billion for the purchase of 15 years fourth generation (4G) mobile license to become the first operator in Egypt to own a 4G license. Before Telecom Egypt’s 4G mobile operator license, there are three 3G foreign owned operators, which are Orange Egypt, Vodafone Egypt and Etisalat Misr. It’s worth mentioning that Telecom Egypt holds 44.94% of Vodafone Egypt shares; which gave it a strategic foothold in the mobile segment during the past years before it launched its own provider, WE, in late 2017 (Oxford Business Group, 2019). Still, however,

Telecom Egypt has a monopoly on both the backhaul and the last mile local transmission as well as ownership of roughly 1,549 exchanges nationwide.

**Table (3-3): ICT Egypt Key Market Players**

1. Mobile Network Operators (MNOs)	Orange Egypt, Vodafone Egypt, Etisalat Misr, Telecom Egypt/WE (Launching order)
2. Incumbent local Exchange carriers	Telecom Egypt
3. ISPs (data local exchange carriers)	Orange Egypt (LinkdotNet), Vodafone Egypt (Raya), Etisalat Misr (NOL & EGYNET), Telecom Egypt (TEData), Nour
4. Cable Operators	NA
5. Direct to Home / Satellite operators	ART, OSN, BeIN Sports

*Source: Global Data (2017)*

According to Daily News Egypt (2018), Vodafone possessed 38 percent market share followed by Etisalat Misr of 31 percent, then Orange Egypt dropped to 29 percent; while Telecom Egypt has its newly introduced mobile operator “WE” accounts for 2 percent (Daily News Egypt, 2018). The following table (3-4) provides statistical highlights of the Egyptian ICT market.

**Table (3-4): ICT Egypt Key Indicators**

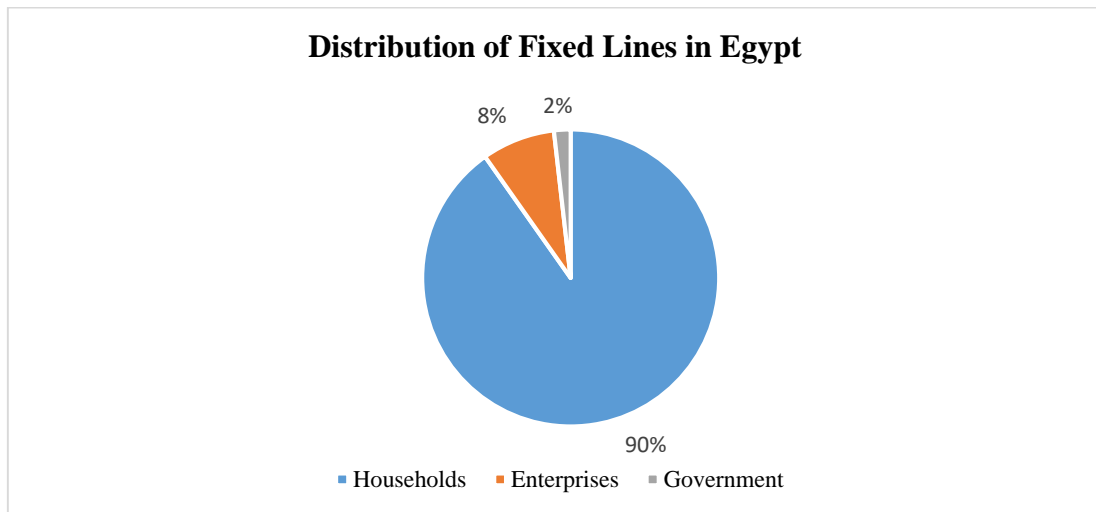
Fixed Market Indicators	Mobile Markey Indicators
Total Fixed Lines: 7.8 million	Total Mobile Subscription: 93.8 million
Fixed Line penetration : 7.59%	Mobile penetration: 101.63%
ADSL Subscription lines: 6.53 million	Mobile Data penetration: 65.2%
PC penetration: 29%	Smartphone Users: 27.9 million
ARPL- residential: 1.35\$	ARPS: \$3.36
ARPL- Enterprise: 6.37\$	Data ARPS/total ARPS: 26.5%

*Source: CAPMAS (2018); Global Data (2017); Statista (2019).*

In the above table (3-4), it is worth mentioning that +100% penetration rate of mobile subscription is due to the fact that the same person has more than one sim card from different operators as per presence and quality of connectivity in designated areas.



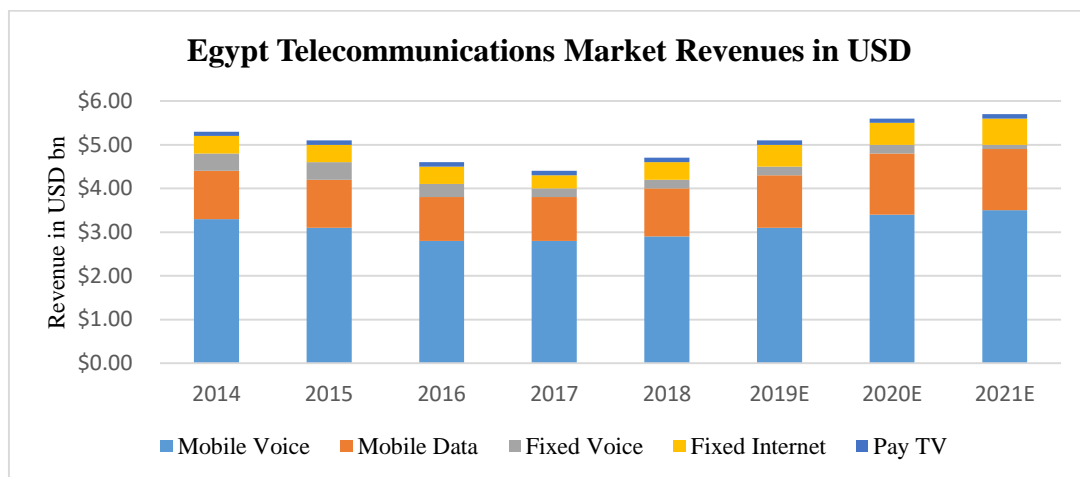
The total fixed lines operated by Telecom Egypt is 7.8 million lines where households displayed the majority by 90 percent as depicted in the below figure (3-1);



**Figure (3-1): Functional Distribution of Fixed Lines in Egypt**  
*Source: CAPMAS (2018)*

### 3.2.2 ICT Market Revenue

According to Global Data Report (2017), Egypt’s telecoms segment is the highest growing sector in terms of year-over-year growth, having increased by 12.5% with a forecast of 14.5% year-over-year growth by end of 2019-20. To follow is an interval representation of revenue contribution of Egypt’s main communications services.

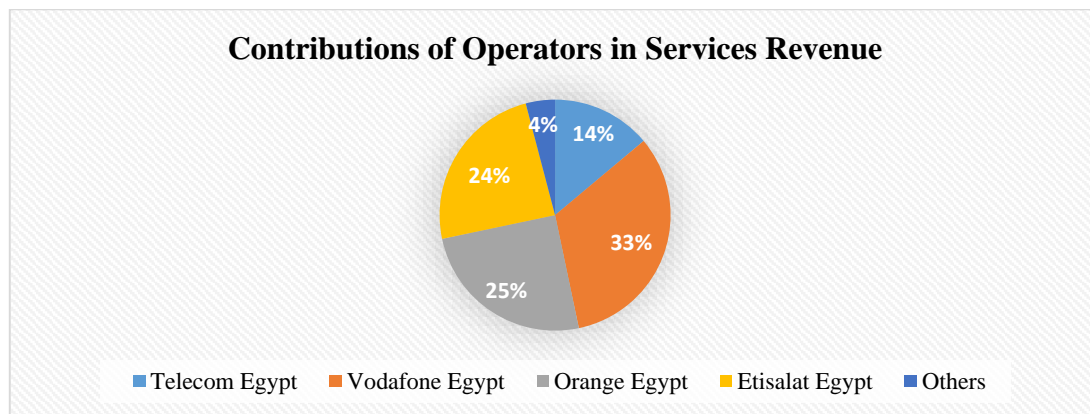


**Figure (3-2): Egypt Telecommunication Industry Revenue (2014-2021)**  
*Source: Global Data (2017)*

As of 2018, the total revenue of Egypt telecommunication market accounted for 4.7 billion USD. The main revenue contributor is mobile voice with 62%, followed by mobile data 23%, then fixed broadband 8.5%, next is fixed voice with 4.3%; lastly pay

TV services accounts for 2% respectively. As per Global data report (2017), it's predicted that data revenue, both fixed and mobile, will achieve a CAGR of 6.8 percent and 7 percent respectively during 2016-2021 due to government initiatives such as the launching 4G license, national broadband plan as well as the increasing adoption rate of smart phones in the Egyptian market.

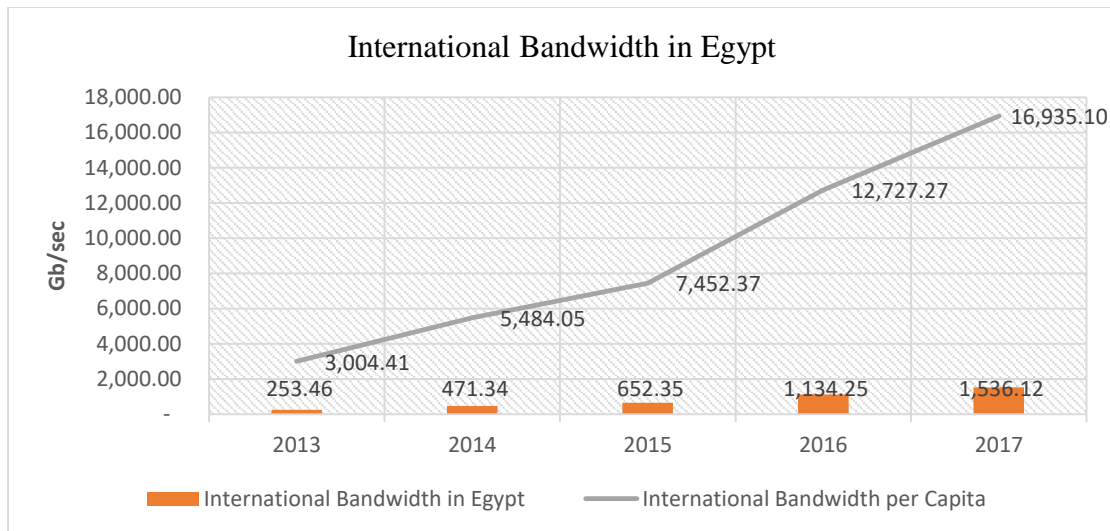
Since Vodafone has the major market share of 38%, likewise, it has the largest revenue contribution percentage of 33% followed by Orange Egypt and Etisalat Misr at comparable contributions of 25% and 24% respectively; finally, was Telecom Egypt at 14% as illustrated in below figure (3-3).



**Figure (3-3): Display of Operators' Contribution in Services Revenue**  
*Source: Global Data (2017)*

### 3.2.3 International Internet Bandwidth

The strategic location of Egypt has supported it to become a significant transit hub for submarine cable systems around the globe. There are 10 out of 18 regional cables crossing Egypt, providing Egypt with a capacity that exceeds 60 TB/sec (Oxford Business Group, 2019). By 2018, the international internet bandwidth has experienced a sharp annual growth rate of 53 percent compared to 2017 fueling 2,356 Gb/sec into Egypt. The average growth rate of international internet bandwidth per capita along a five-year analysis (2013-2017) accounted for 47.65 percent.

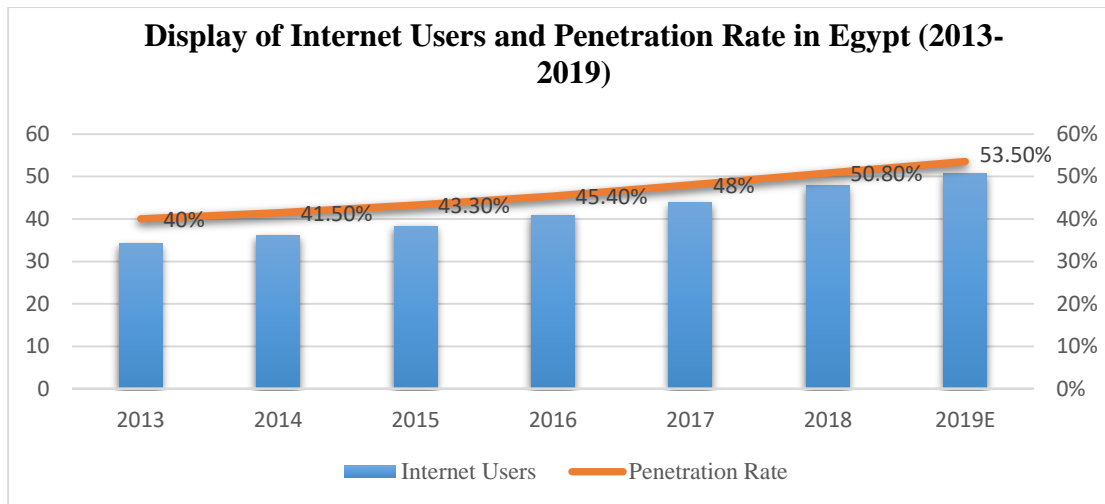


**Figure (3-4): Growth Rate of International Bandwidth in Egypt**  
*Source : <http://www.mcit.gov.eg/> (2018)*

The steady internet subscription growth and the increasing demand for data should enhance competition among operators. Further, the launch of 4G license will make the Egyptian telecom industry incrementally becoming a less voice-dominated and a more price-sensitive industry. This data oriented market requires an upward patterned injection of international bandwidth to satisfy the growing demand for digital services.

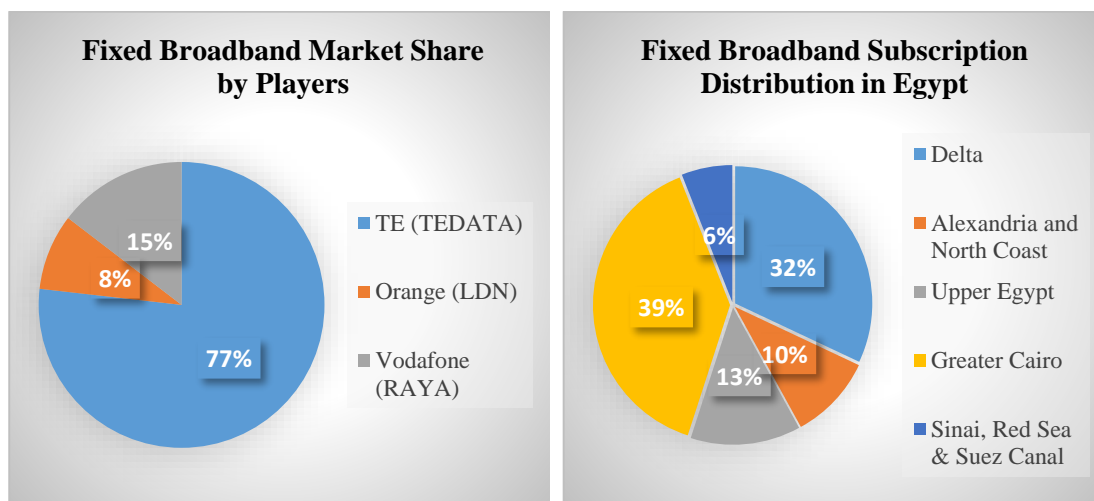
### 3.2.4 Internet and Data Market in Egypt

As per Internet World Stats (2018), Internet subscribers in Egypt has reached about 49 million with penetration rate of 49.5% where Facebook users represent 35-37 million. A report issued by Statista expected that Internet user penetration rate in Egypt to achieve 53.5% of the population by yearend of 2019.



**Figure (3-5): Display of Internet Users and Penetration Rate in Egypt**  
 Source: <https://www.statista.com/statistics/484939/internet-user-reach-egypt/>(2019)

Simultaneously, in accordance to CAPMAS, the fixed broadband subscribers have surged to 6.53 million as of April 2018, compared to 4.57 million in 2017. This 43% percent year-over-year increase where coupled with a dip in the number of subscribers of mobile phone internet services, which stands at 7.56 percent, meaning 30.68 million in April 2018, compared to 33.19 million in 2017 (Egypt Today, 2019). According to MCIT, prices for ADSL lines have declined by 43% to an average of 5.6\$ in the second quarter of 2016 from \$9.8 during the same period in 2015. Below graphs, display fixed broadband market share as well as its geographical distribution across Egypt.



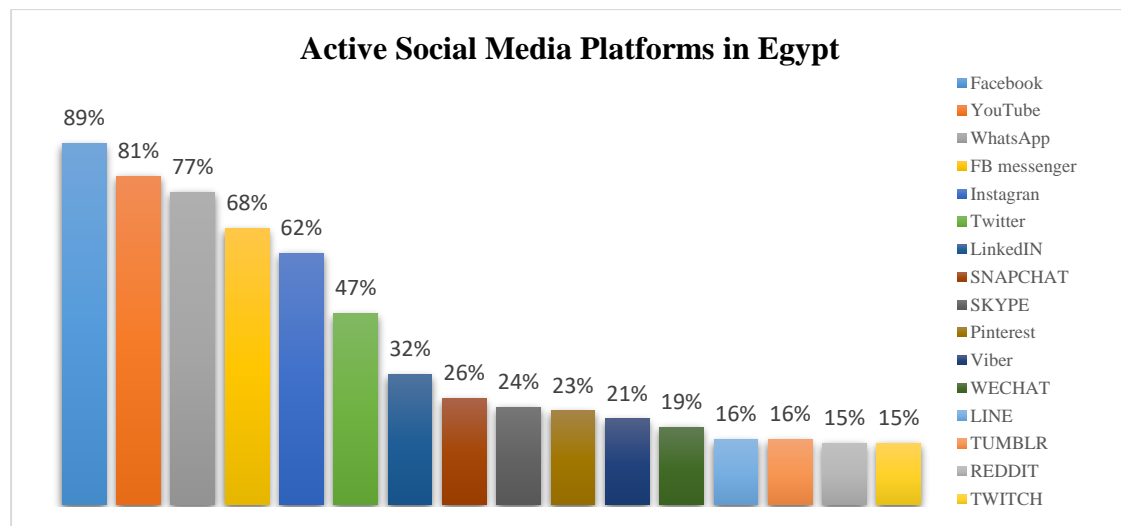
**Figure (3-6): Fixed Broadband Market Share and Geographical Distribution**  
 Source : <http://www.mcit.gov.eg/> (2018)

As per above illustrations, TEDData (Data arm of Telecom Egypt) has the lion market share of fixed broadband with 77% since TEDData is owned by the incumbent and offers

competitive packages ranging from 1-8 Mbps starting at 2.72\$. Further, other market players offer DSL over the incumbent’s network, which is Telecom Egypt. Greater Cairo (Cairo & Giza) has the highest DSL coverage of 39% where the concentration of households, governmental entities and business organization exist. As per Global Data Report (2017), DSL lines are expected to grow at a CAGR of 13.1% during 2016-2021 and will dominate the technology spectrum accounting for 68% of the total access lines on 2021.

### 3.2.5 SNS Market in Egypt

In Egypt, using Internet as a search tool came on the top of internet usage activities at 78%, while social communication was next in ranking at 77% (Yasser, A., 2017). The following illustration showed the percentage of active social network platforms consumed in Egypt.



**Figure (3-7): Display of Active SNS in Egypt**  
*Source: Hootsuite - We are Social (2019)*

As it is obvious, there is a variety of practiced SNS platforms in Egypt. However, **Facebook** has the highest SNS users’ percentage at 89% represented by 35-37 million users; with 22 million or 59% of monthly active people return everyday (Facebook Q3 report, 2017). Second in popularity is the video sharing social platform **YouTube** with 81%; thirdly & fourthly, the Facebook owned social networks ‘WhatsApp and FB messenger’ at 77% and 68% respectively. **Instagram** comes fifth in order taking over Twitter with 2.7 million users at 47%. Followed by **Twitter** users accounting for 1.7 million with monthly average 151 million tweets (Arab Social Media Report, 2017).

Then, *LinkedIn* displays 32% usage rate with an estimated 2.42 million users (Arab Social Media Report, 2017). At minimal usages, there are few recently practiced SNSs such as Line, Tumblr, Reddit and Twitch with 16% and 15% participation rate.

As per digital media community (2018), the Egyptian online users who access via Android device is 31 million versus 2.7 million users via iPhone. The penetration rate of smartphone is 28 percent; thus, facilitates the propagation of SNS usage. The total number of Egyptian users that publish content in Arabic is 34 million, while only 9 million are publishing their content in English. Regarding social network behavioral aspects in Egypt, the following table provides an overview of social platform sites behavioral aspects in general and Facebook in specific.

**Table (3-5): Social Network Sites' Behavioral Aspects in Egypt**

Aspect	Measuring Unit
Visited/Used a SNS or messaging service in the past month	100%
Actively engaged/contributed to social media in the past month	85%
Average amount of time / day spent on social media	3 hours 04 min
Average number of social media accounts/ internet user	10.1
Percentage of Internet users who use social media for work	35%
<b>Facebook engagement benchmark</b>	
Average monthly change in page likes	+0.12%
Average post reach vs. page likes	9.0%
Average organic reach vs. page likes	6.2%
Percentage of pages using paid media	16%
Average paid reach vs. total reach	19%
Average engagement rate for FB page posts (all types of pages)	3.43%
Average engagement rate for FB page video posts (all types)	5.69%
Average engagement rate for FB page photo posts (all types)	3.02%
Average engagement rate for FB page Link Posts (all types)	3.52%
Average engagement rate for FB page status posts (all types)	1.99%

*Source: Locowise & Hootsuite and We are Social (2019)*

The displayed values of this table (3-5) documented that Egyptians are heavily social users of SNS especially Facebook. Hundred percent has visited/used SNS in one month with 85% contribution rate consuming an average of 3 hours and 4 minutes of online spent time. Social media use for work purposes is 35% in contrast to 65% personal use. In addition, the average engagement rate for video posts in Facebook page scored the highest ratio of 5.69% followed by link of 3.43%; while status posts have the lowest

ratio of 1.99% of users' online behavior. Those percentages guided the research in the selection of the SNS brand for in depth observation based on the consumption rate as well as in the construction of the research survey.

### **3.3 Egypt ICT Strategy: Digital Economy**

As per the current GoE initiatives to build a digital economy, there are several activities undertaken by MCIT in Egypt as part of "ICT 2030 Strategy" earlier discussed in this chapter. During 2019, the ministry is planning to launch 25 digital public services including notarization, renewing driving licenses, utilities and electricity, municipalities, agriculture and marriage officiants starting with a pilot project in Port Said governorate before spreading throughout of Egypt. On the mechanisms of transforming into a digital government, the minister gave examples of digital transformation projects to automate governmental agencies including digitizing processes like the E-Visa, Endowed Asset Management, Farmer's Card, Law Enforcement, Health Insurance, and more (Mohamed, H., 2019). Further, MCIT has signed an agreement with Ministry of Education to provide tablets with 50% local manufactured components in the national education system to prepare a new generation that is familiar and capable to deal with latest technologies. In addition, the ministry is adopting financial inclusion services for 20 million citizens through launching unified e-cards and manufacturing electronics projects. The ultimate aim is that citizens will be digitally enabled to perform all their financial deals and transactions online.

All those initiatives by the Egyptian government are important for paving the way for digital transformation process; however, it is essential that policies go in parallel for an effective change on ground. Thus, there are a couple of legislative reforms that has been implemented during the last period, including Egypt's consumer protection law, cybercrime law and the intellectual property rights law. Additionally, the long discussed data protection law by the cabinet is about to be approved and implemented by governmental entities. Further, the government is currently working on an e-commerce bill law (Mohamed, H., 2019).

Whereas digitization can accelerate and differentiate a country's ability to progress, lack of adequate digital skills can limit its potential to digitize and grow economically

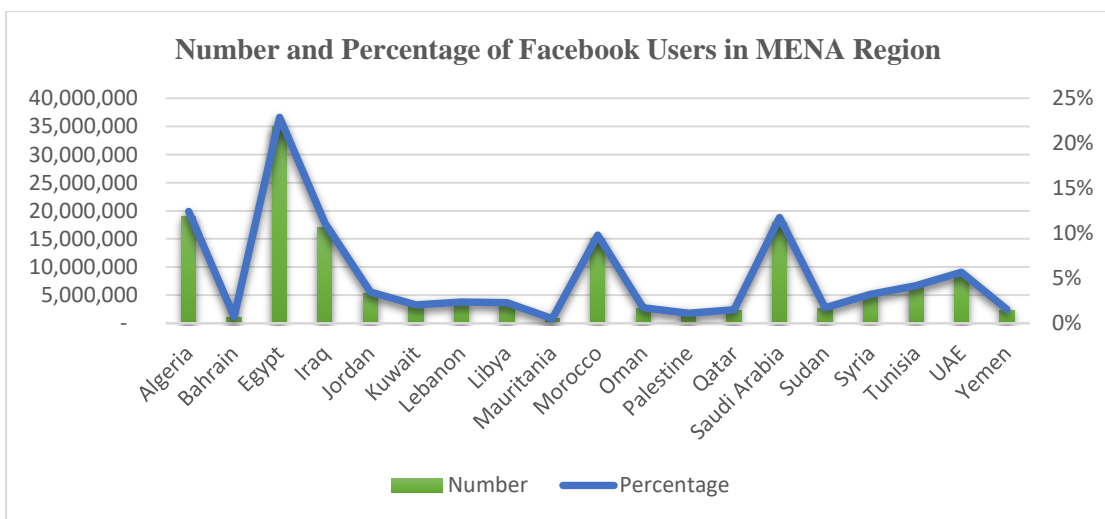
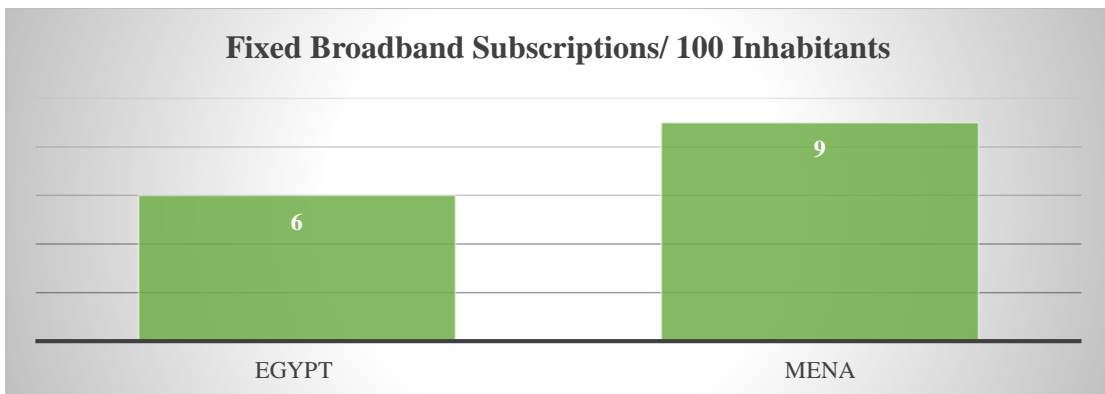
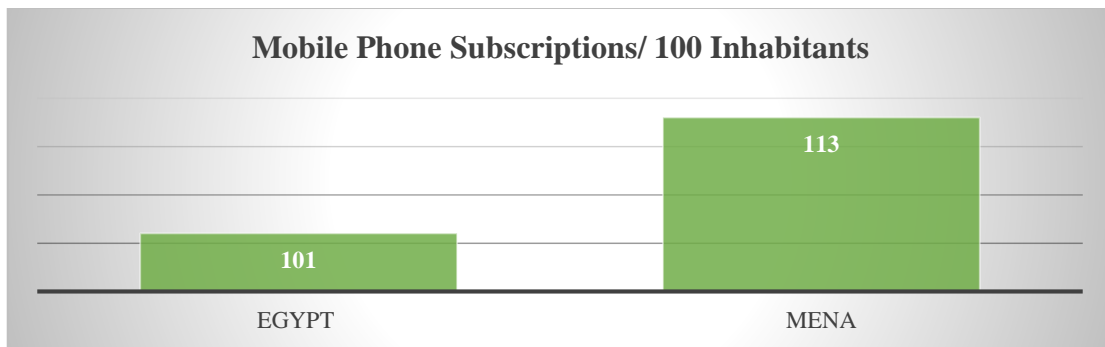
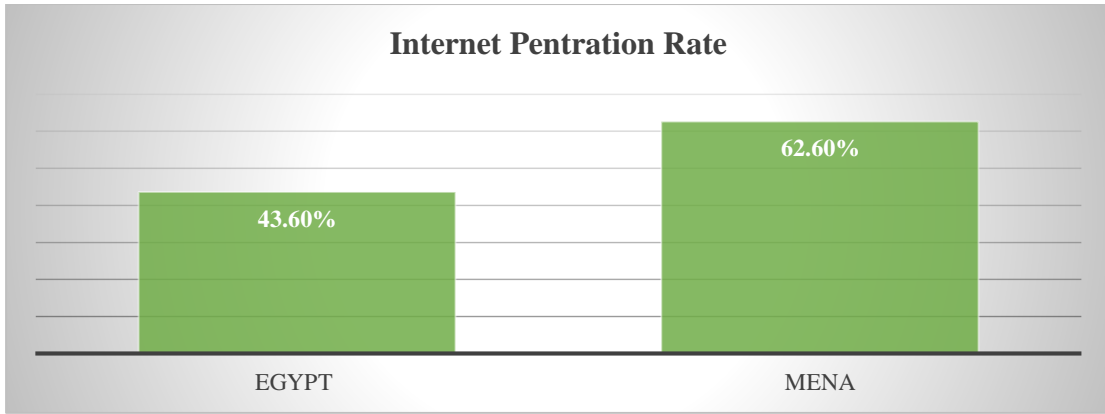
(Tae Yoo et al, 2018). Accordingly, investing on the current human capital competencies' development as well as preparing a new generation capable of maneuvering in the digital world with the appropriate right use is a necessity for successful transformation of the process.

### **3.4 Egypt Versus the MENA Region**

Middle East and North Africa (MENA) inhabitants represented 5.4 percent of the 7.7 billion-world population (internetstats.com). Facebook grew its MENA user base by 20 percent year-over-year between July 2016 and July 2017, and planned further expansion as it sought to tap the region's high usage of video and mobile services (2017). There are 164 million active users in the Arab World, up from 56 million in 2013 (Radcliffe, D. & Bruni, P., 2018). In a report recently published by Crowd Analyzer, which analyzed more than 172 million interactions for its State of Social Media report, social media users in MENA are becoming more active and engaged online where conversations are taking place about brands, businesses and services alongside fashion, politics and religion (Hamid, T., 2019). More than 181 million people use Facebook every month (Arabian business, 2019) with 10 percent year over year growth rate between 2018 and 2019. By early 2019, the social media giant, Facebook, announced partnership with Agence France-Presse MENA (AFP) to reduce the spread of misinformation in Arabic, which will not only help fund the fact-checking work that AFP will do on Facebook, but also help them in their efforts to combat false news off the platform (Bridge, S., 2019).

The following are graphical representations of Egypt versus MENA region in term of Internet penetration rate and means of access whether through mobile or fixed subscription per 100 inhabitants as well as number of Facebook subscribers respectively. It depicted that Egypt, as a standalone country, is almost comparable to the whole MENA region in volume.





**Figure (3-8): Assembled Analogy of Egypt to MENA**  
*Source: Internet World Stats & Statista (July 2019)*

According to the State of Social Media: Middle East study (2018), Egypt remains the biggest market for Facebook in the region, with 24 million daily users and nearly 37 million monthly mobile users. However, the highest growth rate of social media users worldwide was found to be Saudi Arabia, where users grew by 32 percent compared to the global average of 13 percent by January 2018 (Radcliffe, D. & Bruni, P., 2018). Further, Saudi Arabia exhibited the highest number of Instagram (12 million), Twitter (11 million) and Snapchat (14 million) active users for the region (Digital Media Community, 2018). Further is Euler Hermes' Enabling Digitalization Index (EDI) measuring the ability of 115 countries to provide the environment for businesses to thrive in the digitalization era. In the Middle East, the United Arab Emirates (UAE) is the best performer (24th) with an impressive infrastructure score due to its position as a trade hub; while by contrast, Saudi Arabia ranks 50th and Egypt 80<sup>th</sup> (Allianz, SE, 2018). Thus, on the digital direction, Egypt is starting the digitalization path with slow forward moving rate towards digital evolution.

Hence as Egypt represents 23% of total Facebook users in the Arab world and has experienced most of the global SNS brands as per the above figure (3-7) that makes the Egyptian online community a rich field for testing the research proposed model for future applications on other countries in the region. In addition to the established technical infrastructure and current regulations supporting e-government and digitization efforts performed by the government to transition Egypt to the digital era.

### **3.5 Egypt SWOT/C Analysis**

SWOT/C analysis is a technique developed at Stanford in the 1970s, frequently used in strategic planning. A SWOC analysis is simple, but powerful framework for leveraging the organization/industry's strengths, improving weaknesses, minimizing threats, and taking the greatest possible advantage of opportunities (visual-paradigm, 2019); through identification of internal and external factors in an entity, community or an industry. In some literature, Threats are replaced by Challenges. Therefore, this section of the research drafts Egyptian ICT sector SWOC that can assist in determining where the sector stands and what are its potentials toward digital transformation.

Strength	Weaknesses
<ol style="list-style-type: none"> <li>1. Young educated and competitive workforce with the required knowledge in ICT (Kamel, S., 2010).</li> <li>2. Favorable and competitive labor costs (Kamel, S., 2004).</li> <li>3. Multilinguals community; good command of English as well as French, Spanish and German for dealing with foreign transactions.</li> <li>4. Strategic geographic location providing quick access to technological trends (Baltušis, T., 2017).</li> <li>5. Continuous telecommunication infrastructure advancements for offering better quality and reduced prices (MCIT, 2019).</li> <li>6. Increasing entrepreneurial and start-ups businesses based on digital platform (MCIT, 2019).</li> <li>7. Creation of technical parks and smart cities such as Silicon Valley and digitized new compounds (MCIT, 2019).</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of sufficient expertise in any one technology as technical skills are too broad (Baltušis, T., 2017).</li> <li>2. Limited skills related to project management, marketing and managing start-ups.</li> <li>3. Presence of some governmental agencies with low recognition of IT value effect on modern economy.</li> <li>4. Residual of bureaucracy slowing down the immediate impact of numerous current initiatives (Kamel, S., 2004).</li> <li>5. Infrastructure level and cost is still high compared to the capacities of beneficiaries so further reductions are required (Global Data, 2017).</li> </ol>
Opportunity	Challenges
<ol style="list-style-type: none"> <li>1. eMisr national broadband plan aims to reduce Egypt's digital divide through increasing fixed broadband penetration in Egypt to 15% by 2021 and reducing end user prices (Global Data, 2017).</li> <li>2. Current 4G issued license as well as virtual fixed licenses impacting market competition and launching of integrated service offerings with better quality (Oxford Business Group, 2019).</li> <li>3. The growing use of smartphone with penetration rate of 28%, which would increase mobile data usage rate (Statista, 2019).</li> <li>4. Increasing demand of digital activities in both the public and private services (ITU, 2017)</li> <li>5. More proactive role-played by ministries such as Ministry of Education for the use of latest technologies in education system and ministry of Health for e-health card (Mohamed, H., 2019).</li> </ol>	<ol style="list-style-type: none"> <li>1. IP and Copyright violations (Baltušis, T., 2017)</li> <li>2. Relatively high piracy rates, which create lack of security for sensitive data (Baltušis, T., 2017).</li> <li>3. Government regulations need to be firm and enforced.</li> <li>4. Limited understanding of digital services and their implications on business development and people's life.</li> <li>5. Scarcity of specialized market research in domestic and overseas market for lessons learned about digitization (Kamel, S., 2004).</li> <li>6. Relatively modest e-commerce penetration rate (United Nations, 2017).</li> </ol>

<ol style="list-style-type: none"><li>6. Introduction of new supporting policies and laws such as consumer protection law, cybercrime law and the intellectual property rights, data protection law, etc. (Mohamed, H., 2019).</li><li>7. High penetration rate of PCs and tablets in homes, academia and businesses (CAPMAS, 2018).</li><li>8. High growth rate of telecom industry of 16.4% attracting foreign investments (Global Data, 2017).</li><li>9. Corporate tax rates are high as well as taxes on print and TV advertising for promotional and diffusion purposes which make the digital platform the prime substitutional choice (Baltušis, T., 2017).</li></ol>	
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### **3.6 Egypt PESTLE Analysis**

The PESTLE analysis is a useful tool for understanding market growth or decline, besides determining the position, potential and direction for a business or industry. This analysis supplements SWOT analysis in the identification of potentials for the development of an effective roadmap for the ICT industry towards the creation of a digital society. PESTLE's main advantage lies in its big picture of all possible factors that can influence an industry progress toward latest trends.

To follow are analyses of PESTLE on the Egyptian ICT industry from the perspective of capabilities for digitization;

#### **1. Political Factors**

Political factors declare the level of intervention of governmental bodies in the country's economy which can include - government policy, political stability, foreign trade policy, tax policy, labor law, trade restrictions and so on (visual-paradigm, 2019). The Egyptian government represented by MCIT has lately implemented several initiatives with the objective to promote the development of telecom infrastructure and digital services as earlier highlighted. Those endeavors will boost local demand for ICT in various sectors such as education, health, and governmental public services, e-content and legislative services. Initiatives mentioned before such as issuance of 4<sup>th</sup> generation licenses for all telecom operators by 2016, "eMisr national broadband plan" to increase broadband penetration to 15% by 2021 and "ICT 2030 strategy" with five strategic business plans which definitely contribute towards achieving a digital society in Egypt over time. In addition to, the current cooperation between MCIT, Ministry of Higher Education and research centers in Egypt to prepare the initial framework of the technological basis, artificial intelligence and knowledge strategy, pointing out to the impact of technology that allowed the emergence of new types of jobs and contributed to increasing production and supported innovation (Shaheen, M., 2019).

#### **2. Economic Factors**

Economic factors include - economic growth, interest rates, exchange rates, inflation, disposable income of consumers and businesses and so on (Visual –paradigm, 2019). The Egyptian gross domestic product (GDP) was worth 235.37 billion USD in 2017

with annual growth rate of 5.5% that represents 0.38% of the world economy (Trading Economics, 2019). In 2018, Egypt's IT exports reached \$2.5 billion, growing at 38 percent in investments of the sector (Mohamed, H., 2019). Egypt telecommunication's sector witnessed a growth rate of 16.4 percent during the second quarter of the fiscal year 2018/2019, which is one of the highest among the entire Egyptian economy sectors with contribution of GDP reaching 8% (Egypt Independent, 2019).

### **3. Social Factors**

Also known as, socio-cultural factors, social factors are the areas that involve the shared beliefs, attitudes and behaviors of the population. Egypt is a populous country with median age is 25.3 years; categorized into 49.4% female versus 50.6% male. It is an educated community with literacy rate of 86% male versus 75% for female (Hootsuite, 2019). As of 2018, Egypt has 31 private and 26 public universities, in addition to a number of other government high education institutes (141), such as the military academies or the Egyptian Police Academy producing 2.8 million tertiary students (Mohamed, R. et al, 2019). Egyptian community is social by nature with active social media users 40% of total population represented by an average of 35-37 million SNS users (Hootsuite, 2019).

### **4. Technological Factors**

It is clear that technology is ever evolving globally. Technological innovations don't stand within but in fact benefit all other aspects of life as technology provides new methods for producing, promoting, transporting and communicating products/ offered services to geographical dispersed target markets. Egypt is keeping track of the latest technological implementations whether through offering state of the art network generation (4G), provision of latest equipment such as ZTE and Huawei hardware and personal devices such as iPhone and Samsung Android mobiles spreading in the domestic market; in addition to, implementation of advanced software packages as well as practicing latest IT processes.

### **5. Legal Factors**

In order to move forward with digital platforms, policies and regulations need to address in a holistic manner diverse challenges, including those related to competition

and consumer protection, data protection and privacy, taxation, employment and working conditions. The Egyptian government has moved in the right direction through issuance of new telecoms related laws such as consumer protection law, cybercrime law and the intellectual property rights law, data protection law, etc. Those laws aimed towards facilitating secure operation of digital processes within the public services.

## **6. Environmental Factors**

Environmental factors have recently been considered within PESTLE analysis. This factor includes ecological and environmental aspects such as weather, climate, environmental offsets and climate change that may especially affect industries (Business 2 You, 2019). Data management is a key issue in tackling environmental challenges, which can best be done through digitization of processes serving timely data aggregation for quick analysis and remedies. Within the framework of the Egyptian Information Society Initiative, the NTRA introduced a Universal Service Fund (USF). The USF guarantees access of telecommunications services to all citizens at affordable prices, ensures free competition and non-monopolistic practices, enhances usage of modernized technologies in order to expand the scope of the provided services and consolidates the national political, economic and cultural interactions (MCIT, 2019). The USF aims to encourage telecommunication operators to cover under-served areas, mainly the rural ones, to ensure the right of all to be connected and decrease the digital divide nationwide. So by 2014, a budget of EGP 60 million (approximately 3.5 million US Dollars) has been allocated to fund two projects to provide telecommunication services to remote areas in South Sinai and North Sinai governorates to attain digital inclusion.

### **3.7 Lessons Learnt from Developing Nations**

This section highlights the noticeable lessons learnt across developing nations sharing similar circumstances with Egypt. Apart from theoretical models and frameworks, there are numbers of digital transformation projects on ground that are beyond the scope of this study. However, this section displays Digital identification- digital ID projects- as it is proven one of the important prerequisites towards building a digital economy and SNS plays a role in promoting it. Digital ID is a foundational set of enabling

technologies that can be pivotal in a wide range of digital interactions between individuals and institutions. Globally there are currently 3.4 billion individuals that can use digital ID to be verified unambiguously through a digital channel, unlocking access to banking, governmental benefits, education and many other critical services (Mckinsey Global Institute, 2019). For emerging economies, while the share of the economy that digital ID can address tends to be modest, the scope for improvement can be sizable, leading to average potential per country benefit of roughly 6 percent of GDP in 2030 (Mckinsey Global Institute, 2019). Here, are three lessons from developing nations in Asia, Africa and Latin America about national electronic ID implementation experience.

### *1. India: Development of a national digital identification system, 2009*

In Asia, India has the world's largest digital identification programme – 'Aadhar', literally meaning 'foundation' launched in 2009 by a public sector agency, it already has over a billion Indian residents enrolled and uses cloud technology to allocate a unique 12-digit identification number to each person based on their demographic and biometric information (Banga, K., 2018). Aadhar enables -35% of world qualified digital ID population- biometric digital authentication, as part of broader digital ecosystems featuring additional functionality with 90% adoption rate (Mckinsey Global Institute, 2019). With 88% coverage, it is emerging as an important platform for linking individuals' banking transactions, utility bills, telephone number and physical address (Banga, K., 2018). It was mentioned that Aadhar has many problems with data management issues in term of privacy measures and storage capacity. To avoid these shortcomings, Egyptian governments should pay special attention to data security issues and its integration across concerned entities that are offering electronic services under the current pilot project for introduction of ID health card in selected governorates through securing adequate data storage systems at early stages.

### *2. Nigeria, National eID, 2014*

In Africa, this eID card launched by Nigerian public sector in partnership with Mastercard. It enables authentication through chip-based card and data sharing for Know Your customer (KYC) requirements which enables more customer registration for financial services, with potential additional future use cases under consideration. Currently eID in Nigeria has 28% coverage with less than 10% adoption rate and an



expectation to capture economic value equivalent to 4 to 7 percent of GDP in 2030 (Mckinsey Global Institute, 2019). Further, Mckinsey Global Institute has indicated that the large informal sector (81% of Nigeria's workforce are self-employed with 65% contribution to country's GDP) skews the overall benefits of digital ID towards individuals. Likewise, Egypt informal sector represented by more than 50 percent of Egypt's economy and accounted for around 40 to 50 percent of the gross domestic product (Egypt Today, 2019); can benefit from digital ID through 'giving them access to formal recognition' (Mckinsey Global Institute, 2019).

### *3. Brazil, Digital Identification System, 2019*

On the Latin side of the world, Brazil government has launched the digital ID system with 93% coverage addressing the large credit gap through increased financial inclusion of individuals previously unable to access the financial system, and accounting for an additional 35 percent of the potential economic value (Mckinsey Global Institute, 2019). Likewise, Egypt's economy can advantage from facilitating interaction with taxpayers and decreasing payroll fraud.

Hence, digital identification project is one of the application for digitalization within countries. It can promote technology adoption and usage through high value cases, well-designed user experience, seamless financial interactive services and well-connected citizens with its government. At the same time, addresses security precautions through firm design, appropriate infrastructure, authentication systems and well-controlled governance. The right digital ID technology, designed with the right principles and enforced with appropriate policies, can protect individuals from the risk of abuse and enable the safe inclusion of billions in the digital economy (Mckinsey Global Institute, 2019).

Advantages of digitized services are numerous including lower consumer prices, increased market access, more competition, better use of underutilized resources and increased flexibility for the providers of services. However, those earnings need time and persistent on part of all stakeholders. On the other hand, there are growing concerns over the rising market power of certain platforms in light of data protection and ownership issues, consumer protection and policies. Thus, economic policies and

regulations need to maximize the benefits while at the same time reducing the costs of digital platforms and keeping the complexity level at minimal.

## **Summary**

Digitalization of any community is dependent on the country's economic standing and its supporting technical infrastructure thus this chapter scrutinized the current evaluation of Egypt's economy and ICT competencies as well as Egyptians' IT adoption rate. As mentioned, Egypt 2030 strategy is pursuing an ambitious plan to boost GDP growth rate from 4.2 percent up to 12 percent by 2030. Whereas, Egyptian ICT industry is exhibiting a promising growth rate of 16.4% compared to other service sectors. It is transitioning from low-services to high value services such as IT outsourcing, logistics and digital content services. The current reengineering of the Egyptian economy through a comprehensive set of coherent policies, programs and projects require governmental entities' determination, business support and community willingness to adopt to new endeavors. After reviewing Egypt economy and ICT indicators, the researcher realized the importance to visualize those archived data in term of developing a comprehensive SWOC of ICT industry supplemented by PESTLE analysis. Further, the chapter aimed to provide intelligences for the current implementation of digital projects in Egypt via discoursing lessons learnt from countries passing through same circumstances. Those articulations focused the research attention on people, specifically SNS users, how their massive consumption rate reinforced by adequate environmental factors can transform a society.

Hence, this chapter combined with literature review in chapter two were the cornerstone for the development of an adequate theoretical research model investigating the transformation of Egyptian online community to a digital society. In the coming chapter, the study discusses the methodology and approach employed for investigating the research questions and the implemented research methods used to test the impact of SNS on digital transformation of the society of Egypt.

## Chapter Four: Research Methodology

### Objectives of the Chapter

- To determine research knowledge claim
- To emphasize the research methodology design
- To identify the research approach
- To distinguish the research strategy adopted
- To discuss the research methods utilized for (i) data collection, (ii) analysis and (iii) validation

After reviewing the literature repository about SNS and its interactive constructs in the Egyptian environment, the objective of this chapter is to discuss the methodology employed for investigating the research questions and the research methods recommended to test the impact of SNS on digital transformation of the society of Egypt. Therefore, the chapter starts with an illustrative research process design. Secondly, it investigates literature of methodological philosophies for identifying the appropriate epistemology guiding to select the research approach and strategy that best riposte the research inquiries. Thirdly, it discusses the adequate research methods matching the topic under investigation. Finally, the chapter suggests the appropriate data collection techniques and its relevant data analysis and validation tools for the extraction of valid conclusions and sound recommendations leading to contribution to knowledge base.

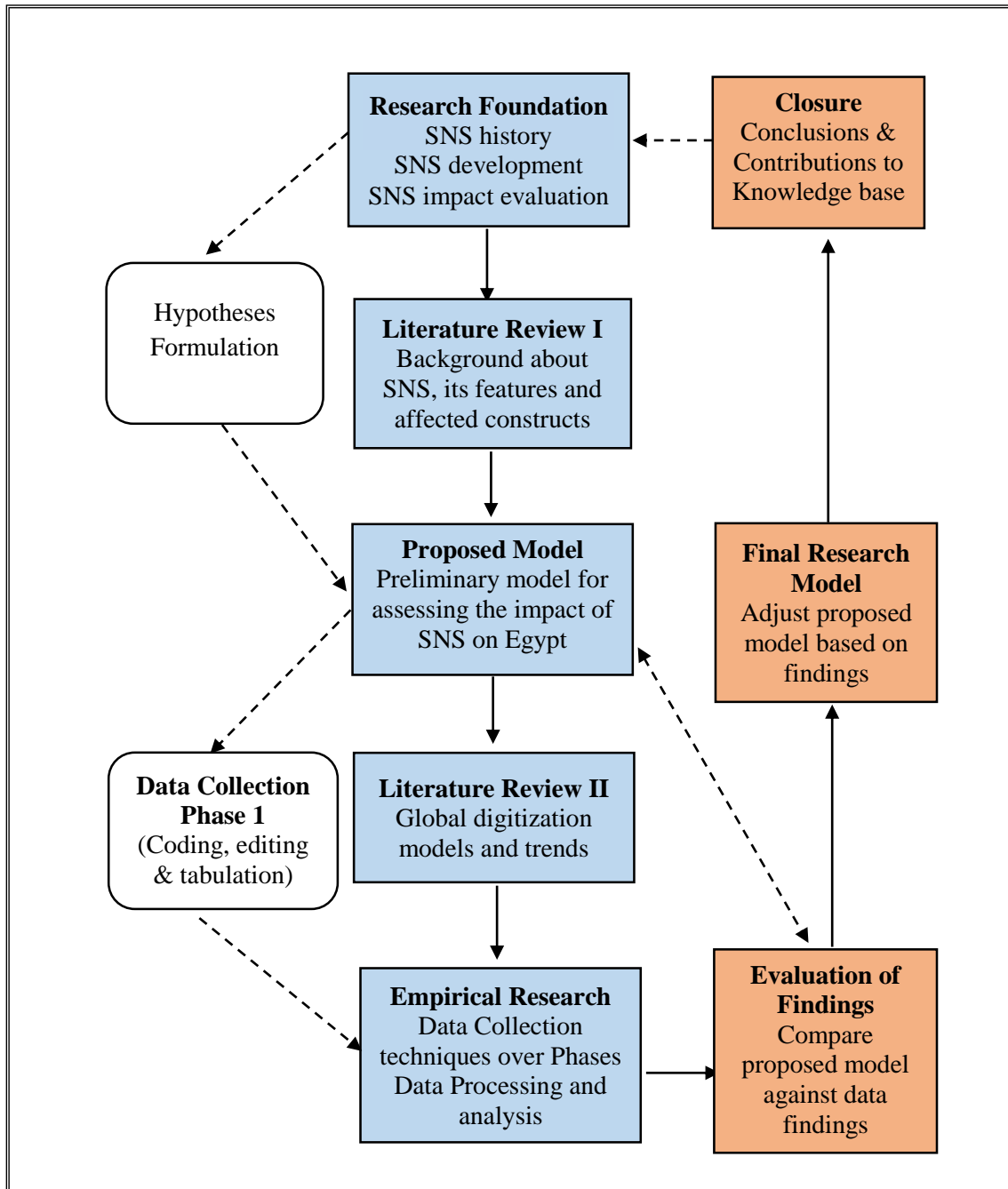
### 4.1 Research Methodological Design

Research is the process of collecting, analyzing, and interpreting data in order to understand a phenomenon (Leedy, P. and Ormrod, J., 2001). Creswell, J. (2002) noted that quantitative research is the process of collecting, analyzing, interpreting, and writing the results of a study, while qualitative research is the approach to data collection, analysis, and report writing differing from the traditional quantitative approaches. The research design refers to the overall strategy that researchers choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the

blueprint for the collection, measurement, and analysis of data (De Vaus, D., 2006). Based on Crotty's (1998) framework, Creswell, J. (2002) proposed the following inquiries upon which the foundation of the research design was built, those are;

1. What *epistemology or theory of knowledge* that expresses the researcher perspective?
2. What is the *theoretical methodology or philosophical approach to be adopted*?
3. What is the *research strategy* governing the researcher's choice of methods?
4. What are the *research methods* and relevant *data collection techniques* as well as *data analysis procedures* that best serve the problem statement?

Accordingly, to answer these above questions, the researcher has developed the following research process design (figure 3-1) where the initial part comprised of investigation of the literature review resulting in the creation of the proposed "The Impact of SNS on the Transformation to a Digital Society" research model. The suggested model was examined through phase (I) of data collection methods, which were observational study of SNS behavioral patterns, survey distribution and execution of focus group sessions. Data gathered and analyzed from phase (I) empirical research was tested with the proposed model in order to reach a final version. Then a second round of literature review is carried out before conducting Phase (II) empirical research, which was interview. The final station in the research design was the discussion of findings to reach conclusions and contributions in the field of SNS and digital transformation. The dotted lines along the figure demonstrated the iterative nature across various research activities in order to fulfill research objectives.



**Figure (4-1): Overall Research Process Design**

Hence, the model for any research includes beliefs about the nature of reality and humanity (ontology), the theory of knowledge that informs the research (epistemology), and how that knowledge may be gained (methodology) that brought about differences in the type of research methodologies (Antwi, S. and Hamza, K., 2015). The following sections describe the application of the research methodological design from literature.

## 4.2 Research Epistemology “knowability”

Since the 1800s various schools of paradigms have been developed, upon which researchers based their investigations and articulations of a specific studied issue. There are two major paradigms that have characterized research design: positivism or rationalism vs. historicism or interpretivism, which are aligned respectively with quantitative and qualitative research (Teddlie, C. & Tashakkori, A., 2009). In practice, interpretivists will use observation, interviews, or ethnography in order to derive patterns in human experiences or processes (Creswell, J., 2008). Positivism can use the same techniques, but the goals and research design differ widely (Cibangu, K., 2010). According to Creswell, J. (2003 & 2009), researchers resorted to combined methods in order to accommodate both research traditions. This combined approach utilized the advantages of both traditional research methodologies and scrutinized the study under investigation from different perspectives.

The interpretivism approach is a paradigm that focuses on gaining an empathic understanding of how people feel inside, seeking to interpret individuals’ everyday experiences, their deeper meanings and feelings, and the idiosyncratic reasons for their behaviors (Rubin, A. and Babbie, E., 2010). Therefore, human beings are seen as active agents capable of monitoring their own behaviors and they are able to use their speeches to make comments on their performance and plan ahead. Further, human beings are purposive, active and involved with life experiences (Cohen, L. et al, 1985). In regard to analysis of data, interpretivists carry out the task of data collection in an iteration process. The data collected is not in support of a hypothesis; rather, they are gathered to help develop a theory. Thus, theory is emergent and grounded on the data that is produced in the investigation (Cohen, L. et al, 2000).

As a result of the in-depth review of the philosophical assumptions mentioned above, the researcher resolved that interpretivism was the most appropriate approach in terms of its compatibility and relevancy with the nature of the research under study dealing with human being interaction with computer object applications. Hence, the research addressed the impact of SNS on cultural behaviors and societal change, so the affected constructs- their weighted impacts as well as their interrelationships- are displayed in the developed model which:

- Intellectualize the proposed ideas through the grouping of identified constructs and depicting their relationships in a one model.
- Identify variables, both dependent and independent ones.
- Set hypotheses about the nature of relationships between each identified variable.
- Determine the appropriate parameters to test those constructs and their developed relationships.
- Testing model's applicability through empirical research of SNS via observational study, surveys distribution and focus group sessions then interviews.

### **4.3 Research Approach**

This research focused on human's communicational actions and behaviors in engaging with SNS that required the examiner to wide open his/her eyes for observation, surveillance, reflection, and two-ways discussions in collecting data from members of online community thus enabling adequate analysis for formulation of valid conclusions. Ideally enough, Inductive approach starts with observations so theories are formulated towards the end of the research and as a result of observations (Goddard, W. and Melville, S., 2004). Inductive research "involves the search for patterns from observation and the development of explanations or theories for those patterns through series of hypotheses" (Bernard, R., 2011). It is noted that "inductive reasoning is often referred to as a "bottom-up" approach to knowing, in which the researcher uses observations to build an abstraction or to describe a picture of the phenomenon that is being studied" (Lodico, M. et al, 2010). Thus, the researcher collected data of possible behaviors and trends in SNS then data is analyzed in aggregation to produce meaningful information that is used to examine the proposed model developing a theory to explain SNS's implications on the gradual digitization of the society of Egypt.

### **4.4 Research Strategy Design**

Researchers in interpretive modes more commonly begin their work with inductive logic of inquiry, with puzzles or a sense of tension between expectations and prior observations, grounded in the research literature and not atypically in some prior

knowledge of the study setting (Locke, G. and Feldman, 2008; Schwartz-Shea, P. and Yanow, D., 2012; Sorensen et al, 2007). As the interpretivism approach is inherently concerned with studying human communication behavioral phenomenon, which is the heart of this research, so a set of hypotheses are developed as a guideline that are initially examined via qualitative methods then verified by quantitative tools. Given the same mindset, the research strategy for studying the impact of SNS on the society of Egypt was, (i) Grounded Theory followed by (ii) Surveys in Phase I; then back to Ground Theory in Phase II.

#### **4.4.1 Grounded Theory**

This research “is about discovering theory from data, what Glaser and Strauss called grounded theory” (1967). It is an approach for developing theory that is "grounded in data systematically gathered and analyzed" (Strauss, A. & Corbin, J., 1994). According to Charmaz. K. (2003), the grounded theory refers to a set of systematic inductive methods for conducting qualitative research aimed toward theory development. In addition, Charmaz, K. added that the term grounded theory denotes dual referents: (a) a method consisting of flexible methodological strategies – where the inductive theoretical thrust of these methods is central to their logic - and (b) the products of this type of inquiry (2014). For Urquhart (2012), grounded theory method (GTM) is the theory building where analysis and conceptualization are engendered through the core process of constant comparison. As every slice of data is compared with all existing concepts and constructs to see if it enriches an existing category (by adding to/enhancing its properties), forms a new one or points to a new relation. A process of theoretical sampling selects the slices of data of all kinds where researchers decide, on analytical grounds, where to sample from next (Urquhart, C., 2012). Grounded theory is compatible with a wide range of data collection techniques such as semi-structured interviews, participant observation, focus groups, even diaries can generate data for grounded theory (Charmaz, K., 2014). Further, Kathy Charmaz has drawn upon grounded theory’s considerable significance such as it (a) provides explicit, sequential guidelines for conducting qualitative research; (b) offers specific strategies for handling the analytic phases of inquiry; (c) streamlines and integrates data collection and analysis; (d) advances conceptual analysis of qualitative data; and (e) legitimizes qualitative research as scientific inquiry (2014).



#### **4.4.2 Surveys**

Pinsonneault and Kraemer (1993) have defined a survey as a means for gathering information about the characteristics, actions, opinions of a large number of people. Surveys also can be used to assess needs, evaluate demands and examine impact (Salant, P. and Dillman, D., 1994). Surveys are traditional widely used research method for collecting information by asking different types of questions mostly multiple-choice questions (MCQ). Surveys are inclusive in the types and number of variables that can be studied, require minimal investment to develop and administer and are relatively easy for generalizations (Bell, S., 1996). Surveys rely on the concept of collecting data from a sample that represents a whole study population, revealing associations and causal effects among several factors (Hakim, C., 1987). In the survey research method, the researcher tends to capture phenomena at the moment which is used for sampling data from respondents that are representative of a population and uses a closed ended instrument or open-ended items (Williams, C., 2007). Surveys are commonly used in researches as they have many advantages, such as provision of transparency and accountability (Hakim, C., 1987); reusability and repetition to allow for comparison over different groups, times, or places enabling theory testing in an objective manner (Newsted, P. et al., 1998).

#### **4.5 Research Methods**

Research methods are categorized into desk and field research methods. Every researcher started with the desk research for accumulation of knowledge and guidelines before diving into the field for data gathering. This section detailed the practiced desk research method then the data collection methods applied under each of the earlier identified research strategy respectively followed by mixed method evaluation.

##### **4.5.1 Desk Research for Preparation of Data Collection Process**

It is recommended to undergo a stage of preparation prior to the data collection process (Yin 2002). The preparation stage is important as it simplified the research logistics and contributed in smoothing the data collection phase. In this preparation stage of data collection, the researcher's skills were spelled out and categorized in-order to improve

capabilities and knowledge of methods and techniques for further elaboration and future application on the real world. Thorough reading about the selected research methods – in term of types, procedures, logistics, advantages and disadvantages - was important for determining the corresponding observation types, focus group implementation procedures, survey formulation steps as well as interview asking techniques guidelines for mastering the whole data collection process, data management and the subsequent analysis phase. The adequate preparation phase undertaken prior to collecting data ensured the appropriateness and sufficiency of data gathered to avoid methods repetition, worthless data, wasting time, extra cost since it won't be feasible to repeat methods again.

#### **4.5.2 Field Data Collection Methods**

An optimal data collection method is defined as the best method, given the research question and given certain restrictions (Biemer, P. and Lyberg, L., 2003). In line with Creswell, J. (2008), the approaches and methods to be adopted will be based on appropriateness for this particular research topic and relevance to the research questions as well as to the researcher's experience and training. The research methods were a mix of quantitative and qualitative techniques matching the research questions, paradigm and methodology earlier identified in section 3.1 and 3.2. The study mapped the research questions and models' hypotheses against utilized data collection methods respectively. Qualitative analysis such as participant observation, focus group, structured and semi-structured interviews for elaborative data gathering so as to collect timely practical data from online users themselves about recent society's preferences, behaviors, practices and technological adoption. Quantitative analysis is carried out through surveys (open and closed questionnaires) to capture factors affecting SNS usage and behavioral change using general data type correlation analysis within a selected well-defined population sample. The data collection process was iterative where there was ongoing collection and analysis of datasets in order to examine variables and their causal interrelationships with respect to the proposed model.

##### ***3.5.2.1 Participant Observation under Grounded Theory (Phase I)***

There are four roles of observational researcher (Gold, R., 1958). In this research, the researcher played “non-participation” and “observer-as-participant” roles; each as

situation required respectively. In “non-participation” role, described by Spradley (1980), requires no level of involvement with insiders. The researcher is not present on the scene but rather can “observe” from an entirely different environment such as the case of non-intrusive method for collecting data from a large number of individuals for understanding online-user behavior (Davis, P. M., 2004). The researcher in gathering data from online records (for example, Facebook pages) and official statistical reports practiced this “non-participation” observational role. The “non-participant” observation was longitudinal over a period of two years to gather sufficient information for inference of behavioral patterns over time. Secondly, the “observer-as-participant” role where the researcher advanced very slightly in her/his involvement with the insiders; while still mostly involved in observing, she/he may conduct short interviews (Gold, R., 1958 and Pearsall, M., 1970). Therefore, researcher practiced the former observational role through scrutinizing popular SNS sites in Egypt selected for observation and performed the latter role during focus groups and interviews data collection methods.

Access to SNS is public; information is identifiable, but not private; and information gathering requires no interaction with the person who posted it online, and then presumably the proposed project does not constitute the human subjects research (Moreno, M. et al, 2013). In the current observational study of popular Facebook pages in Egypt, the information is publicly posted and there is no whatsoever interaction with human to acquire such information i.e. humans willingly set information as not private by publishing it online.

#### ***4.5.2.2 Questionnaires under Survey (Phase I)***

Surveys are selected as a data collection research design that involved human participation after the applied remote observation method. According to Mathers et al (2007), the selection of the appropriate survey design depends upon number of factors such as access to potential participants/respondents, the literacy level of respondents, the subject matter, the motivation of the respondents and resources. Questionnaires, as a type of survey, offer an objective mean of collecting information about people's knowledge, beliefs, attitudes, and behavior (Oppenheim, A., 1992). Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have

standardized answers that make it simple to compile data; as well as allows statistical analysis (Kabir, S., 2016). Also, the other advantage is that they provide quantitative data to facilitate comparisons and generalizations (Sánchez, V., 2017). Studies of online population have led to an increase in the use of online surveys, presenting scholars with new challenges in terms of applying traditional survey research methods to the study of online behavior and Internet use (Andrews et al, 2003; Bachmann & Elfrink, 1996; Stanton, J., 1998; Witmer, D. et al, 1999; Yun, G. & Trumbo, C., 2000). The success of a questionnaire depends upon adopting a logical, systemic and structured approach to the development process. Questionnaires can be cross sectional or longitudinal. For this research topic, cross sectional approach is applied. The survey was distributed at a point in time to a sample of SNS users' population. Surveys are good for collecting enormous information about people's attributes and attitudes but if one wants to dig for in-depth specific information about digitization measures within society of Egypt then there is a necessity to perform focus groups. Hence, the research proceeded with the execution of focus groups.

#### ***4.5.2.3 Focus Group under Grounded Theory (Phase I)***

The researcher selected focus group as a grounded theory technique for further exploring SNS users' point of views, opinions and perception about the current use, impact and future implications of SNS on their lives. When well executed, a focus group creates an accepting environment that puts participants at ease allowing them to thoughtfully answer questions in their own words, share opinions and speak out their minds. As Powell, R. et al (1996) noted the basic format of focus group "is a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of research". As a qualitative research method, focus group is useful in two main regards; provides a way of gaining insights into (a) the spectrum of views that individuals hold regarding a particular issue; and (b) the nature of their interaction and dialogue over that issue (Flowerdew, R. & Martin, D., 2005). Focus group instrument was ideal for the topic under study as it provided the space for participants to speak out freely their opinions and perceptions; as well as, the chance to share and discuss ideas about one of the communal persuasive daily phenomenon.

#### ***4.5.2.4 Interviews under Grounded Theory (Phase II)***

Interviews are a common tool in most of data collection methods. More specifically intensive qualitative interviewing fits grounded theory methods particularly well (Charmaz, K. & Keller, R., 2016). Yin (2002) classified two main types of interviews: open-ended interviews prevailing respondents' point of views while following the investigator's line of inquiry, and interviews producing quantitative data. Researchers adopt intensive interviewing precisely because it facilitates conducting an open-ended, in-depth exploration of an area in which the interviewee has substantial experience (Charmaz, K. & Keller, R., 2016), thus allows probing to acquire rich data especially when dealing with people's attitudes and behavioral issues. Open-ended interviews, also referred to as unstructured or semi-structured (Denscombe, M., 2003). The second type of interviews, also referred to as structured interviews (Denscombe, M., 2003), supports in generating quantitative data. Interview is a best-fit data collection instrument with the culture of the Egyptian society where each individual is given the time privately to express verbally his/her point of views. Accordingly, semi structured interviews (in-depth interviews) were conducted as appropriate with administrators of popular SNS pages and key industry experts in digital media in Egypt and groups interview at The United Kingdom so as to generalize and endorse the research proposed SDR model.

#### **4.5.3 Sampling Method**

As it is impossible to test the research model on all population under study, so it is important to make sound decisions as to limit investigation to a representative subset of the desired population. Probability sampling, also known as random sampling, refers to sampling when the chance of any given individual being selected is equal and these individuals are sampled independently of each other. Further, researchers also may break their target population into strata, and then apply these techniques within each stratum to ensure that they are getting enough participants from each strata to be able to draw conclusions (Trochim, W. et al, 2015). The logic behind simple random sampling is that it removes bias from the selection procedure and should result in representative samples (Gravetter, F. & Forzano, L., 2011). On the other hand, there is purposive sampling which is a non-probability sampling method and it occurs when "elements selected for the sample are chosen by the judgment of the researcher" (Black, K., 2010). Hence, the research applied random sampling in the questionnaire

instrument, whereas, purposive sampling approach was utilized in the Interview technique.

#### **4.5.4 Mixed Methods**

After spelling out the data collection methods selected for testing research questions and suggested theoretical model, this study illustrated a multi-methods approach in interpretive research. Creswell, J. (2011) and Teddlie, C. and Tashakkori, A. (2011) examined controversies and issues in multi-methods research (MMR), or the third methodological moment where they suggested that it is inquiry that focuses on collecting, analyzing, and mixing both quantitative and qualitative empirical materials in a single study or a series of studies. Teddlie, C. and Tashakkori, A. (2003) tackled the mixed methods approach to research, which has emerged in the mid-to-late 1900s. The goal for researchers using the mixed methods approach is to draw from the strengths and minimize the weaknesses of the quantitative and qualitative research approaches (Johnson, R. & Onwuegbuzie, A., 2004). In an attempt to achieve, a “best of both worlds” perspective about what is being studied (Macnamara, J., 2005); this study is identified as MMR.

Therefore, different research methods can provide more concrete deliverables when taken from various disciplines and perspectives since “no single methodology can hope to capture the rich complexities of life on Internet” (Norris, P., 2001). The discussion of mixed methods took into account Norman Denzin’s (1970) early call for triangulation (Denzin, N., 2012). This ostensible triangulation technique is practiced through the utilization of different approaches –whether sequential or simultaneous. Drawing on quantitative and qualitative data collection with the aim to seek convergence of results, complementing and developmental, where data from one method will be the input for the other (Clarke, R., 2002). Further, it is an approach in verification that uses multiple sources to contrast and compare study data to establish supporting and/or contradictory information to ultimately give the researcher and users of the research a more balanced and deeper understanding of the outcomes than relying on the study data alone (Roller, M. and Lavrakas, P., 2015). Reference to all above research disciplines professionals, the study under investigation benefited from

triangulating mixed methods findings aiming to better understand and analyze SNS impact on digitizing the online society of Egypt.

#### **4.6 Data Analysis**

Data collection methods and analysis techniques should be supplementing to each other, in coherence with the nature of topic under study, fulfilling research's objectives as well as answering the research questions. Data collection and analysis methods will be selected in sense to complement each other's strengths and weaknesses (Peersman, G., 2014). Content analysis is a research method for bridging both qualitative and quantitative methods. Analyzing data relies on a pattern matching technique, which is, according to Yin (2002) compares an empirical based pattern with a predicted one.

Given the guidelines of Creswell, J. (2014) in data analysis, *quantitative data* is analyzed by first determining the number of valid and invalid responses, and then developing a descriptive analysis of data revealing demographics of respondents, and other statistical data about the research variables such as means, standard deviations, etc. The second stage of quantitative data analysis, as also noted by Creswell, J. (2014), it involves testing the proposed model through identifying the statistical procedures as well as the reliability and validity approaches to be undertaken, and employed by software programs. On the other hand, *qualitative data* analysis is about making connections and inference from texts. The 'text' that qualitative researchers analyze is most often transcripts of interviews or notes from participant observation sessions, but text can also refer to pictures or other images that the researcher examines (Morrill et al., 2000). The text becomes a way to get 'behind the numbers' that are recorded in a quantitative analysis to see the richness of real social experience (Morrill et al., 2000).

Hence, *data analysis techniques* were a mix between quantitative tools that focused on examination of numerical data for demonstrating percentages, ratios or any other statistical data using SPSS, Tableau, etc. Reinforced by qualitative tools with emphasis on content analysis of descriptive data aiming at exploring trends of attitudes and patterns of online behaviors using CAQDAS e.g. NVivo.

#### 4.6.1 Quantitative Data Analysis

Testing of the research model was carried out on phases to check statistical measures through structural equation modeling methodology. The decision of which statistical test to use depends on the research design, the distribution of the data, and the type of variables (University of Minnesota, 2019). Measurement is the process of systematically assigning numbers to objects and their properties to facilitate the use of mathematics in studying and describing objects and their relationships (BosLaugh, S., 2019). In accordance to literature, there are four steps that the researcher has adopted; a) prepare factor Analysis, b) check reliability and validity of the model, c) perform multivariate regression analysis, d) test the model fit of the suggested research model. These statistical measurements were performed because they are compatible with the nature of the study in investigating human behavioral attitudes and preferences with respect to consumption of ICT tools. In addition, they supported in testing the research hypotheses developed of the model including their dimensions to determine the impact of each and their interrelationships using several measuring constructs.

Quantitative data analysis is carried out through using the IBM® SPSS® (Statistical Package for the Social Sciences) software Version 20.0 and AMOS 20.0.0 (Build 817). The SPSS is a package of programs for manipulating, analyzing, and presenting data; the package is widely used in the social and behavioral sciences (Landau, S. and Everitt, B., 2004). Data are presented as mean, standard deviation (SD), frequencies and percentage values as follows;

- *Construct validity* is assessed through factor analysis and correlation coefficients.
- *Reliability* of the questionnaire is assessed through using Cronbach's alpha reliability coefficient.
- *Multivariate regression* analysis through Structural Equation Modeling (SEM) is performed to produce regression models for testing the research hypotheses.
- The *Model Fit* is tested by checking the Chi-square values and calculating Root-mean-square error of approximation "RMSEA".

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® IBM Corporation, NY, USA. ® SPSS, Inc., an IBM Company.



#### **4.6.1.1 Factor Analysis**

Factor analysis is a useful tool for investigating variable relationships for complex concepts such as socioeconomic status, dietary patterns, or psychological scales (Rahn, M., 2019). It is a statistical approach involving finding a way of condensing the information containing a number of original variables into smaller sets of factors, also called dimensions, with a minimum loss of information (Hair, J. et al., 2010). Factor analysis identified the items included in the constructs more clearly.

Using SPSS version 20.0, a factor analysis was accomplished to extract then categorize constructs in the two external dimensions: Culture and Environmental Contexts, which resulted in elimination of numbers of items under each dimensions. The extraction method was carried out using the rotation method of Varimax with Kaiser Normalization. The Kaiser technique (1958) is widely used, due to its ability in minimising the number of variables that have high loadings under each dimension for the purpose of simplification (Stevens, J., 2002). The loading rule was based on retaining constructs with a loading number greater than 0.5 on one factor, and less than 0.5 on all other factors (Hair, J. et al., 1998). The 0.5 and 0.5 rule was used since it is less strict than the 0.5 and 0.3 rule, which prevents as much as possible the removal of many constructs under each dimension (Liu, S., 2001). It is beneficial to maintain as much items in each construct as possible to develop richer output in measuring the impact of the selected dimensions on digital readiness through the SDR model.

#### **4.6.1.2 Reliability and Validity**

The purpose of empirical research is to test the reliability and validity of the proposed model to reach valid inferences for theory building. Reliability deals with how consistently similar measures produce similar results (Rosenthal, R. and Rosnow, R., 1984), whereas validity of a measurement instrument refers to how well it captures what it is designed to measure (Rosenthal, R. and Rosnow, R., 1984). SPSS version 20.0 was used to calculate reliability and validity of the measurement of hypotheses.

##### ***Reliability***

A common measure of the internal consistency of a measurement instrument in social sciences research is Cronbach's alpha (Zmud, R. and Boynton, A., 1991). Apart from the fact that Cronbach's alpha is easy computation, it does not pose any restriction on

the types of variables used, and it removes the memory effect possibility when measuring reliability (Bollen, K., 1989). Reliability of the questionnaire was assessed using Cronbach's alpha reliability coefficient (1971). It has two dimensions referred to as repeatability and internal consistency (Zigmund, W., 1995). Internal consistency refers to the ability of a scale item to correlate with other items in the scale that are intended to measure the same construct. The coefficient normally ranges between 0 and 1. The closer it is to 1.0 the greater the internal consistency of the items in the scale. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower coefficients e.g. 0.6 are sometimes used in the literature. Therefore, 0.7 indicates a high level of internal consistency or homogeneity among the constructs under each dimension (Straub, D., 1989). According to Schuessler (1971), a scale is considered to have good reliability if it has an alpha value greater than 0.6. In this research, the reliability of the corresponding constructs is measured via Cronbach's alpha where the value of 0.6 or greater was deemed acceptable.

### ***Construct Validity***

Construct validity is the ability of a measure to confirm a network of related hypotheses generated from a theory based on constructs (Campbell, D. and Fiske, W., 1959). Internal construct validity is assessed through factor analysis and correlation coefficients. Construct validity was evaluated through measuring convergent validity which refers to how well different scales of items indicate the same or similar constructs, and how well multiple measures of the same construct agree with each other (Kerlinger, 1986). Since factor loadings can be interpreted like standardized regression coefficients (Rahn, M., 2019), therefore the variable with correlation higher than 0.5 would be considered a strong association for a factor analysis in this research.

#### **4.6.1.3 Multivariate Regression**

Testing the research model and its hypotheses was achieved through employing Structural Equation Modeling (SEM). SEM is models of relationships among constructs that comprise and extend regression and factor analysis procedures (Hayduk, L., 1987; Bollen, 1989). In addition, Mertler, C. and Vannatta, R. (2001) defined SEM as a sophisticated version of path analysis incorporating unobservable, un-measurable (latent) constructs into the path model.

The SEM technique whose true power lies in assessing proposed measurement and structural relations within a model (Kelloway, E., 1998) was used for three main reasons based on Kelloway's (1998) suggestions. First, SEM performs explicit tests of both of the overall quality of the model as well as on specific parameters (e.g. factor loadings) composing the model. In this study, SEM checks the extent to which the measures reflect the intended constructs. Secondly, since this study was principally concerned with the relationships among the measures, SEM techniques allow for the specification and testing of complex path models reflecting causal processes. Thirdly, SEM provides a unique analysis that considers questions of both measurement and prediction. Typically referred to as latent construct models, this form of SEM provides a flexible and powerful means of simultaneously assessing the quality of measurement and examining predictive relationships among constructs.

#### **4.6.2.4 Model Fit**

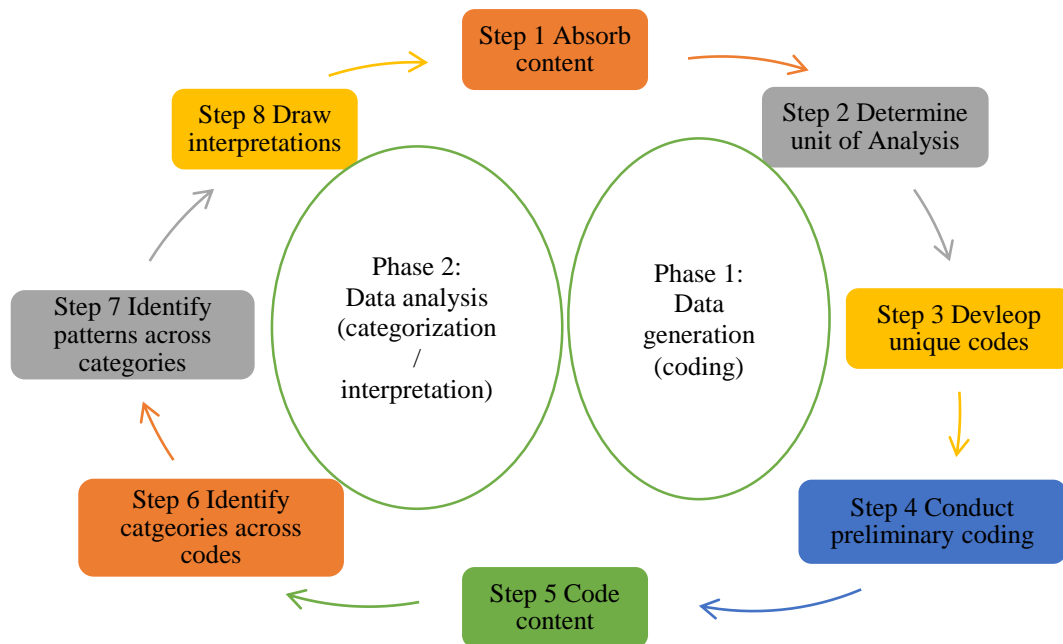
Georg Rasch mentioned chi-square statistics as a way of evaluating fit of data to the model (Rasch, G., 1980). One potential mechanism for accommodating large sample sizes may be to use the Root Mean Square Error of Approximation "RMSEA" (Steiger, J. and Lind, J., 1980) as a supplementary fit. The RMSEA is widely used in structural equation modeling to provide a mechanism for adjusting sample size where chi-square statistics are used. Therefore, the Model Fit was tested by checking the Chi-square values and calculating root-mean-square error of approximation "RMSEA". Non-statistically significant Chi-square values and RMSEA values less than 0.05 indicate good fit of the regression model. Regression coefficients and coefficient of determination (Squared multiple correlation coefficient) were calculated to find out the relation between independent and dependent variables. The significance level is set at  $P\text{-value} \leq 0.05$ .

#### **4.6.2 Qualitative data Analysis**

Alternatively, qualitative data analysis relied mainly on "*content analysis*" which is characterized by its theory driven approach through setting a number of rules to be followed during data analysis. The goal of qualitative content analysis is "to provide knowledge and understanding of the phenomenon under study" (Downe-Wamboldt, B., 1992). The 'content' in qualitative content analysis often originates from other

qualitative methods (e.g., transcripts from IDIs, focus group discussions, and ethnographic field notes). With this point in mind, qualitative content analysis researchers devised and advocated for a methodical process similar to quantitative content analysis but with a greater emphasis on subjective interpretations of the meaning in qualitative content in order to identify relevant themes and patterns (Zhang, Y. & Wildemuth, B., 2009; Hsieh, H. & Shannon, S., 2005). In addition, qualitative content analysis is defined as a subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh, H. & Shannon, S., 2005). Later it was defined as the systematic reduction or “condensation” (Graneheim, U. & Lundman, B., 2004) of the analyzed content with special attention to the context in which it was created, to identify themes and extract meaningful interpretations of the data (Roller, M. & Lavrakas, P., 2015). Content analysis is proven useful in describing and making inferences about the characteristics of communications and patterns of usage, as well as making extrapolations about the consequences of communications (Holsti, O., 1969) which satisfied studying the impact of SNS on societies.

The process of grounded theory qualitative data analysis usually starts during the earlier stages of data collection. The process is comprised of eight basic steps that are divided into two phases: (1) coding the content, which generates the data that are analyzed in Phase 2, and (2) analyzing the data created in Phase 1 by identifying categories, themes and developing interpretations of the findings (Roller, M. & Lavrakas, P., 2015). These two phases with eight steps are displayed in the following figure (3-2).



**Figure (4-2): Phases and Steps in Qualitative Content Analysis**

*Source: Roller, M. & Lavrakas, P. (2015)*

On interpretation of figure (4-2), phase one (1): Data Generation commenced with the most crucial step that is the full digestion of content from all data sources of all data methods, which is a pre-requisite for the success of the whole analysis process. Data obtained from transcribed interviews, archival records and observation notes is examined and several attempts take place to find common themes among them (Silverman, D., 1997). Second step is developing unit or theme of analysis based on the objectives of the study, means classifying the content into themes that can be a word, phrase or a sentence (Datt, S., 2016). Then proceeding with coding step of datasets, as it helps to move away from particular statements towards more abstract interpretations of data (Charmaz, K., 2014). This information was supported by quotations from interviews or specific evidence (Creswell, J., 2002). Next is preliminary coding step where pre testing of the coding is applied on a small dataset for verification before applying on the overall content i.e. code content step. There are three types of thematic coding, *open coding* of the transcripts led to concepts or codes grouped in categories and sub-categories, then *axial coding* focused on the relationships between categories and sub-categories, finally *selective coding* of the transcripts (Strauss, A. and Corbin, J., 1990). This study used the idea of leveraged SNS features and factors as the core category and systematically related it to other categories.

Then the researcher proceeded with phase two (2): Data Analysis itemized from step six (6) to eight (8) where categorization and interpretation occurred. Once the dataset is fully coded, the researcher can then look for meaningful categories across codes that will help illuminate possible connections and patterns (Roller, M & Lavrakas, P., 2015). Doing that, the researcher is now prepared to look across the codes that define each category and across all categories to discern themes or patterns in the coded data (Roller, M & Lavrakas, P., 2015). There is a systematic reduction of content, analyzed with special attention to ‘theoretical sampling’ (Strauss, A. and Corbin, J., 1998) which is a process of searching for concepts relating to ‘incidents, events or happenings’, to identify themes and extract meaningful interpretations of the data. At this stage the researcher is able to draw inferences on the basis of codes and categories generated (Datt, 2016) as well as identify themes/patterns to frame results that are supported by secondary data and quotes from the developed codes in an easy manner of interpretation by users.

Qualitative data similar to quantitative ones can be gigantic thus there are many specialized computer-aided tools. Among the various tools, the most common ones are NVivo or Atlas. That software has several features, which help in coding and development of nodes and cases. They also support in the visual representation of interpretations drawn from the content (Datt, 2016).

#### **4.7 Data Validation**

The research provided special attention to the quality of data collected through a checklist in term of validity, reliability, completeness, integrity, timeliness, and precision (Peersman, G., 2014). In addition, the researcher ensured good data management over the life span of the project through following a scientific way for collecting, recording, processing, storing data, as well as adequate presentation and accessibility of data for verification.

Creswell, J. (2002) has suggested number of techniques in order to validate the data obtained from research work. Primarily, an *analysis of a number of worldwide cases* drawn from the literature took place. Secondly, further *empirical studies* in other contexts are conducted. Thirdly, *triangulation* is applied between quantitative and

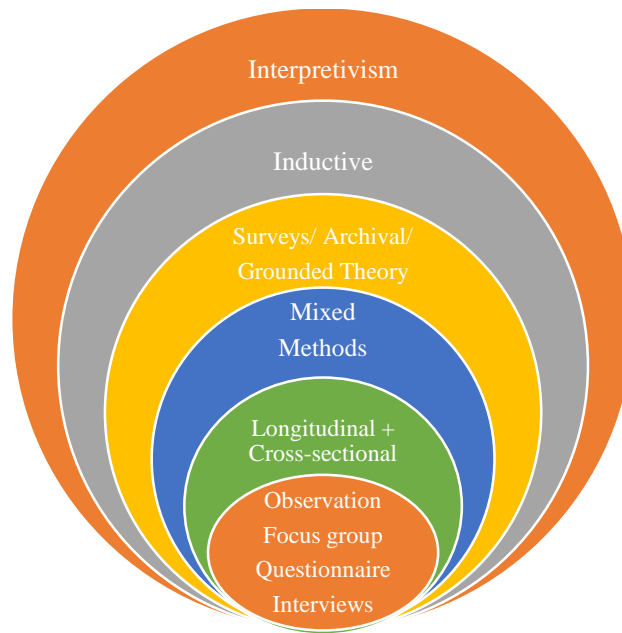
qualitative data to examine reaching same facts. Triangulation is an approach in verification that uses multiple sources to contrast and compare study data to establish supporting and/or contradictory information to ultimately give the researcher and users of the research a more balanced and deeper understanding of the outcomes than relying on the study data alone (Roller, M. and Lavrakas, P., 2015). There are three forms of triangulation. This study will apply two out of the three forms; which is compare study data with data obtained from another data source “data triangulation” and a different method “method triangulation” (Roller, M. and Lavrakas, P., 2015). Chapter 7 of this research discussed and evaluated findings through triangulation in details.

Moreover, the study used what Johnson, R. and Onwuegbuzie, A. (2004) called “pattern matching”; a process that involves “predicting a series of results that form a ‘pattern’ and then determining the degree to which the actual results fit the predicted pattern”. This pattern-matching view of social research is strongly related to developments of the notion of construct validity over the past thirty years (Cronbach, L. and Meehl, P., 1955; Campbell, D. and Stanley, J., 1963; Campbell, D. and Fiske, W., 1959; Cook, T. and Campbell, D., 1979). Accordingly, the study found that pattern-matching technique is suitable for examining the future impact of SNS on the Egyptian online society especially in predicting SNS life cycle development phases in Egypt.

## **Summary**

### **Saunders Onion’s Illustration of the Research**

This study is an example of interdisciplinary research, linking cultural theories and social networking phenomena with human mediated informational technology and communication studies. This research contributed to the emerging field of Internet Studies (Consalvo, M. and Ess, C., 2011); it is where technological sciences are served for humanity well-being, needs and life satisfaction. The best way to summarize this chapter is through peeling off Saunders’ Research Onion (2012) illustrating the research’s methodological line of thought;



**Figure (4-3): Saunders’ Research Onion Illustration (2012)**

*Source : Saunders, M. et al (2000, 2012)*

Given the exploratory nature of the research questions to describe and analyze the emerging phenomenon of SNS in the digital transformation of societies, the researcher nominated an interpretive paradigm for this study. This paradigm benefited from the objective approach of relying on factual and quantitative data knotted with qualitative data resulting from the subjective meanings of human interaction, perceptions, interests and behaviors in his/her environment. The approach was an inductive bottom up approach starting with observation moving forward on toward building blocks until theory formulation. Morse, J. and Niehaus, L. (2009) have pointed out that grounded theory is not something that is performed by different researchers in exactly the same way; every researcher will need to tailor the approach to costume their particular research purpose/s. Thus, grounded theory is tailored to the research objectives reinforced with surveys and archrivals as needed.

Data Collection methods are a mix between qualitative and quantitative ones. Henceforth, in phase one, the study applied observation, questionnaire and focus group methods. Then, in phase two, in-depth interviews (IDIs) are carried out for further verification and generalization of the theoretical model. The structural design and implementation of the four methods are illustrated in detail in chapter 6: Data Collection and Analysis. The use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of the phenomenon under question (Denzin, N.,



2012). The quantitative sense of the researcher apprehended meanings from the repetition of the phenomenon intertwined with the qualitative sense captured significance from specific event or incident. The study benefited from the mixed methods results through triangulation of data for validity and reliability checks. Lastly, quantitative statistical analytical tools are as valuable as qualitative content analysis, when the researcher is working in an interpretive paradigm. Through careful data preparation, tabulation, coding and interpretation, the results of both analytical tools can support in the development of new theories and models, as well as validating existing theories and providing thick descriptions of particular settings or phenomenon of the social reality. Hence, this study applied the existing research methods from literature to validate Society Digital Readiness “SDR” assessment model which is explained and illustrated in details in the next chapter.

## Chapter Five: SDR Assessment Model

### Objectives of the Chapter

- To explore digital transformation models from literature
- To illustrate research's Society Digital Readiness Assessment Model and its hypotheses
- To demarcate the relationship of each dimension/construct in the suggested model with the respective data collection instrument.

After identifying the research methods, it is time to discuss the research assessment model developed for studying SNS users in Egypt. The focus of the study is to analyze the impact of social networks sites on users' cultural behavior and modes of life through investigating how SNS can play a role in the transformation to a digital society.

To recap on why Egypt is considered as the research's case study:

- It is a substantial human resource country in the MENA region. By yearend 2018, CAPMAS had announced that Egyptian population hits 104.2 million (1.31% of world population). 94.98 million live within Egypt while 9.4 million live abroad, where the Capital Cairo and Giza governorates have a combined population of 18.1 million (i.e. 19% of overall population).
- It is a youth rich country with an average age of 24.3 years old (Worldometer, 2019). As per CAPMAS, 23.6% of country population is between the ages of 18 and 29; where 51 percent of the youth is males and 49 percent is females (2018). This age bracket is the innovator, engine and the principle users of SNS worldwide.
- As per Internet World Stats (2018), Internet users in Egypt are about 49 million with penetration rate of 49.5%. Egypt has the highest Facebook subscribers of 37 million i.e. 23% of the MENA region, which made Egypt an optimal market to test SNS impact on digitalization. As per Statista (2019), the numbers of smart phone in Egypt has reached 27.9 million accelerating SNS usage.
- According to CISCO's Country Digital Readiness research (2018) of 118 investigated economies, where Egypt has scored 10.83 out of 25 with an accelerate mode (Cisco research is discussed later on in below section 5.1). The global average

readiness score was 11.96, which indicated that Egypt is on its way forward in the digital journey.

- In addition to, the remarkable catalyst role of social networks during 2011 revolution which was vivid enough to intellectuals and academia as well as Egyptian laymen to provoke more in-depth studies.

Accordingly, this chapter presents the global models and frameworks of digital transformation from literature review and academia as well as NGOs' data repository. Secondly, it displays the proposed conceptual model, its origination and hypotheses. Thirdly, it delineates each construct of the model with the selected data collection methods, whether quantitative and/or qualitative tools.

## **5.1 Background from Literature about the Suggested SDR Research Model**

Traditionally, the IS field has focused on IT governance and system development in well-bounded organizational contexts, along with studying IT effects on individuals, groups, organizations, and markets (Sidorova, A. et al, 2008). The recent wave of digitizing, however, is transforming the nature of IT and shifting the focus to service ecologies, new experiences, and new forms of human interaction (Tilson, L. and Sørensen, 2010). Ongoing digitalization challenges the separation of disciplines, for example, between communication and media studies, information systems, and telecommunications engineering, three disciplinary fields associated with the interrelated content, code, and physical infrastructure layers (Lessig, L., 2001). The notion of digital society reflects the results of the modern society in adopting and integrating information and communication technologies at home, work, education and recreation (VSNU, 2017). Digitization will enable countries to maintain global competitiveness, increase GDP, foster innovation, and create new jobs (Tae Yoo et al, 2018). Nowadays, one of the phenomenal digital tools is SNS that has sociotechnical implications on individuals, businesses and governments, which can be accessed from various devices at anytime from anywhere.

On the *global non-governmental organizations (NGOs) scale*, the ITU Telecommunication Development Sector (ITU-D) study group has developed a report about 'Creating the Smart Society: Social and Economic Development through ICT

Applications' (2017) which discussed the principle foundation for creating smart society in developing countries from the viewpoints of ICT policy and regulation, budgets, standardization and human capital. In addition, the World Bank Group in the Digital Dividends Report (2016) adopted guidelines that have emerged from the collective experience of digital ID schemes' rollouts around the world. As per Axelle Lemaire, Secretary of State for the Digital Economy in OCED (France, 2016), "the digital innovation is an opportunity — for governments, for business, for the public and for the way in which they relate to each other". Therefore, OCED has developed a report about the "Background and Methodological Considerations in Benchmarking Digital Government Strategies" in MENA Countries (2017), where the report focused on transformation to digital governments by creating value through the use of ICT. Further, the UNESCO paper prepared by Correia (2016) has raised the idea of citizen transforming from literacy to information literacy then digital literacy. Webber and Johnston (2001b) have proposed a broad definition of information literacy:

*"Information literacy is the adoption of appropriate information behavior to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society";*

*On the educational front, VSNU -Association of Universities in The Netherlands- has published their elaborated plans for future proofing education in a digital society (2017). LIBRe Foundation applied research (2016) has discussed digital innovations that are shaping our society, economy and industries at a high speed and impact consumers, citizens and workers, including all of these combined into a single 'digital person'. In addition, how they have affected social and private life, education, science, government, democracy and business. Similarly, research group for Media & ICT (IBBT-MICT), Ghent University, Interdisciplinary Institute for Broadband Technology (IBBT) has exerted efforts in the development of the conceptual framework of Social Media Literacy (Vanwysberghe, H. et al, 2012).*

*From the business perspective, Digital Society Index was produced by Dentsu Aegis Networks (DAN) in coordination with Oxford Economics (2018); where creating a digital economy is not only about digitizing existing processes and business models; but a fundamental revolution of the traditional economic model. The impetus is shifting*

from the supply to the demand side of the economy, where all organizations must pivot around consumers faster than the competition. Another endeavor worth mentioning was Cisco Country Digital Readiness Score (2018) over 118 countries. Cisco Research Affairs has conducted this research to gain better understanding of what it means to be digitally ready with the satisfactory equipment and system integration services for those countries. In coordination with Gartner Inc., this research was developed as a framework to define readiness, measure countries' digital readiness and discover key interventions supporting the digital journey. Each country has scored based on standardized data points from reputable data sources, such as the World Bank, the World Economic Forum, Gartner, and the United Nations then summed up to create a total digital readiness score (Tae Yoo et al, 2018).

## Calculating a Country's Score

### How It Adds Up - Criteria for the Components



**Figure (5-1): Country Digital Readiness Components**  
*Source: Cisco Corporate Affairs Research, Tae Yoo et al (2018)*

The above figure (5-1) is an illustration of the seven components making up the digital score in that research, where the global average for digital readiness was 11.96 out of 25. Countries were categorized in three stages: the highest stage of digital readiness (Amplify) averaged 16.83 such as USA and West Europe. Then, those in the middle stage of digital readiness (Accelerate) averaged 12.49 such as Latin America, Eastern Europe, Asia, and some Middle East countries. While, the lowest stage of digital readiness (Activate) has an average of 8.10 such as Africa and some of Middle East and Asia (Tae Yoo et al, 2018). Egypt has scored 10.83 thus positioned in the middle stage (i.e. the Accelerate stage) that would most benefit from technological infrastructure readiness, human capital development, basic human needs improvements, and

advancements in the ease of doing business in the country. The key importance of Cisco Research Affairs' study is that human capital development is critical across every stage of digital readiness (Tae Yoo et al, 2018). In addition, it supported this study in quantifying the current standing of Egypt's digital readiness from the viewpoints of international IT vendors; besides the main components to be considered to transform a country to a digital economy.

Hence, phase II of literature review was dedicated for selectively surveying more than dozens of digital models and positioning their contributions, the study concentrated on nine (9) digital transformation frameworks, models or/and programs that tackled the impact of technologies on the digital transformation of societies. In addition, the study excluded those models of digital transformation that was country specific or dimension specific, such as enhancements within ICT for specific industry digitization, in order to standardize comparison among models based on general criteria.

To follow is a descriptive comparison of the constructs or components of the studied conceptual models and frameworks from the previously highlighted accomplishments by various entities sorted chronologically:

**Table (5-1): Comparative Analysis between Digital Transformation Models**

Entity	Focus/ Region	Components of Conceptual Model
1. DAN/Oxford Economics, 2018	Digital Society Index, Global	<ul style="list-style-type: none"> <li>✓ Use of ICT skills at work</li> <li>✓ Level of digital training</li> <li>✓ Relevance of digital education</li> <li>✓ Transparency of government in using personal data</li> <li>✓ Transparency of businesses in using personal data</li> </ul>
2. Cisco Research: Modeling an Inclusive Digital Future, 2018	Country Digital Readiness Score, Global	<ul style="list-style-type: none"> <li>✓ Technology Infrastructure &amp; Adoption</li> <li>✓ Human Capital</li> <li>✓ Basic Needs (Life expectancy, mortality rate, sanitation, access to electricity)</li> <li>✓ Ease of doing business</li> <li>✓ Business &amp; government investment</li> <li>✓ Start-ups (legal rights, time to start business, Venture capital availability)</li> </ul>
3. ITU, 2017	Smart Society, Global	<ul style="list-style-type: none"> <li>✓ Technology</li> <li>✓ Politics (law and policy making process).</li> <li>✓ Public administration/service</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Industry/Economic activities</li> <li>✓ Knowledge production (Education)</li> <li>✓ Culture (Attitude and life style)</li> </ul>
4. OCED, 2017	Digital Governments, MENA region	<ul style="list-style-type: none"> <li>✓ Openness and engagement participation</li> <li>✓ Creation of data driven culture/protecting privacy and ensuring security/ engagement and participation in multi-actor context in policy making and service delivery</li> <li>✓ Governance and coordination</li> <li>✓ Leadership</li> <li>✓ Management capacity to support implementation</li> </ul>
5. VSNU, 2017	Digital Society, Europe	<ul style="list-style-type: none"> <li>✓ Citizenship &amp; Democracy</li> <li>✓ Responsible Data Science</li> <li>✓ Health &amp; Well-Being in using technology</li> <li>✓ Learning &amp; Education</li> <li>✓ Work &amp; Organizations</li> <li>✓ Digital Cities &amp; Communities</li> <li>✓ Safety &amp; Security</li> </ul>
6. LIBRe Foundation, 2016	Digital Society, Europe	<ul style="list-style-type: none"> <li>✓ Regulation and policy development;</li> <li>✓ Legally compliant services and tools;</li> <li>✓ Cross-border cultural differences and the creation of a common digital culture;</li> <li>✓ ICT-enhanced management</li> </ul>
7. World Bank Group (WBG), 2016	Digital ID schemes, Global	<ul style="list-style-type: none"> <li>✓ Legal and regulatory concerns</li> <li>✓ Institutional and administrative concerns</li> <li>✓ Technological concerns (digital infrastructure readiness)</li> <li>✓ Business models and procurement concerns</li> <li>✓ Country-specific and cross-border concerns</li> </ul>
8. UNESCO, 2016	Information Literacy for an Active and Effective Citizenship, Global	<ul style="list-style-type: none"> <li>✓ Information Environment</li> <li>✓ ICT infrastructure &amp; information skills development, data protection and privacy, preservation of cultural heritage, content creation, universal access to ICT, E-government)</li> <li>✓ Individual</li> <li>✓ Formal Education system, informal adult education for lifelong learning</li> <li>✓ Intermediary Role (Public and civil society institutions)</li> </ul>
9. Research group for Media & ICT (IBBT-MICT), 2012	Social Media Digital Literacy, Europe	<ul style="list-style-type: none"> <li>✓ Digital competences,</li> <li>✓ Digital usage and</li> <li>✓ Digital transformation.</li> </ul>

The study recognized that all above models in Table (5-1) have several dimensions in common that this research has classified them into six main categories as follows:

**Table (5-2): Assessment Criteria for Digital Transformation from Literature**

Area/ Construct	Context
IT infrastructure	ICT infrastructure development, Technology, quality of service, compatible software and hardware, data protection, privacy measures
Human Resources	Individual users of IT tools, IT skills competencies, Technology adoption, basic human needs
Culture	Value system of a society with associated attitudes and life styles, cross cultural difference and creation of digital culture
Environment	Digital knowledge production for society, business and political structure, public sector information access and delivery. Business and government investment e.g. foreign direct investment, high technology exports and government success in ICT promotion.
Policies and Regulations	Legal and policy development by government in term of security, data safeguarding and privacy concerns as well as ease of doing business especially for start-ups
Digital Transformation	A digital way of interaction by society members, governments and businesses among each other.

Further, digital transformation tools are classified into two main categories tackling different goals: one is *general* seeking to measure digital readiness, literacy or society (d-society) metrics and the other is *sector specific* looking at digital economy (d-economy) and/or digital government (d-government). Below table (5-3) illustrated a comparative analysis among the studied digital transformation models/frameworks. The table (5-3) depicted each model/framework with its specific focus and the constructs it has measured based on grouping of six classifications with their context definition in Table (5-2).



**Table (5-3): Comparative Analysis of Digital Transformation Models**

Research	Focus	IT	H R	Culture	Environment	Policies	Digital Transformation
DAN/ Oxford Economics	d-economy	√			√		√
Cisco Research	d-readiness	√	√		√	√	√
ITU	d-society	√		√	√	√	√
OCED	d- government	√	√		√	√	√
VSNU	d-society	√	√		√		√
WBG	d-economy	√			√	√	√
LIBRe Foundation	d-society	√		√	√		√
UNESCO	d-literacy	√	√	√	√		√
IBBT- MICT	d-literacy	√					√

As per digesting those above-mentioned international models/frameworks, the study has developed those two tables (5-2 and 5-3) that guided in the creation of the proposed research model in term of envisioning the dimensions affecting digital transformation already exemplified by different disciplinary entities at various scales. The study utilized IT infrastructure, culture and environmental factors from the above table (5-3); however, human resources was applied in term of people, while policies in term of governmental initiatives and regulations.

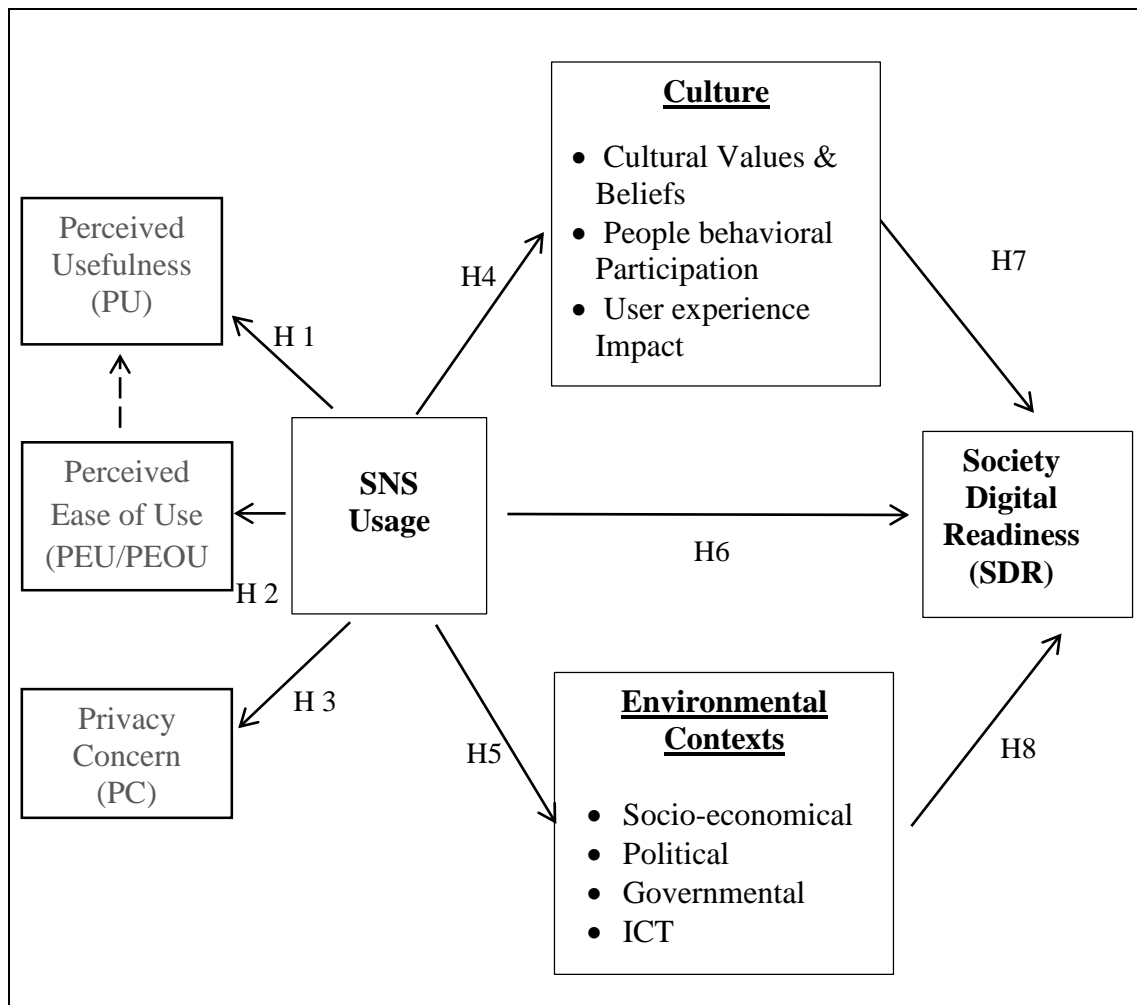
## 5.2 SDR Assessment Research Model

This section discusses the research proposed conceptual model of digital transformation based on the utilization of ICT applications i.e. SNS. The model is drawn from literature review narrated in chapter two about SNS, IS, culture and digital citizenship, people as SNS users, environmental contexts; in addition to global digital transformation models presented in section (5.1) of this chapter. The data repository is categorized into published journals, university papers and international organization reports e.g. ITU, World Bank, UNSECO, OECD, etc. Furthermore, the researcher investigated already established IT usage conceptual theories such as the prominent Technology Adoption Mode (TAM) to create a comprehensive view.

This study addressed the absence of a framework that assesses digital readiness transformation in the Arab region through examining the impact of a massively used IT tool within a populous country like Egypt. Hence, the research proposed “The Impact of SNS on Transformation to a Digital Society” conceptual model. It is an attempt to benefit from previous models merits and overcome their shortcomings at the same time tailored to Egypt ICT industry and online community. It is originated from various constructs interacting with SNS on daily basis that gradually leads to changing society’s behavior to a digital one. This model encompassed most internal and external factors that affect SNS from pervious researches. Internal factors are SNS’s essential features and external factors are two main dimensions and their associated constructs that are interacting with SNS to facilitate a society transformation to a digital one; which are:

- 1) SNS’s characteristics and features that drive people to use it and are considered as independent variables;
  - a. Perceived usefulness,
  - b. Perceived ease of use,
  - c. Privacy concern
- 2) Dimensions affect and are affected by SNS that can be grouped into Culture and Environmental Contexts with the following sub-constructs;
  - a. Culture: cultural values and beliefs, people behavioral participation, user experience impact;
  - b. Environmental Contexts: socio-economic conditions, political issues, governmental initiatives and technical infrastructure.

## The Impact of SNS on Society Digital Readiness (SDR) Model



**Figure (5-2): Research Proposed SDR Model (V.0.2)**

This conceptual model is an effort to study the impact of social networks on changing people’s modes of life; however, it can be applied similarly to various other kinds of technological tools that tend gradually to impact ways of doing things across people, businesses or governments.

### **Description of the SDR Research Model and the Explanation of its Hypotheses**

This model has two types of hypotheses: internal and external ones. To follow is the explanation of each respectively and their references from literature.

#### ***Internal Hypotheses***

On addressing SNS features, past studies have confirmed the impact of perceived enjoyment, perceived risk, subjective norm, fun, hedonic and utilitarian motivations

(Tong, X., 2010; Childers, T. et al., 2001; Lorenzo-Romero, C. et al. 2011; Maditinos, D., et al. 2013; Venkatesh, V. et al, 2003; Chtourou, M. and Souiden, N., 2010; Xu, C. et al, 2012) on technology usage and adoption. Therefore, the internal hypotheses depicted the characteristics that should be present in SNS as a tool of communication, information seeking, self-representation and networking for people's adoption and continuity of use. SNS's utility covered usefulness, relevance, timeliness, accessibility, ease of use, etc. While, SNS's credibility encompassed trustworthiness, privacy, perceived risk, reliability, etc. The success of SNS depends on both -utility and credibility- that facilitates content sharing, sociability, and self- presentation. Thus, the model focused on measuring SNS's utility through the independent variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEU) as per TAM model (Venkatesh and Davis, 1996) and in measuring credibility of SNS through the independent variable: Privacy Concerns (PC) based on the conceptualized Model of Xin Tan et al (2012).

***H1: There is a null relationship between SNS and Perceived Usefulness (PU)***

***H2: There is a null relationship between SNS and Perceived Ease of Use (PEU/PEOU)***

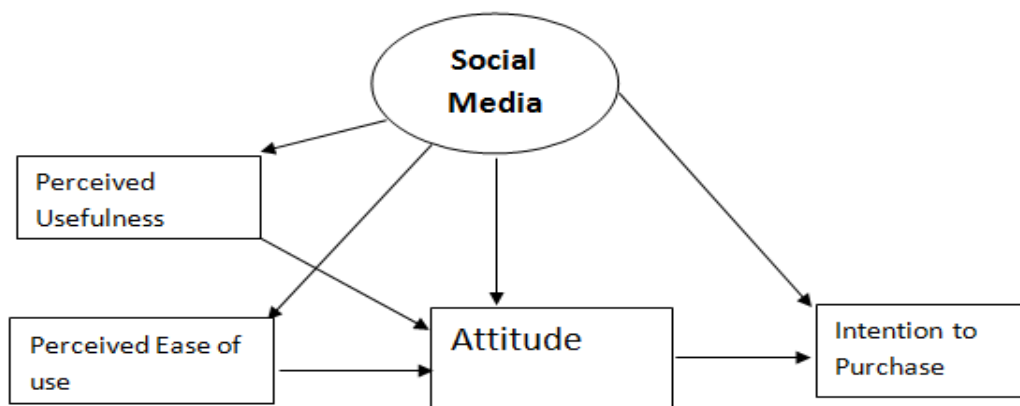
***H3: There is a null relationship between SNS and Privacy Concern (PC)***

Speaking about utility feature of SNS, the breaking research by Davis, F. (1989) has resulted in the Technology Adoption Model (TAM), which is a commonly applied model in the information systems field to predict user's acceptance of information technology and usage in an organizational context. There are a number of meta-analyses on TAM that have demonstrated that it is a valid, robust and powerful model for predicting user acceptance (Bertrand, M. and Bouchard, S., 2008). TAM model which deals with perceptions as opposed to real usage, suggests that when users are presented with a new technology, two important factors influence their decision about how and when they will use it (Davis, F., 1989). These key factors are:

- Perceived usefulness (PU) - This was defined by Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance" or the value that user perceives when using the technology to serve his needs (Lubbe, B. and Louw, L., 2009).

- Perceived ease-of-use (PEoU) - Davis defined it as "the degree to which a person believes that using a particular system would be free from effort", that has to say, he/she does not have to put an effort to use the technology.

Both variables are main determinants of consumers' attitude towards the use of technology. Many scholarships have widely applied TAM model on various IT tools. As a reference here is Singh, G. et al (2016) efforts to examine the linkage between social media and the theoretical framework of Technology Adoption Model (TAM).

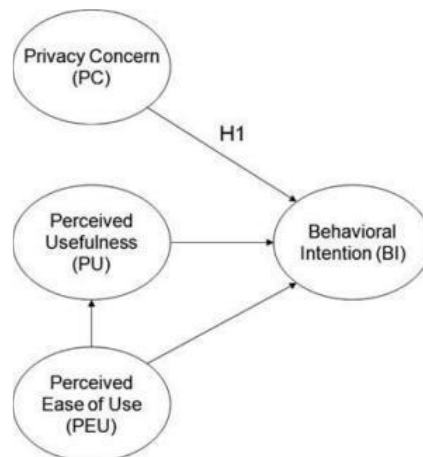


**Figure (5-3): Conceptual Model of the Role of Social Media**  
*Source : Singh, G. et al (2016)*

Thus, Social media being a significant platform to provide the consumers with all the relevant information plays a crucial role in determining the consumer perceptions (Singh, G. et al, 2016). That explained why certain SNSs continue and flourish while others decline and perish. As the former was able to tailor applications to customers' preferences and expectations for easiness of use, flexibility of maneuvering through user-friendly interfaces and adjustable to be accessed from any device as well as promoting value of use. Simultaneously, taking the necessary security measures to safeguard privacy concerns and ensure trust by users transfers the study to the second variable, which is credibility of SNS.

Concerning the second feature credibility, perceptions of privacy concern of SNS are highly debatable nowadays that influence people willingness to use SNS for sharing information, socialization and generation of new relationships. Privacy within SNS was fully discussed in Chapter 1. Studies have indicated that users will express very strong concerns about privacy of their personal information, but be less than vigilant about

safeguarding it (Awad and Krishnan, 2006). Facebook studies, by Acquisti, A. and Gross, R. (2006), Lampe, C. et al (2007) and Stutzman, F. (2006) showed that members reveal a lot of information about themselves and are not very aware of privacy options or who can actually view their profiles. The following display of Xin Tan et al (2012) showed the efforts to depict correlation between behavioral intention of use of IT and the three identified SNS variables from theories. Research models conceptualized Privacy Concern (PC) as a moderator of TAM model.



**Figure (5-4): Privacy Concern Conceptualized Model**

*Source: Xin Tan et al (2012)*

As per Xin Tan et al (2012), the privacy concern of the research’s respondents were found to be statistically significant; however, they did not directly affect users' acceptance of social networking web sites. Instead, privacy concerns did moderate the effects of perceived usefulness and perceived ease of use, on users' intention to continue to use SNWs (Xin Tan et al, 2012). Sequentially, this paper deduced that perceived use (PU) of a tool is dependent on its perceived ease of use (PEU) that why the arrow is headed from PEU to PU in the above figure (5-4).

Henceforth, there is a correlation between SNS and utility and credibility in term of perceived usefulness, ease of use and privacy concerns for intentional usage. This correlation appeared in grey shade in the model since they are SNS’s internal hypotheses.

### ***External Hypotheses***

The external hypotheses addressed the effects of SNS on two major dimensions, which are Culture and Environment Contexts towards society’s transformation to a digital

one. The researcher developed the external dimensions from literature review elaborated in chapter two and the above table (5-2) displaying the area/ construct of reviewed global digital transformation's frameworks and models. Then, the Society Digital Readiness model– SDR- output is measured using Mike Ripple's developed nine themes of digital citizenships that are classified into three categories: Educate, Respect and Protect known as ERP model (Ribble, M., 2011). To follow is narration of each hypothesis;

***H4: There is a relationship impact of SNS on Culture***

***H5: There is a relationship impact of SNS on Environmental Contexts***

***H6: There is a relationship between SNS and society's digital transformation readiness***

***H7: There is a relationship of change in Culture because of SNS's usage leading to transformation to a digital society***

***H8: There is a relationship of change in Environmental Contexts because of SNS's usage leading to transformation to a digital society***

**Consequently;**

1. PU, PEU and PC, there is a direct relationship (proven by theories and researches) between the two fundamental features: utility and credibility with respect to the adoption of SNS. Utility is exemplified in the model by perceived usefulness and perceived ease of use, while credibility is signified through privacy concern.
2. Culture, this dimension analyzed people's cultural values, behaviors and experiences that affect online user's attitudes and behaviors. So, it is comprised of;
  - a. cultural values & beliefs,
  - b. people behavioral participation,
  - c. user experience impact,
3. Environmental Contexts, this dimension studied the relationship of SNS with various environmental aspects. So it is comprised of;
  - a. socio-economic conditions,
  - b. political issues,
  - c. governmental regulations and initiatives and;
  - d. Information Communication Technologies (ICT) infrastructure.

## Description of the Initial SDR Proposed Research Model

It is worth mentioning that originally the model was composed of *eighteen (18) hypotheses*, which were all statistically proven during the first data collection stage of the research. Based on academic feedback and endeavors to simplify the model, the researcher revised and consolidated the hypotheses to these final *eight (8) working hypotheses* while maintaining the same theme of the model. Below is a demonstration of the old model under the name of Digital Culture Readiness model before consolidation and changing its name to Society Digital Readiness (SDR) model in figure (5-2).

### The Impact of SNS on Transformation to Digital Culture (DC-Readiness) Model

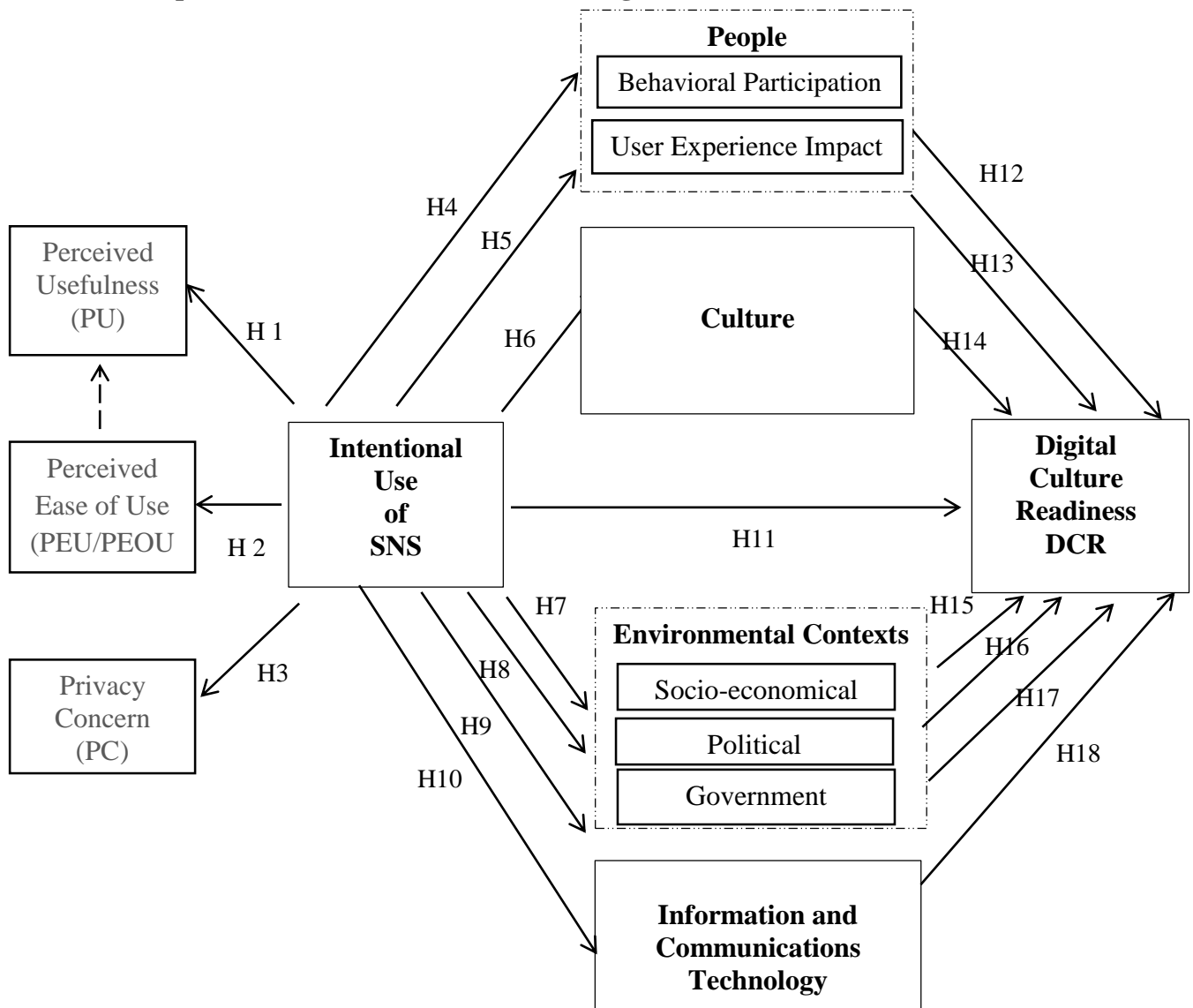


Figure (5-5): Research Initial Proposed DCR Readiness Model (V.0.1)



Apparently, the main conception of the model remained unchanged, as well as, the notion of external and internal hypotheses is maintained; however, the adjustments were as follow:

- i. Modification of the name of the model from ‘Culture’ to ‘Society’ as culture is an abstract term that requires specialized tests to measure its transformation over a longitudinal period of time.
- ii. The new model migrated the internal hypotheses, which are SNS’s identified features from literature; however, it consolidated the four dimensions of the external hypotheses of the initial model under two broad dimensions, which are Culture and Environmental Contexts encompassing their related sub-constructs for better inclusion and representation.

After illustrating the initial suggested research model in figure (5-5), the table (5-4) below depicts the compilation of statistically proven hypotheses (Appendix C, D, E) resulting in the design of a new proposed SDR model (V.0.2) in figure (5-2) as discussed above.

**Table (5-4): Compilation of Hypotheses from Old to New Proposed Research Model**

S.N	Old Hypotheses	S.N	New Hypotheses
H1	H1: SNS should have Perceived Usefulness (PU)	H1	H1: There is a null relationship between SNS and Perceived Usefulness (PU)
H2	H2: SNS should have Perceived Ease of Use (PEU/PEOU)	H2	H2: There is a null relationship between SNS and Perceived Ease of Use (PEU/ PEOU)
H3	H3: SNS should have Privacy Concerns (PC)	H3	H3: There is a null relationship between SNS and Privacy Concerns (PC)
H4	SNS has an impact People Behavioral Participation (PBP)	H4	There is a relationship impact of SNS on Culture a. SNS-People Behavioral Participation (PBP) b. SNS-People User Expérience (PUEXP) c. SNS-Cultural Values & Beliefs (CVB)
H5	SNS has an impact People User Experience (PUEXP)		
H6	SNS has an impact on Culture of Egyptian Society		
H7	SNS has an impact on Environmental Contexts: Socio-economical (SE)	H5	There is a relationship impact of SNS on Environmental Contexts a. SNS-Socio-economic conditions (SE) b. SNS-Political issues c. SNS-Government initiatives d. SNS-ICT infrastructure
H8	SNS has an impact on Environmental Contexts: Political		
H9	SNS has an impact on Environmental Contexts: Government		
H10	SNS has an impact on ICT infrastructure		
H11	SNS has an impact on Digital Culture Readiness of Egyptian Society	H6	There is a relationship between SNS and society's digital transformation readiness
H12	People’s Behavioral Participation is affected by SNS for transformation to a digital culture	H7	There is a relationship of change in Culture because of SNS’s usage leading to transformation to a digital society: a. Behavioral Participation- SDR b. User Experience- SDR c. Culture- SDR
H13	People’s user Experience is affected by SNS for transformation to a digital culture		
H14	Culture is affected by SNS for transformation to a digital culture		
H15	Environmental Contexts: Socio- economical is affected by SNS for digital transformation	H8	There is a relationship of change in Environmental Contexts because of SNS’s usage leading to transformation to a digital society: a. Socio-economic conditions – SDR b. Political issues– SDR c. Government initiatives– SDR d. ICT infrastructure – SDR
H16	Environmental Contexts: Political is affected by SNS for transformation to a digital culture		
H17	Environmental Contexts: Government is affected by SNS for digital transformation		
H18	ICT is affected by SNS for transformation to a digital culture		

Henceforth, the new version of the proposed research model i.e. SDR V.0.2 argued that these two external dimensions and their constructs are affected by SNS's adoption and usage. SNS through its identified features leads to intensified practices that is capable of influencing those dimensions to transform its online community into a digital society. This conceptual model is an effort to study the impact of social networks on changing people's life; however, it can apply similarly to various other kinds of digital technologies tools such as Internet of Things (IoT) that tend by time to impact ways of doing things across people, businesses or governments.

To follow is mapping of all model's hypotheses reference to data collection methods. Then, each one of the sub-construct is examined to construe the correlations between the use of SNS and digital transformation.

### **5.3 Mapping of Model's Dimensions & Hypotheses to Data Collection Methods**

Each dimension in the model is comprised of a number of measuring constructs derived from literature as earlier indicated. Research methods were divided into two phases. A survey instrument in phase one followed by an open-ended interview in phase two; both are implemented as a proof of evidence for verification of the suggested model. The survey was distributed to Egyptian online SNS users across most demographic factors (excluding below 18 years old); then, interviews were conducted with the developer of a popular Facebook page and professional digital media experts in Egypt as well as international SNS subjects in The United Kingdom for testing opinions of diversified nationalities. The former research method aimed to test the application of the model within Egyptian community; while the latter targeted to verify from professional perspective as well as generalize the model outside Egypt (across different nationalities).

The survey consisted of four sections (see appendix B): the first part included personal demographic questions about subjects (gender, age, academic background, occupation, geographical distribution, device type, browser brand). The second part marked as 'Usage of SNS' measured users' perception toward SNS through the two suggested dimensions of the model: Culture and Environmental Contexts. The third and fourth parts marked as 'Attitude towards SNS' and 'Level of satisfaction towards SNS'

measured users' perception about SNS's utility and credibility variables as well as the two suggested dimensions of the model. In each section, every question reflected a measurement construct under the related examined variables or dimensions.

Similarly, the interview is divided into three sections: introduction, research topic, wrapping questions (Appendix H). The first part aimed at breaking the ice with the interviewees and gathering profile information about behavior of SNS users in Egypt and UK. The second part examined SNS's utility and credibility variables plus the two suggested dimensions in the research model.

The following sections displays how each variable and/or construct of the two main dimensions is mapped with their corresponding question(s) in the respective data collection instrument. This mapping was based on earlier discussed literature review. Therefore, variables of SNS based on the application of TAM theory were mapped to questions related to perceived usefulness, ease of use and privacy concerns of SNS. Cultural dimension was aligned with people related cultural values, behaviors and perception of SNS questions and finally Environmental dimension was aligned with social, political, economic and technological aspects of life affected by SNS consumption. Society Digital Readiness construct was mapped to questions related to usage of SNS on daily basis and changes in doing those activities in light of SNS.

### **5.3.1 SNS Variables**

Table (5-5) displays the addressed SNS's variables in term of the corresponding question(s) in the employed questionnaire and interview. The three theoretical variables: Perceived Usefulness (PU), Perceived ease of Use (PEU) and Privacy Concern (PC) were normally grouped in the same question due to their cross-affiliation. Research variables were measured in 5-Likert's scale, with 1 as strongly disagree and 5 as strongly agree.

**Table (5-5): Variables of SNS and the Corresponding Questions in Methods**

Variable/Construct	Question No. in Survey	Question No. in Interview
Perceived Usefulness (PU) of SNS	Q 21/ 22 / 29 /30	Q 10
Perceived ease of Use (PEU) of SNS	Q 21 / 22/ 30	Q 10
Privacy Concern (PC) of SNS	Q 23 / 29 / 30 /31	Q 10

Therefore, highlighting the effect of SNS's three independent variables on its usage resulted in the following hypotheses:

*H1: There is a null relationship between SNS and Perceived Usefulness (PU)*

*H2: There is a null relationship between SNS and Perceived Ease of Use (PEU/ PEOU)*

*H3: There is a null relationship between SNS and Privacy Concerns (PC)*

### 5.3.2 SNS and SDR

Society Digital Readiness measure as per of SNS usage is examined through the following questions in the table below.

**Table (5-6): SDR and the Corresponding Questions in Methods**

Variable/Construct	Question No. in Survey	Question No. in Interview
SDR	Q 11/ 24 / 27/ 30/ 31/ 32 /33/ 34/ 35 / 36/ 40	Q 15/16/17

The display of the impact of intense use of SNS on a society's digital tendency is represented by the following hypothesis:

*H6: There is a relationship between SNS and society's digital transformation readiness*

### 5.3.3 Culture Dimension

This dimension is divided into three constructs: Cultural values and beliefs (CVB), People Behavioral Participation (PBP) and People User Experience (PUE). The following table mapped each construct with its associated question(s) in data collection methods.

**Table (5-7): Dimension of Culture and Corresponding Questions in Methods**

Construct	Question No. in Survey	Question No. in Interview
SNS- Cultural Values and Beliefs (CVB)	Q 9/ 10 /11/ 12 / 13/ 14 / 15 / 21/ 23	Q 14
SNS-People Behavioral Participation (PBP)	Q 17 / 18 / 19/ 23 /	Q5/6/11/12/ 16
SNS- People Users Experience (PUE)	Q 9/ 10/ 18 /22	Q7/8/9
Cultural Values and Beliefs (CVB)- SDR	Q 13/ 14/ 15/ 16/ 24 / 27/ 31/ 39/ 40	Q15/ 16
People User Experience (PUE)- SDR	Q 25/ 26/ 30/ 31/ 32/33	Q15
People Behavioral Participation (PBP)- SDR	Q 13/ 21 / 22/ 23/ 28	Q15

The significance of “Culture” through its different underlying constructs of cultural beliefs and values, people participation and user experience resulted in the following hypotheses:

***H4: There is a relationship impact of SNS on Culture***

***H7: There is a relationship of change in Culture because of SNS’s usage leading to transformation to a digital society***

### 5.3.4 Environmental Contexts Dimension

It is divided into four essential constructs: socio-economic conditions, political issues, governmental regulations and initiatives plus Information Communication Technologies (ICT) infrastructure. The following table mapped each construct with its associated question(s) in data collection methods.

**Table (5-8): Dimension of Environmental Contexts and Corresponding Questions in Data Collection**

Construct	Question No. in Survey	Question No. in Interview
Socio-economic conditions	Q 9/12/ 16/ 20	Q 14
Political issues	Q 16/ 20	Q 14
Governmental regulations and initiatives	Q 16/ 20	Q 14
Information Communication Technologies (ICT) infrastructure	Q 13/ 19/ 25/ 26/	Q 14

Socio-economic conditions– SDR	Q 19 / 24/ 30 / 39	Q 15/ 16
Political issues–SDR	Q 24/ 31	Q 15
Government initiatives– SDR	Q 24/ 31	Q 15/ 16
Information Communication Technologies (ICT) infrastructure – SDR	Q 24/ 27 / 33/ 36	Q 15/ 16

Showing the significance of “Environmental Contexts” along with its different four underlying constructs resulted in the following hypotheses:

***H5: There is a relationship impact of SNS on Environmental Contexts***

***H8: There is a relationship of change in Environmental Contexts because of SNS’s usage leading to transformation to a digital society***

## **Summary**

This chapter has presented nine global models and frameworks for digital transformation developed by non-governmental organizations, academia, consulting entities and business enterprises. Next, it displayed the research suggested model of Society Digital Readiness (SDR) where its variables were deduced from theoretical concepts (e.g. TAM model) and its dimensions were derived from discussed representations and models in literature review. Further, the chapter highlighted the mapping of hypotheses of the suggested model to questions in various sections of the applied data collection techniques. The data collection techniques are instruments used to verify the model and its applicability on the society of Egypt besides its generalization to other nationalities. So, the next chapter, Chapter six: Data Collection & Analysis, demonstrates in details the research methods deployed and the respective data analysis techniques practiced over the two phases of the research path.

## Chapter Six: Data Collection and Analysis

### Objectives of the Chapter

- To describe the context, methodology, procedures and findings of each empirical research instrument:
  - i. Data Collection Phase I:
    - i. Observation
    - ii. Survey (Questionnaire)
    - iii. Focus Group
  - ii. Data Collection Phase II:
    - i. Interviews
      - a. Individual Interview
      - b. Group interview
      - c. Digital Media Experts In-depth Interviews
- To explain remarks encountered during the data collection process

After demonstrating the SDR assessment model of the research in the previous chapter, this chapter discusses the data collection process that is mapped to the suggested hypotheses for testing the proposed model over two phases. Phase (I) comprised of three empirical methods which are observation, survey and focus group. Phase (II) witnessed the implementation of interview technique with Egyptians and non-Egyptians subjects. Each method was tackled in term of fulfilled purpose/s, employed methodology, selected sample, applied procedures and realized findings.

### 6.1 PHASE I: Data Collection

#### 6.1.1 Observation

Based on literature review, observation “involves the systematic recording of observable phenomena or behavior in a natural setting” (Gorman, G. and Clayton, P., 2005, p. 40). Observing or experimenting with large samples enables scientists to minimize the problem of sampling error typical to social science and to detect patterns that might not be apparent in smaller samples (Kosinski, M. et al, 2015). Accordingly,



Facebook can be used as a powerful data-recording tool because it stores detailed demographic profiles and records of an enormous amount of actual behavior expressed in a natural environment (Kosinski, M. et al, 2015).

#### **6.1.1.1 Purpose**

The study has initiated with broad observation of the online behaviors of Facebook assessment in Egypt through gathering public published data of popular FB sites over (2) two years' duration i.e. 2016 and 2017. The large samples and rich data offered by Facebook supported in understanding and analyzing the usage patterns of online community in Egypt.

#### **6.1.1.2 Sample Selection**

Facebook was selected for analysis, as it is the massively used SNS in Egypt. According to Radcliffe, D. and Bruni, P. (2018), out of the 164 million Facebook subscribers in MENA, Egypt has 35-37 million people accessing Facebook every month. With over 24 million or 65% of monthly active people return every day which makes Egypt the highest daily users' rate in the region. Selection of analyzed sites is based on the categories of major aspects of life across online communities as well as Social Bakers.com global rating of the highest number of followers per category across Egypt online society at the time of investigation (2016-2017). Further, Google (2017) announced the release of Egypt's 'Year in Search', displaying the most trending topics that Egyptians searched for during 2017 which were:

- *Sport*; Egypt's qualification to the 2018 World Cup, Al Ahly elections, African league and Mohammed Salah.
- *Social*; School examinations along with the raise in electricity bills.
- *Cultural*; Serials (i.e. Silisal Aldam, Kafr Dehlab) and programs (i.e. Ramez Ttaht El'ard / 'under the earth') over MBC channel
- *Local Events*; the passing of the iconic artist Shadia and Al Wahat terrorist Attack
- *Popular Figure*; captain Mahmoud Al Khatib, Al Ahly Club's new president.

Those trends had a huge significance on the volume and types of interaction over the virtual platform of Egyptian online users at that respective time duration.

From the above references and published reports by SNS, the following categories and respective popular sites were selected for observational study:

1. Celebrity, page taken as an example was Mostafa Hosny at <https://www.facebook.com/MustafaHosny/>.
2. Media, page taken as an example was MBC, <https://www.facebook.com/MBCMAsr/>.
3. Community, page taken as an example was Daily Medical Information at <https://www.facebook.com/DailyMedicalinfo/>.
4. Business Brands, page taken as an example was Vodafone at <https://www.facebook.com/Vodafone.Egypt/>.
5. Sport, page taken as an example was Al Ahly sporting Club (number one football club in Egypt) at <https://www.facebook.com/Officialahlysc/>
6. Places, page taken as an example was AFNCI, Association of Friends of the National Cancer Free Initiative at <https://www.facebook.com/AFNCI.officialpage/>
7. Special Groups Sites, page taken as an example was Tagrba stands for Experience at <https://www.facebook.com/Tgrba.News/>.

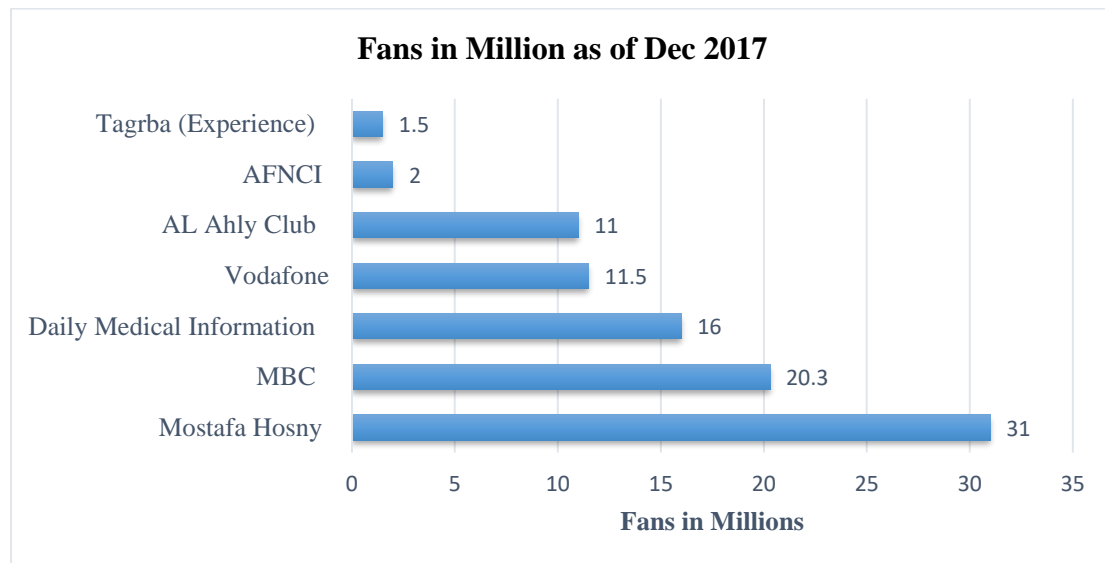
### **6.1.1.3 Methodology**

Data was retrieved using software analytical code (Facebook APIs). Based on the license mechanisms, data was extracted from the selected sites and imported to Microsoft Excel 2010 for data editing, configuration and management purposes then visualized via Tableau 10.2 software tool for physical analysis and representation. The study has considered all possible angles displayed in the observed sites and concluded that there were three key parameters consuming most of the fans' behaviors and interaction time across the pages. Therefore, analyses covered the following three angles of online behavioral participation (Appendix A):

- Volume of interactions in term of Reactions, Comments, Shares;
- Reaction was further inspected in term of its types; positive ones: Love, Wow, Hahas, Like versus negative ones: Sad, Angry (FB reactions' options for online users);
- Post Types (Video, Photo, Link, Status)

#### 6.1.1.4 Findings

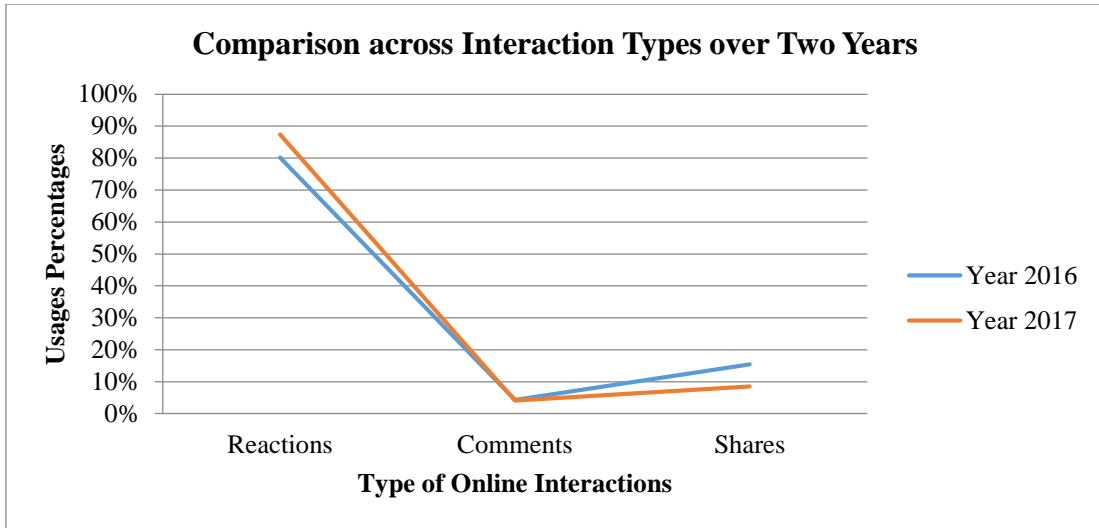
1. Ranking of the most popular Facebook sites per category by numbers of fans/followers;



**Figure (6-1): Display of Numbers of Followers of Investigated FB Pages**

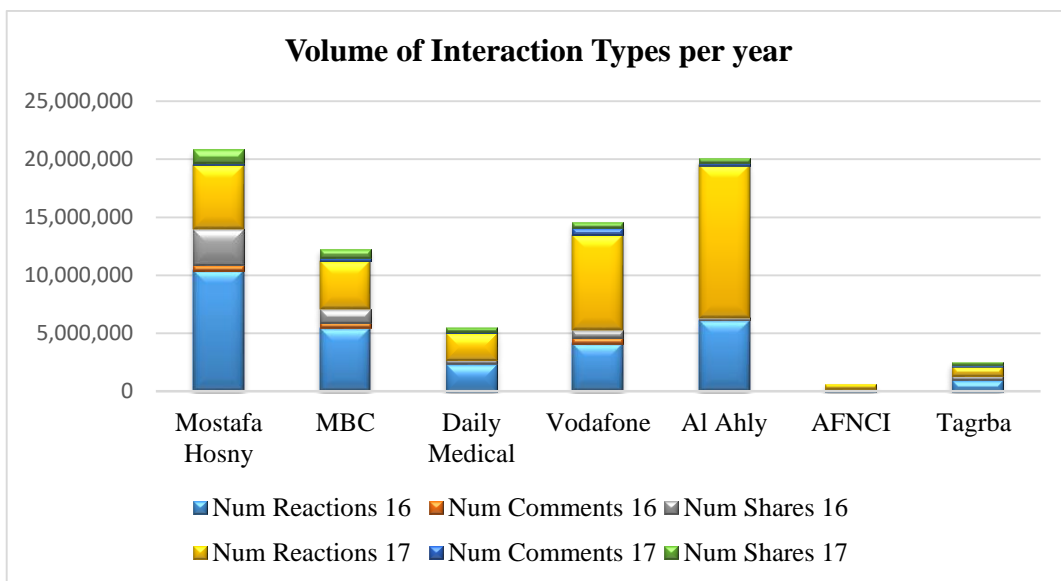
It is apparent that culture plays a role in using SNS by Egyptians, as religious celebrity page (Mostafa Hosny) had the highest number of followers (31 million) due to the impact of religion on Egyptian lives. Next in ranking was MBC Channel attracting 20 million as media is active over SNS to attract audience especially during the month of Ramadan. Thirdly, was community site (Daily Medical Information) since health issue is a common human concern. Fourthly, commercial brands especially mobile communications such as Vodafone, which is market share leader in Egypt. Fifth was sport as Egyptians' favorite team is Al Ahly football club. Lastly, were place and special group site, which are AFNCI and Tagrba with modest number of followers since the former is a charity site and the latter is a new social endeavor by people for sharing experiences/reviews about products and services.

2. Post Types: Photos and Videos are the most practiced types across sites.
3. Types and Volume of Interactions:
  - Reactions (in millions) are the mostly used type of interaction as they are quick and accessible especially via smartphones. As per below graph of accumulated interactions for the seven sites, reactions displayed highest ratios of 80% and 87% year over year followed by Shares of 16% and 9% year over year and lastly Comments with constant ratio of 4% over 2016 and 2017. Thus, Reactions has increased on the expense of Shares as displayed in figure (6-2) below.



**Figure (6-2): Comparison across Interaction Types over Years**

- The sum of volume of all types of interactions for all sites was displayed in figure (6-3). Volume was relative to the numbers of fans respectively. Therefore, *Mostafa Hosny* site had the highest number of fans as well as the topmost interactions of 21 million; followed by Al Ahly Club had 20 million interactions, next was Vodafone of 14.5 million and the lowest two ranks were Tagrba of 2.5 million and AFCNI of 665,000 interactions. In addition, the graph exhibited the classification of Reactions, Shares and Comments per year, as it is clear that Mostafa Hosny site had the highest reactions in 2016; however, Al Ahly Club had the highest reactions in 2017 relative to events.



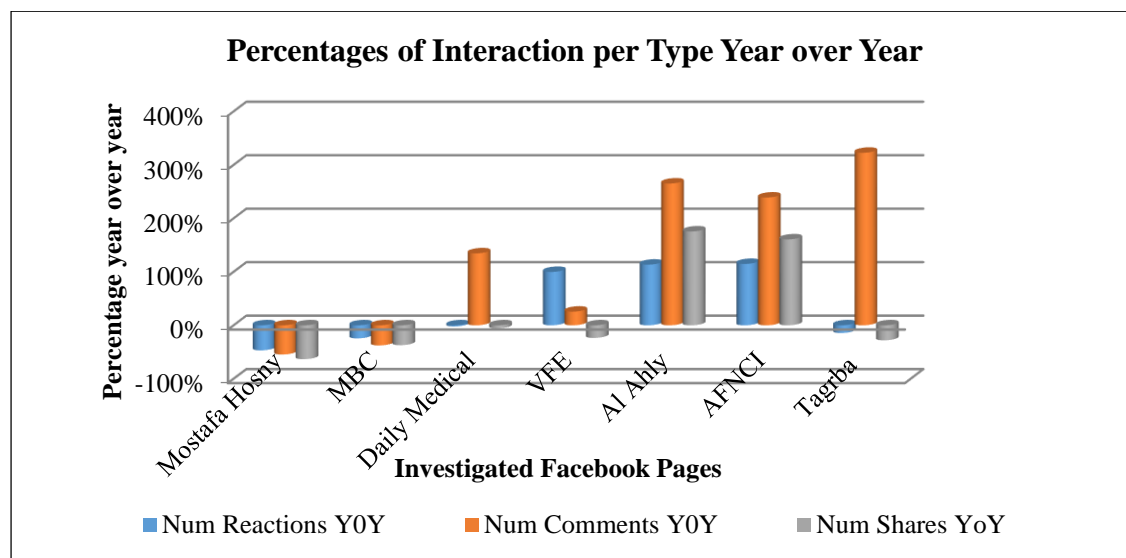
**Figure (6-3): Volume of Interaction across Pages over Years**

- Types of Reactions: People tended to use positive reactions rather than negative ones. Therefore ‘Likes’ was heavily used by far, then ‘Loves’; while the two least usable icons were ‘Sads’ and ‘Angrys’.

4. Pattern of Online Usage Behavior;

- Connected with Holy month of Ramadan e.g. Media for TV serials, Celebrity for religious programs and advices, Places for charity work and donations, Brands for Ramadan’s special advertisement and offers.
- Related to specific activities per site was seasonal change in weather at Daily Medical Information (DMI) or Board election in Al Ahly Club site, etc...
- No site exhibited a linear pattern of behavior across the two investigated years; sometimes sharp fluctuations like Al Ahly Club during Q4 2017 and inconsistent usage as exhibited by Daily Medical Information (DMI) site.
- Remarkable swings in overall sites’ interaction whether by descent or ascent.

To follow is an illustrative graph of the percentages of interaction per category year over year over year across the seven investigated sites;



**Figure (6-4): Display of Types of Interaction per Observed Sites Year over Year**

a. *Descent*;

- Despite the large number of fans amounted to 31 million in *Mostafa Hosny* site (Celebrity Category); there was a remarkable drop with an average of (-55%) in 2017 compared to 2016 across all types of interaction such as

Reactions (-47%), Shares (-63%) and Comments (-55%). This can be explained in term that people became more engaged with economic and social issues in life aside of religion. Particularly, the economic reform measures that took place at that time in Egypt forced Egyptians to adjust their spending and seek alternative profit generation venues. However, *Hosny* site has increased in number of fans from 31 million on Nov 2017 (time of observation) to 33.3 million by July 2019. This requires in-depth future analysis by specialized cultural tests.

- In *MBC* site (Media Category), there was a decline by 24% due to emerging of new competing Egyptian channels like ON E and DMC as well as other sources of media like online newspapers e.g. Youm 7 (attracting 13 million followers).

b. *Ascent*;

- Generally, there was a remarkable increase in “Comments” which can be arranged in ascending order as follows: *Tagrba*, *Al Ahly Club*, *AFNCI*, *Daily Medical Information (DMI)* on an average of 128% from 2016 to 2017 since online users by time got more acquainted and interactive with the site to move from just clicking reaction icons to sharing comments.
- *Vodafone*’s reactions have doubled and comments have increased by 26% year over year which are due to increase in number of mobile network subscribers, expansion in mobile offers as usual as people’s proactive online behaviors.
- *Al Ahly Sporting Club*’s Facebook site exhibited a noticeable increase in consumption with an average 184% jump in volume of all types of interaction due to the 4-year board election.
- *AFNCI* site displayed a remarkable growth of 172% across all three types but at a smaller scale compared to other analyzed sites.

This observational analysis was the first research method in the study to observe, scrutinize and understand Egyptians’ online behavioral patterns and interaction trends through SNS across various aspects of life. Findings matched the study model assumption that SNS affect Culture dimension in term of users’ behavioral pattern, interests and online experience over time. Those results acted as guidelines in developing the survey which was the second adopted research method.

## **6.1.2 Survey (Questionnaire)**

Surveys rely on the concept of collecting data from a sample that represents a whole study population, revealing associations and causal effects among several factors (Hakim, C., 1987). According to Mathers, N. et al (2007), the selection of the appropriate survey design depends upon a number of factors such as access to potential participants/respondents, the literacy level of respondents, the subject matter, the motivation of the respondents and resources.

### **6.1.2.1 Sample Selection**

The questionnaire followed a random sampling technique as was mentioned in chapter three. Sample size was calculated based on Egyptian Facebook users of 28 million by 2017, with confidence ratio of 95% and margin of error equivalent to 5%, to be 286 respondents. Total Number of responses (printed and online) was 300 with 1% incomplete ones so the valid analyzed responses rate is 99%. All figures presented later in findings section are percentages of the total analyzed sample.

### **6.1.2.2 Methodology**

The developed questionnaire was adopted from previous studies and reports in the region such as Arab Social Media Report, ASMR (2012, 2017) and E-Marketing Insight report for Egypt (2016) addressed to measure online users' behaviors and perceptions toward SNS. The survey backbone was dependent on the findings of observation in addition to mapping of questions to the hypotheses of the model. The survey (Appendix B) was divided into four sections to explore the research questions, test suggested model and its respective hypotheses. The questionnaire was developed using Likert scale technique- reference to Rensis Likert (1932) - which is the most common type of rating scale used in human-subject research. Questions using the Likert scale typically present a statement, and subjects are invited to choose their response to it from an ordered, odd-numbered set of choices most often five but sometimes seven or nine (Boslaugh, S., 2019).

The survey was translated to Arabic version to reach more range of people that may have modest English language skills. It had online and hard copy format to ensure high response rate. Several pilot tests were conducted for both versions on a small scale of

respondents to check clarity of questions, style of structure, and familiarity with terminologies utilized throughout the survey. Concerning Arabic language version, an Arabic teacher was approached for checking structure and grammar. All inquiries in pilot test sessions were noted and amended respectively. The tool used for creating the online survey form is Google forms. Duration of the survey is 3 months (90 days). Distribution base was 3000 out of which 300 responses with response rate 10%. Distribution venue was universities, clubs, cafes besides online posting over high volume portals e.g. Big Data Geeks public FB page and clubs' pages.

### 6.1.2.3 Findings

The findings of the surveys started with a display of the socio-demographics characteristics of the sample of SNS population in Egypt. Then followed with detailed analysis of the three sections of the questionnaire.

**Table (6-1): Socio-Demographics Characteristics of the Study Subjects (n=297)**

<b>Socio-Demographic Characteristics</b>	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	140	47.1
Female	157	52.9
<b>Age in years</b>		
<18	7	2.4
18 – 29	135	45.5
30 - 39	62	20.8
40 – 49	76	25.6
50 – 59	12	4
>60	5	1.7
<b>Social status</b>		
Single	154	51.8
Engaged	4	1.3
Married	136	45.8
Widowed	3	1
<b>Geographic location</b>		
Cairo	230	77.4
Giza	44	14.8
Alexandria	8	2.7
Sinai	2	0.7
Delta	5	1.7
Upper Egypt	8	2.7
<b>Educational level</b>		
Primary school	1	0.3
Secondary school	6	2
Higher education – Undergraduate	200	67.3
Higher education – Postgraduate	90	30.3



<b>Occupation</b>		
Unemployed	28	9.4
Studying	81	27.3
Part-time employment	25	8.4
Full-time employment	160	53.9
Retired	3	1
<b>Most common device to access social sites</b>		
Smart phone	277	95.5
Tablet	26	8.8
Laptop	140	47.1
PC	25	8.4
<b>Most common browser</b>		
Google Chrome	217	73.1
Mozilla Firefox	22	7.4
Safari	62	20.9
Internet Explorer	12	4
Other	4	1.3

The following paragraphs present the analysis of responses of the four sections of the questionnaire:

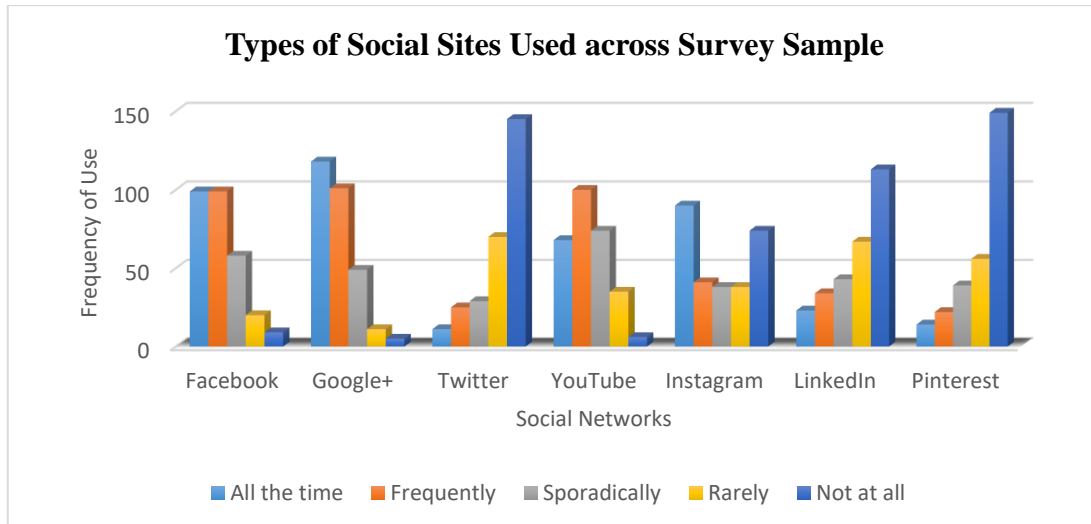
### 1. Socio-Demographics Section

The survey was conducted on 297 subjects; 140/297 males (47.1%) and 157/297 females (52.9%). All age brackets are presented. The predominant age category was 18 – 29 years old comprising 45.5% of the study sample while the least participating category was >60 years old (1.7%). Different geographic locations were represented in the survey; yet, responses from Cairo governorate were the most prevalent (77.4%) as it is the capital. Two-hundred and ninety subjects (97.6%) had higher education whether under or postgraduate levels. Full time employed subjects comprised 53.9% of the study sample while 27.3% were students. The most common device used to access social sites was smartphones (95.5%) followed by laptops (47.1%), while tablets and PCs showed nearly equal percentages of use (8.8% and 8.4% respectively). The most common browser used was Google Chrome (73.1%) followed by Safari (20.9%) which is the main browser of iPhone then Mozilla Firefox (7.4%).

### 2. SNS Usage Section

- Initial Reasons for using SNS by Egyptians were 26% for ‘Finding information’, 24% for ‘Know Latest News’, then 23% for ‘Keep in touch with family and friends’.

- The most used SNS platforms were Google and Facebook, which had the highest contribution levels among the sample by 23% and 22% respectively followed by YouTube 21%; on the other hand, at a modest usage rate was Pinterest and Twitter by 6% and 5% respectively.



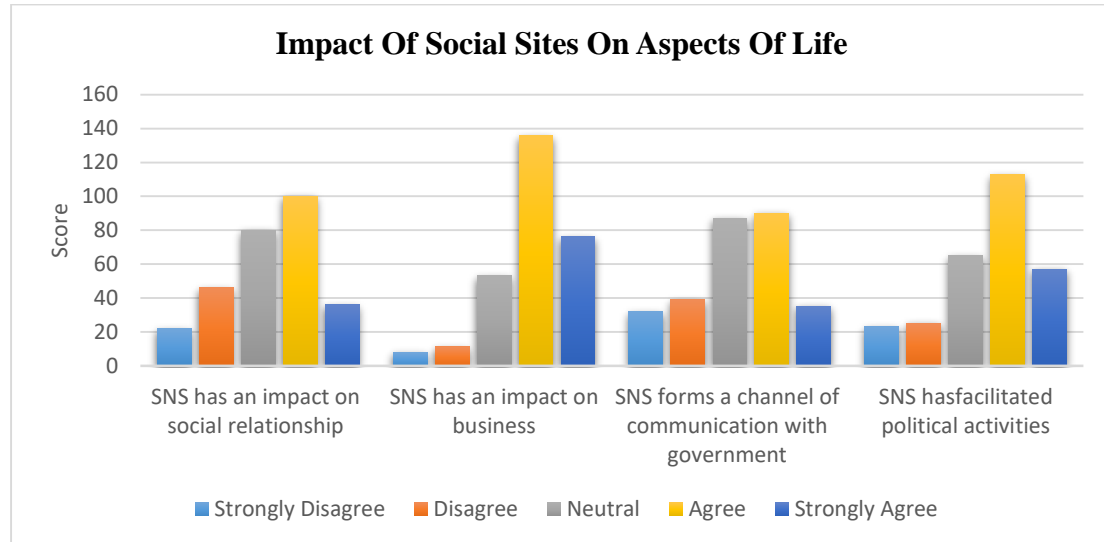
**Figure (6-5): Display of Usage Frequency per SNS**

- Information provided on online platforms; mostly ‘email addresses and ‘real name’ accounted for 16% then ‘date of birth’ represented 14%.
- Time analyses:
  - Fifty-three (53%) has been using SNS for more than 7+ years and 30% for 3-5 years.
  - Eighty-eight (88%) accessed it several times a day;
  - Forty-five (45%) of daily usage time lasted for 1-3 hours; followed by 28% for 3-6 hours;
  - Evenings time represented 63% of use;
  - Thirty-five (35%) has quitted using SNS for 1-3 days and 20% for a week out of being busy and privacy concerns.

This time analyses drew attention of the enormous impact of SNS on the society of Egypt in term of high percentage (88%) of daily users where half of which lasts for an average of 1-3 hours and third of them lasts for 3-6 hours.

- Number of profile contacts: 56% of sample population has 351-550 contacts, while 20% has 201-350 contacts on their list.
- Access venues, 52% from home and 37% from everywhere (home, work, University).

- Fifty-five (55%) of SNS users mostly speak to “Close friends and Family members”, thus FB is prime purpose is social communication.
- Social sites have affected all aspects of life in Egypt with an average of 56% of “Strongly agree/agree” across the board as per below figure (6-6).

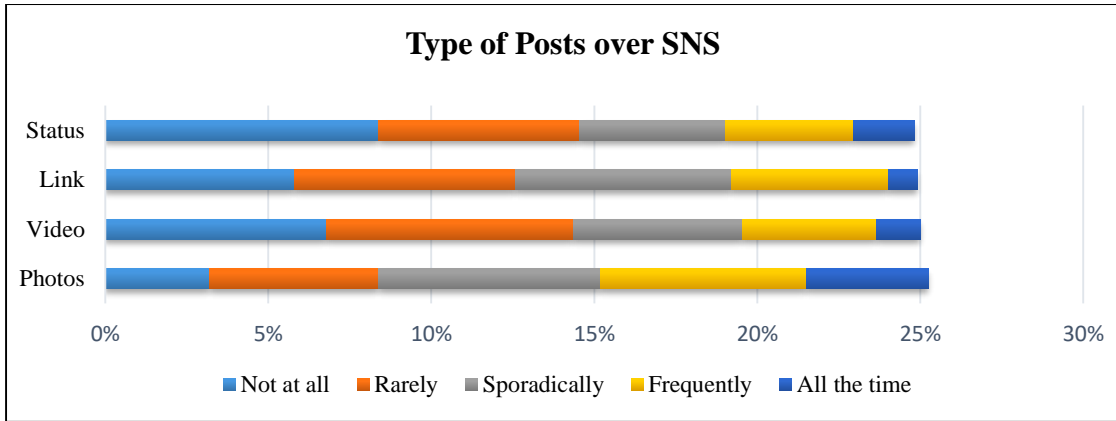


**Figure (6-6): Display of Impact of SNS on Aspects of Life**

By 2018, SNS has influenced businesses the most by 75%, followed by political issues of 59%, then social relationships were affected at 47%, lastly communication with the government at 43%. The effect of SNS on businesses was due to the current interest in economic gains through formal as well as informal sectors’ desire to use social media to reach customer base with directed messages. Therefore, currently social media is considered an important marketing tool that all businesses must include within their marketing strategy and dedicate workforce for it. Famous example is the extensive presence of social media accounts in the ‘contact section’ of the majority of commercial organizations, ranging from entrepreneurships up to multinational organizations.

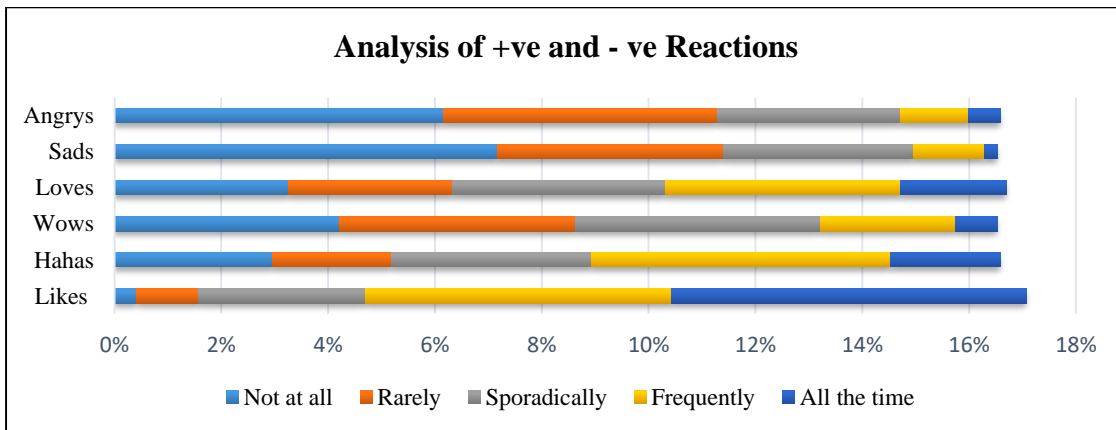
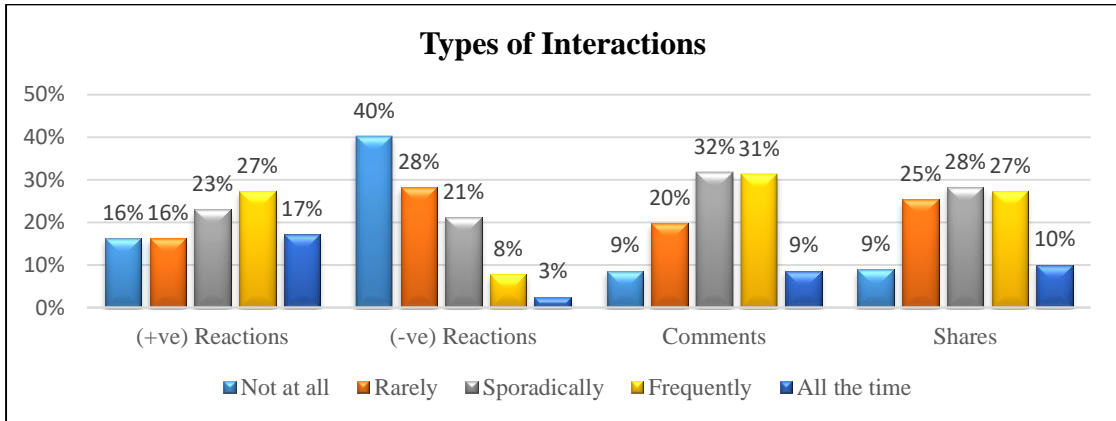
### 3. Attitude toward SNS Section

- The most type of posts performed was “Photos” at 68% then “Link” at 49%, followed by 43% for “Videos”. Lastly, “Status” was performed between ‘rarely and not at all’ by 60%.



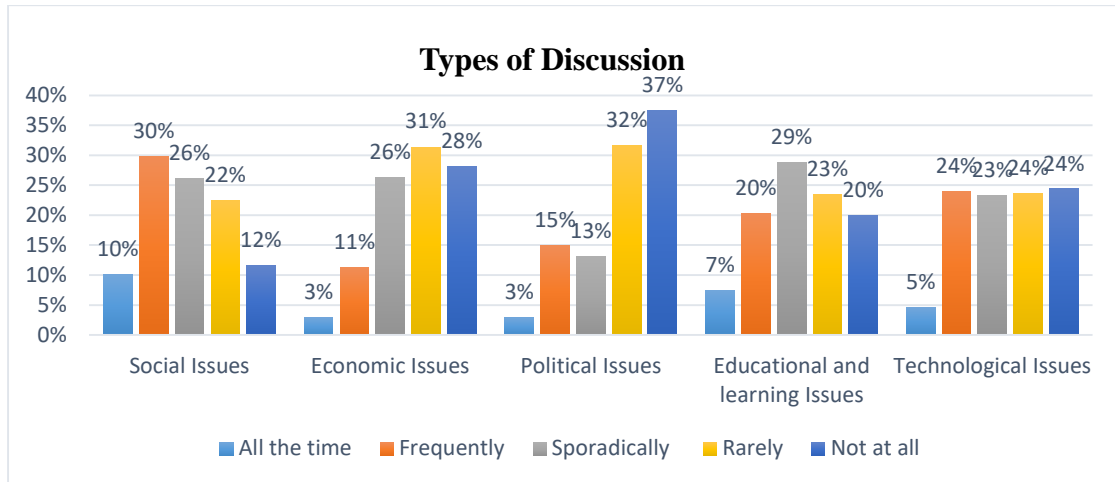
**Figure (6-7): Attitude towards SNS: Types of Posts**

- Types of Interaction;
  - Reactions are the most accomplished type with 74% where positive reactions oversized negative one by a double score. “Likes” scored 23% of users’ positive reactions for “all the time/frequently/sporadically”; followed by “hahas” then “Loves” as per figure (6-8).
  - “Comment” and “Shares” have achieved comparable usage pattern of 13% each respectively.



**Figure (6-8): Attitude towards SNS: Types of Interaction**

- Types of discussion that online users mostly engaged in nowadays are social (66%) then educational/ learning (57%) and technological issues (52%), followed by economic issues at 41% and at the least percentages was political issues with 31%.



**Figure (6-9): Attitude towards SNS: Types of Discussion**

- Email and SNS consumed most online-spent time with “Agree” 82% and 80% respectively.
- Major reasons for liking a certain site were ‘nature of topic’ and ‘technical quality of the page’ amounting for 72% and 60% respectively.

#### 4. Level of Satisfaction of SNS Section

- Ninety-nine percent (99%) had ‘Strongly agree/agree/neutral’ that SNS is an easy to use tool (PEU, H1), 90% observed SNS as a useful tool and 91% perceived it as relevant to their needs (PU, H2).

*“I perceive it as an easy to use tool”;*

*“I perceive it as relevant to my needs”;*

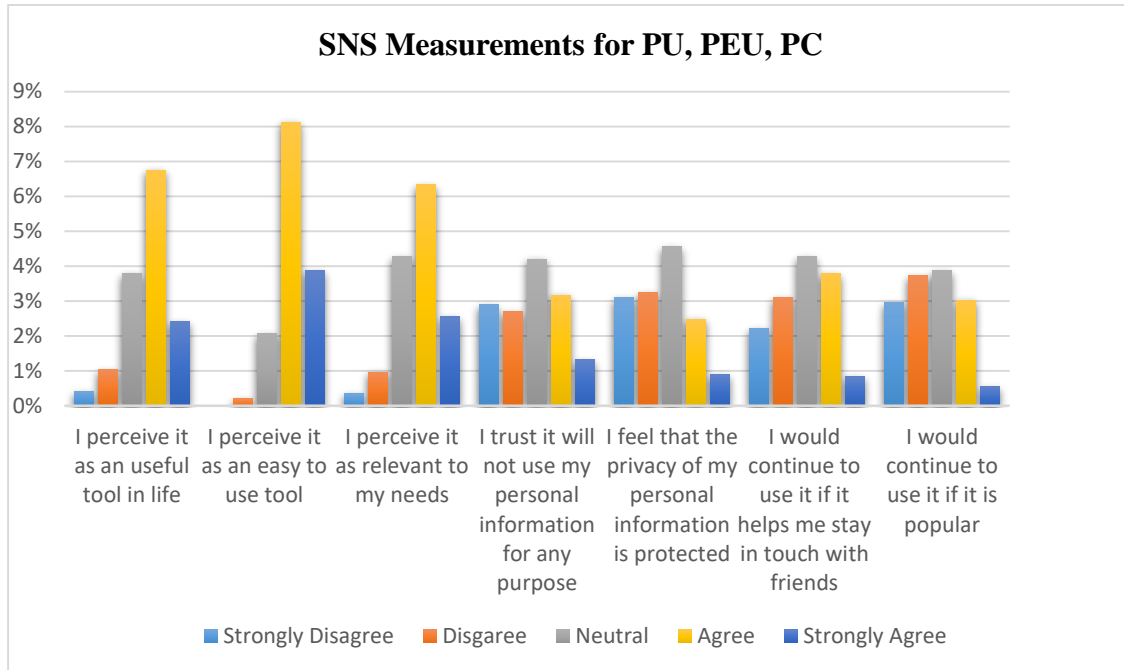
*“I perceive it as a useful tool in life”;*

- Seventy-six percent (76%) had “Strongly disagree/ disagree” concerning privacy of personal information; however, 31% “strongly agree/ agree” that SNS will not use their personal information. Further, 75% will not continue using SNS regardless of its privacy policy despite its popular and 67% will not use it despite it helps stay in touch with surroundings.

*“I trust it will not use my personal information for any other purpose”;*

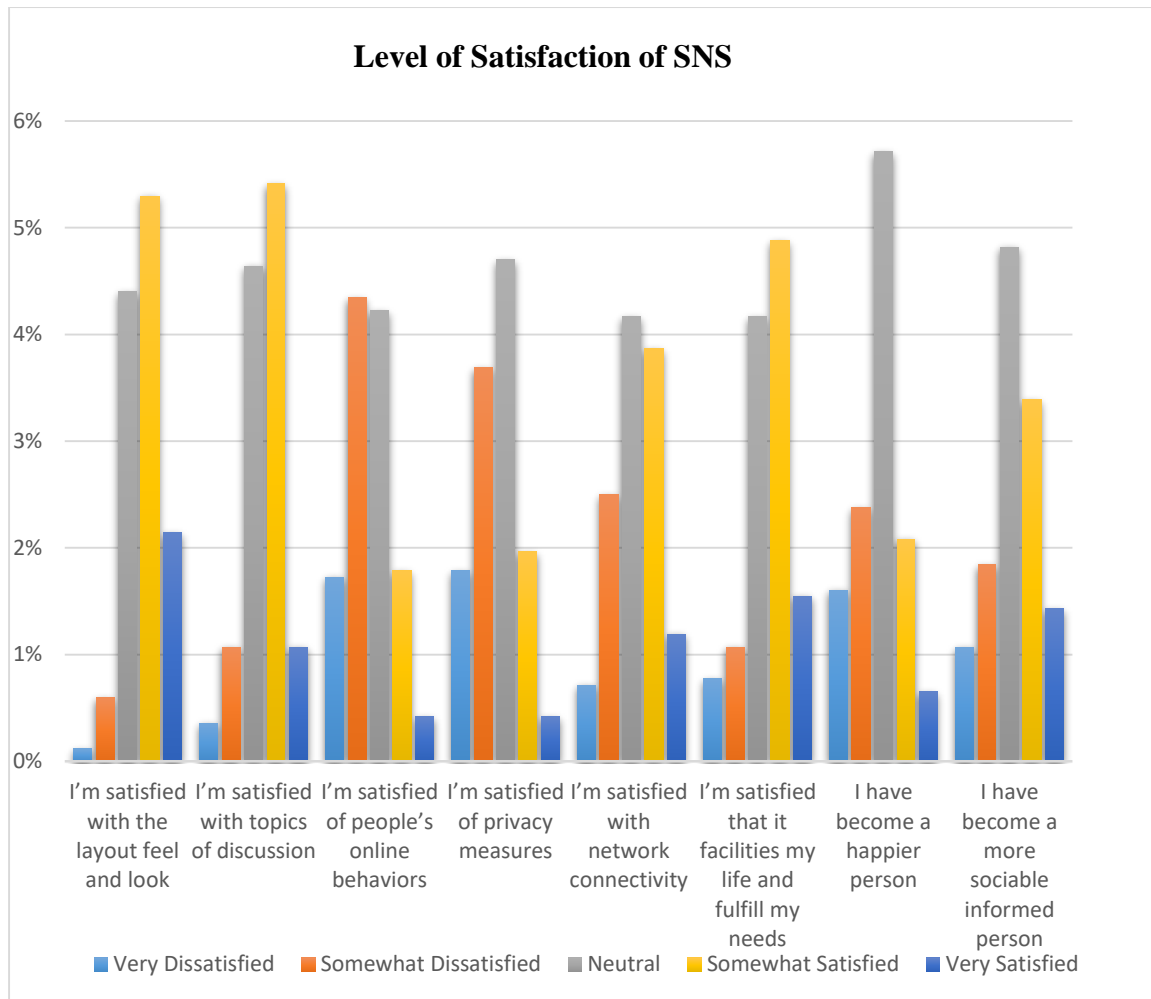
*“I feel that privacy of my personal information is protected”;*

*“I would continue to use it regardless of its privacy policy if it is popular”;*  
*“I would continue to use it regardless of its privacy policy if it helps me stay in touch with friends”*



**Figure (6-10): Measurements of SNS Variables (PU, PEU, and PC)**

About satisfaction level, most of the replies positioned in the “neutral” area. The highest satisfaction rate of 59% was for “*I’m satisfied with the layout feel and look*”; and the highest dissatisfaction rate of 49% was for “*people’s online behaviors*” and 44% for “*privacy measures*”.



**Figure (6-11): Level of Satisfaction of SNS**

- Further, response rate of the open-ended question for respondents to express their views was 31%. The word ‘privacy’ was at the top of the list with weighted percentage of 10.99, followed by ‘security’ 5.22, then ‘improves’ 3.85 with the implication of improving connectivity and online users’ behaviors.



**Figure (6-12): Words Count of the Open Ended Question of the Survey**

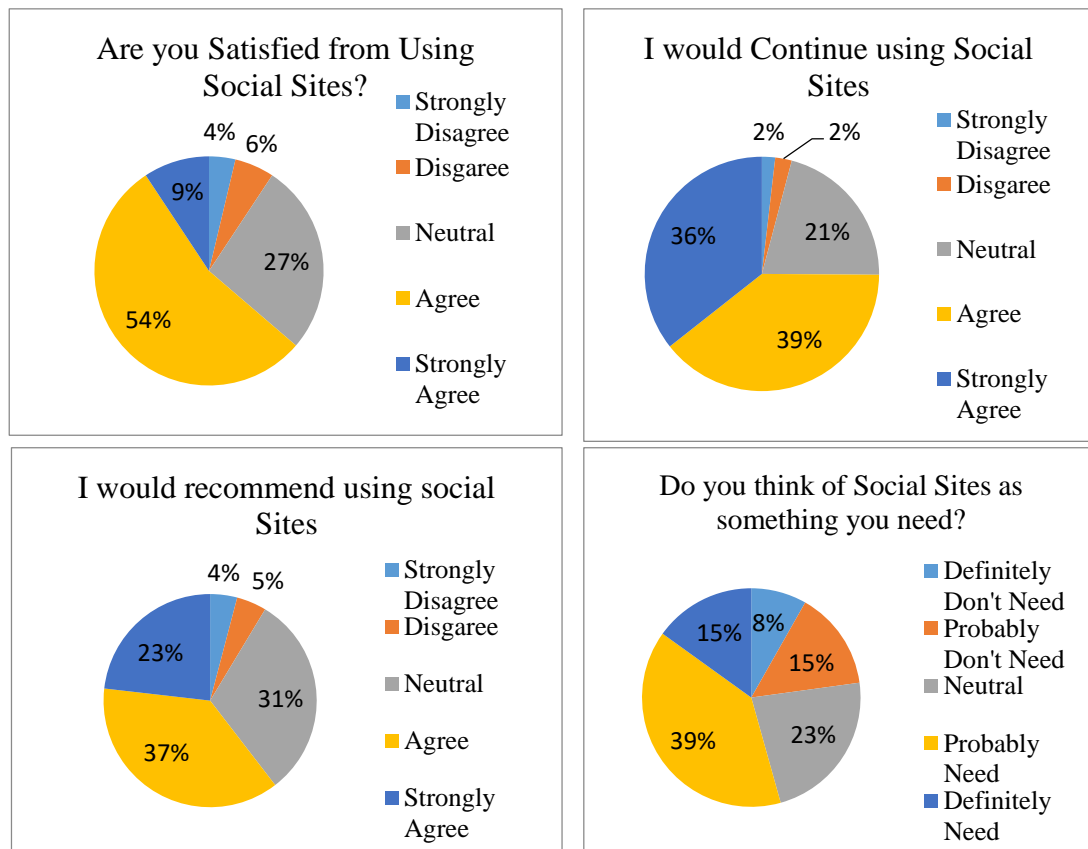
The above ‘words count’ graph expressed SNS users’ concerns and aspiration for;

- *Features of SNS platform:* Advanced platforms, trusted security system, privacy criteria, age restrictions, introducing subscription base to control consumption, etc...
- *Behavior of Online users:* Responsible online behavior and attitude, time management, stop overuse of SNS, checking sources of news, less exposing of personal information, etc.

- Users’ opinions in SNS are accumulated as follows;

SNS users Opinions	Are you satisfied from using Social Sites?	I would Continue using Social Sites	I would recommend using social Sites	Do you think of Social Sites as something you need?
Strongly Agree/Agree	63%	75%	60%	54%

Therefore, majority of the sample is satisfied of SNS where they would continue using it and in fact would recommend it to others in order to expand their virtual communication network as represented in the aggregated figure (6-13).



**Figure (6-13): Display of Users’ Opinions about SNS**



- Regarding the likelihood of change in the Egyptian culture and way of doing things;
  - Fifty- one percent (51%) admitted that SNS has replaced face to face communication
  - Eighty- six percent (86%) perceived it as Very Likely/Somewhat Likely that SNS has changed Egyptian Culture: with configuration 57% females versus 43% male, which was in line with the proposed model assumption.
- Concerning applying TNS Global Arab users’ classifications of SNS on the Egyptian online users; they resided in four out of the five classification types where “Escapists” was the least selection as per the table (6-2) below;

**Table (6-2): Egyptian SNS Users Classification**

User Type	Rating	Definition
Pragmatics	29%	Functional benefit of communication mostly, and gaining knowledge
Social Butterflies	22%	SNS acts as communication, connectivity and entertainment tool
Explorers	20%	Social media primarily is a tool for them to learn and discover new
Achievers	20%	Through knowledge building, hence helping in their personal & professional lives towards success & being ahead of others.
Escapists	8%	People longing for sociability

This table (6-2) depicted that SNS has created various types of purpose-oriented users in Egypt. One third of the sample population is pragmatics users seeking functional gains from this virtual communication, while less than quarter is using it for keeping in touch with friends and family members, again this coincided with the survey earlier inquiry about the reasons for using SNS and the big volume of family and friends in contact list. At a lesser stage, amounting to 20% of survey sample, SNS was considered as a learning tool and knowledge development.

## Testing Research Model (Statistical Analysis)

Testing of the research model was carried out on phases to check statistical measures. Quantitative data analysis is done with the aid of IBM SPSS (Statistical Package for the Social Sciences) software Version 20.0 and AMOS 20.0.0 (Build 817). Data is presented as mean, standard deviation (SD), frequencies and percentage values to verify the following statistical measures;

- *Reliability* of the questionnaire is assessed using Cronbach's alpha reliability coefficient.
- *Construct validity* is assessed through factor analysis and correlation coefficients.
- *Multivariate regression* analysis through Structural Equation Modeling (SEM) is performed to produce regression models for testing the research hypotheses.
- The *Model Fit* is tested by checking the Chi-square values and calculating Root-mean-square error of approximation "RMSEA". Non-statistically significant Chi-square values and RMSEA values less than 0.05 indicated good fit of the regression model.

### 1. Factor Analysis

Construct validity assessment for this study was done through factor analysis. Factor analysis is a statistical approach involving finding a way of condensing the information containing a number of original variables into smaller sets of factors, also called dimensions, with a minimum loss of information (Hair, J. et al., 2010). The study factor analysis identified the items included in each construct more clearly. Loadings range acceptable from the literature is usually greater than 0.5 (Hair, J. et al., 1998); which was satisfied in this study. The generated exploratory factor analysis tables were checked for each construct where the question that laid in more than one dimension/construct was eliminated for better alignment of questions to produce confirmatory factor analysis respectively (Appendix C).

### 2. Reliability

Reliability of the questionnaire was assessed using Cronbach's alpha reliability coefficient (1971). It has two dimensions referred to as repeatability and internal consistency (Zigmund, W., 1995). Internal consistency refers to the ability of a scale item to correlate with other items in the scale that are intended to measure the same

construct. The coefficient normally ranges between 0 and 1. The closer it is to 1.0 the greater the internal consistency of the items in the scale. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower coefficients e.g. 0.6 are sometimes used in the literature. In the present study all Cronbach's alpha values for different constructs ranged from 0.728 to 0.834 indicating very good level of internal consistency or homogeneity among the items under each dimension/construct (Appendix D).

### **3. Validity**

Construct validity is assessed through factor analysis and correlation coefficients. In this study, construct validity was evaluated through measuring convergent validity which refers to how well different scales of items indicate the same or similar constructs, and how well multiple measures of the same construct agree with each other (Kerlinger, F., 1986). All constructs had correlation coefficients higher than 0.5 except for political and government constructs which showed correlation ranges lower than 0.5 which were 0.421 – 0.475 (Appendix E). Thus the study concluded that convergent validity existed as the majority of constructs' correlation coefficients range greater than 0.5. On checking surveys' responses for Government and Political constructs, mostly they were positioned in the "neutral" scale since most respondents refrained from answering political questions after all political incidences faced by Egypt. Further, on the government front, still there are not any distinguishable efforts perceived or felt so far by the sample of population to express their opinions about.

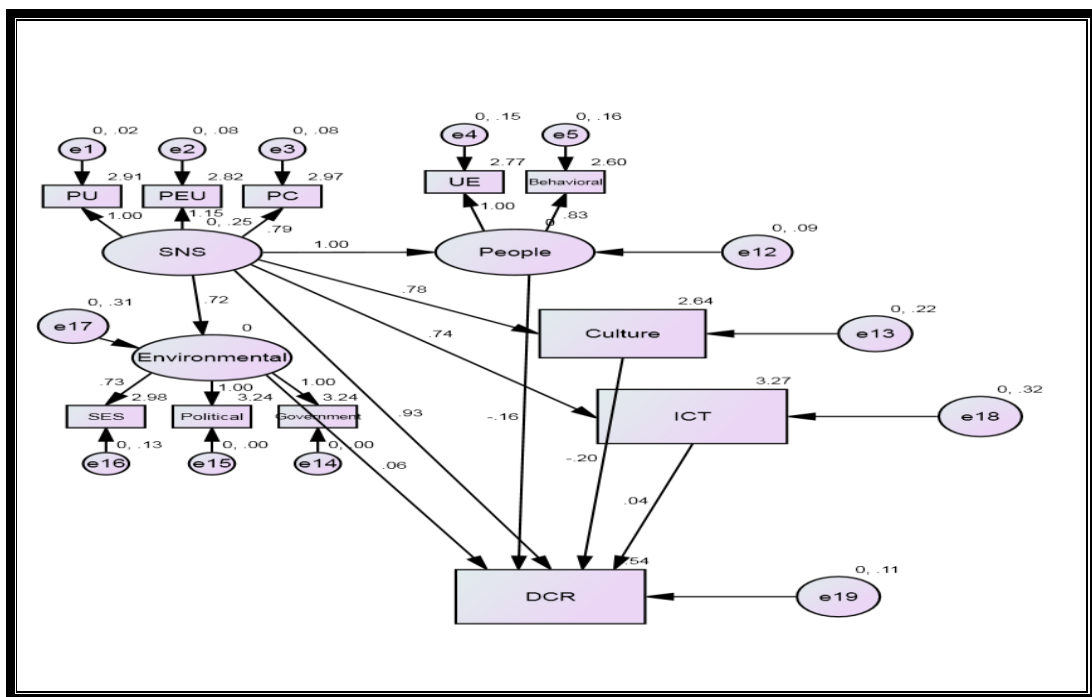
### **4. Model Fit**

The Model Fit was tested by checking the Chi-square values and calculating Root-mean-square error of approximation "RMSEA". Non-statistically significant Chi-square values and RMSEA values less than 0.05 indicated good fit of the regression model. Regression coefficients and coefficient of determination (Squared multiple correlation coefficient) were calculated to find out the relation between independent and dependent variables. The significance level was set at  $P\text{-value} \leq 0.05$ .

The model displayed good fit to data ( $\chi^2 = 11.7$ , degrees of freedom (df) = 39,  $P\text{-value} = 0.275$ , Root-mean-square error of approximation "RMSEA" = 0.023). It is

represented in figure (6-14) displaying observed variables and their respective relationships as follows:

- Squares represented the observed variables (dimensions/constructs) while eclipses represented latent variables. At the top of each square lied the intercept of regression model (the “a” coefficient) which is the constant of the regression equation.
- Values on the arrows were the regression weights or the (b) coefficients, describing the relation between the independent and dependent variables.
- The (e) represented the error variance, which is the variation in the construct due to extrinsic factors to the model. It is the actual error according to the model.



**Figure (6-14): Path Diagram of the Research Model**

To follow are testing of the hypotheses of the research model as per P-value, regression coefficients, coefficient of determination (Squared multiple correlation coefficient) and significance;

**Table (6-3): Research Model Hypotheses Testing Results**

#	Hypothesis Name	P-value	Standardized Regression weight	Squared multiple Correlation Coefficient	Significance	Result
<b>H1</b>	SNS-PU	0.003	0.975	0.951	95.1% Very High Impact	Accepted
<b>H2</b>	SNS-PEU	<0.001	0.896	0.803	80.3% High Impact	Accepted
<b>H3</b>	SNS- PC	<0.001	0.820	0.672	67.2% High Impact	Accepted
<b>H4</b>	There is a relationship impact of SNS on Culture					
	SNS-PBP	<0.001	0.598	0.355	35.5% Moderate Impact	Accepted
	SNS- PUEXP	<0.001	0.676	0.355	35.5% Moderate Impact	Accepted
	SNS- Cultural Values	<0.001	0.613	0.335	33.5% Moderate Impact	Accepted
<b>H5</b>	There is a relationship impact of SNS on Environmental Contexts					
	SNS-SE	<0.001	0.489	0.237	23.7% Weak Impact	Accepted
	SNS- Political	<0.001	0.494	0.2452	24.2% Weak Impact	Accepted
	SNS-Gov.	<0.001	0.490	0.244	24.4% Weak Impact	Accepted
	SNS –ICT	<0.001	0.550	0.303	30.3% Moderate Impact	Accepted
<b>H6</b>	There is a relationship between SNS and society's digital transformation readiness					
	SNS-SDR	<0.001	0.953	0.497	49.7% Moderate Impact	Accepted
<b>H7</b>	There is a relationship of change in Culture because of SNS's usage leading to transformation to a digital society					
	PBP-SDR	<0.001	0.340	0.258	25.8% Weak Impact	Accepted
	PUEXP- SDR	<0.001	0.459	0.329	32.9% Moderate Impact	Accepted
	Cultural Values- SDR	NA	NA	NA	Non	Accepted

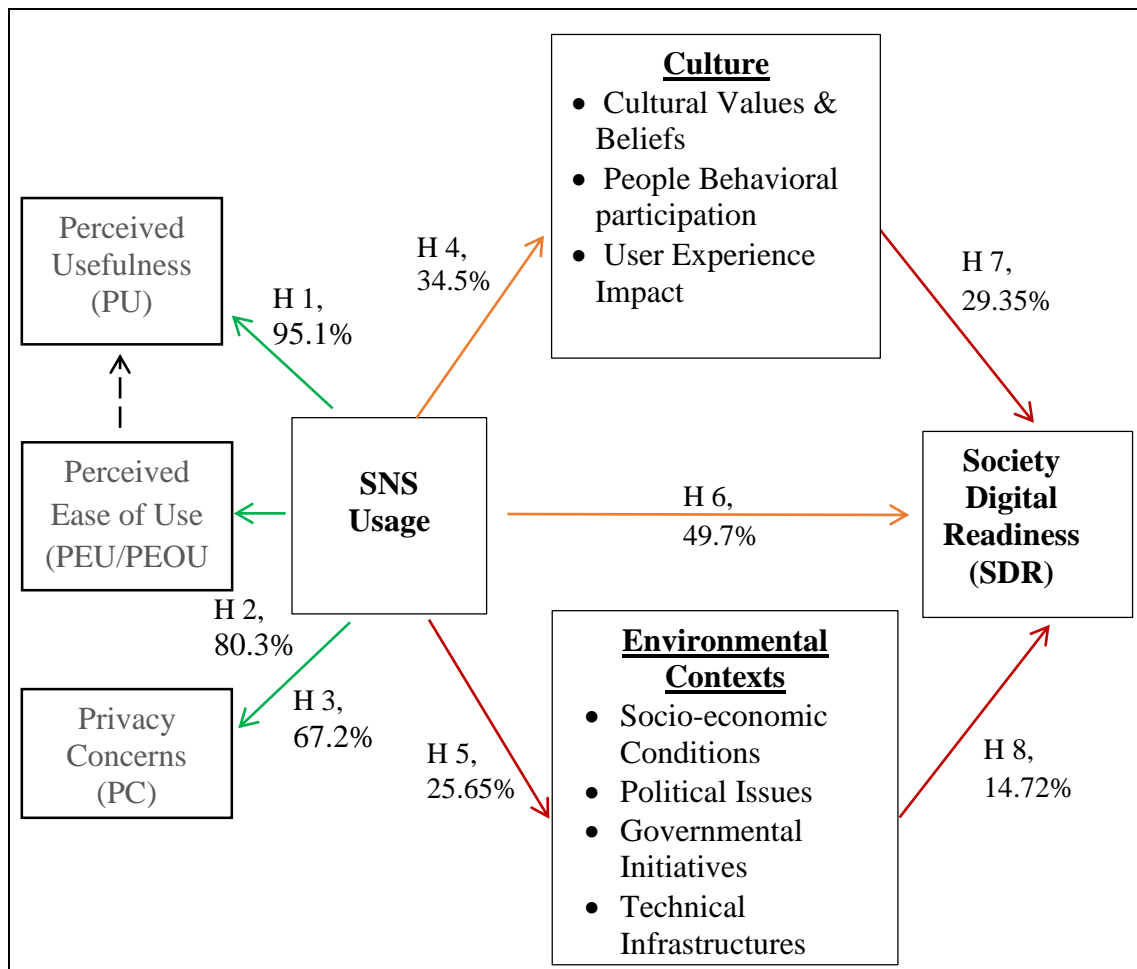
<b>H8</b>	There is a relationship of change in Environmental Contexts because of SNS's usage leading to transformation to a digital society					
	SE-SDR	<0.001	0.357	0.155	15.5% Weak Impact	Accepted
	Political-SDR	<0.001	0.375	0.144	14.4% Weak Impact	Accepted
	Gov.- SDR	<0.001	0.375	0.144	14.4% Weak Impact	Accepted
	ICT-SDR	0.048	0.161	0.146	14.6% Weak Impact	Accepted

This above table (6-3) verified the proposed model from statistical perspective; whereas all hypotheses were proven except cultural values and beliefs sub-construct since Culture is an abstract concept that required specialized tests. Internal hypotheses were confirmed with high impact value since without those three independent variables, SNS won't have speeded dramatically. Further external hypotheses were verified with moderate to weak impact value whereas people related sub-constructs depicted the highest percentages since SNS is a people driven ICT tool. While still more digital impact to be perceived on external environmental contexts as time progresses.

For further clarifications, above statistics are represented on the research proposed SDR model with colors differentiation displaying the strength of correlations. Whereas the two dimensional impact values were calculated, after hypotheses compilation, based on an average value of each sub-constructs respectively. Accordingly:

- Green colored arrows represented the direct strong relationship of SNS with its three independent variables.
- Orange colored arrows exhibited SNS moderate impact value on Culture dimension as well as on a society's digital readiness.
- Red colored arrows depicted current SNS weak impact of changes on culture and environmental contexts dimension (encompassing the three sub-constructs) because of consumption of SNS.

## The Impact of SNS on Society Digital Readiness (SDR) Model



**Figure (6-15): Demonstration of Statistical Measures on Research Proposed SDR Readiness Model (V.0.2)**

The statistical measurements have proven that there was direct positive strong correlation between SNS and its features, where H1, H2, H3 have recorded between very high-to-high impact. Thus, whenever SNS is easy to use, tailored to needs and ensured privacy measures, the more users would consume it. On discussing the impact of SNS usage on external dimensions, all hypotheses have well proven with moderate to weak impact value where SNS's effect varied in intensity as per usage rate and duration. Therefore, the impact value was moderate where SNS is dealing with people's cultural behavior and users experience, while was weak concerning environmental contexts as most efforts have been just started. All, current and prospect impacts, should result in digitizing societies using SNS over time.

Through examining how far the breakdown of the two major dimensions have been affected by SNS usage toward digitization; People's two related constructs in Culture

dimensions have scored weak impact; however, cultural values and beliefs construct was not proven since it is an abstract concept that needs further specialized tests. Then, the four sub-constructs of the Environmental Contexts have proven a weak impact factor. Construing that People (i.e. population of a country) is the key driver of digitization in any society and all remaining environmental contexts follow to fulfill populace's demand.

### **6.1.3 Focus Group**

Focus group technique was chosen for this study since 'it is particularly useful for reflecting the social realities of a cultural group through direct accessing online users' experiences' (Hughes, D. & DuMont, K., 1993). Focus group method matched Egyptian culture regarding people's desire to express verbally their experiences but in a friendly atmosphere. This emphasis on accessing experiences was reiterated by Morgan, D. (1996), who goes on to identify the three major components of focus group research as (1) a method devoted to data collection; (2) interaction as a source of data; and (3) the active role of the researcher in creating group discussion for data collection. Stancanelli (2010) claimed "online focus groups and traditional focus groups have more commonalities than differences". Williams, S. et al (2012) defined the online focus group as an interactive qualitative group discussion, comprising a selected group of individuals who gave consent and volunteered to participate in a facilitated, predesigned, online discussion in order to explore a specific topic for the purpose of research. Those reviews alerted the researcher for the possibility of conducting an online focus group especially as per nowadays-tough schedule of the participants and their geographically dispersed locations due to work commitment.

#### **6.1.3.1 Purpose**

The purpose of focus group was to scrutinize the responses of the last question of the survey, where eighty- six percent (86%) have perceived that it is very likely/somewhat likely that SNS has changed Egyptian culture. Focus group was implemented to assess this change in the society of Egypt through testing the nine digital citizenship's themes of Mike Ribble (2011) whereas the traditional citizenship for adults can apply to the general online setting not only to students. The focus group comprised of ten questions mapped to the nine themes (Appendix F).



### **6.1.3.2 Sample Selection**

In the selection of the participants, there was a logic to represent various age brackets as well as to mingle between professional telecom executives in Egypt and regular social users. It was a random sample from the questionnaire respondents. The number of participants in each group was within the manageable size as per literature, eight persons in the online focus group and seven participants in the two traditional face-to-face focus groups.

### **6.1.3.3 Methodology**

The study conducted three focus groups: one online and two traditional face-to-face sessions. The online focus group via “WhatsApp” was a new data collection practiced method in Egypt and was an opportunity for the researcher to test SNS via using the same medium of virtual communication. The three focus groups were each homogenous from within, which provided better interaction resulting in richer discussions. To follow are the logistical procedures of all focus group sessions.

- An invitation was sent to recruit participants with a broad line about the objection of the session.
- The details of the research topic and the aim of the focus group discussion were fully explained at the beginning of each session;
- Ground rules were narrated for all participants verbally and in text at the beginning of each session;
- In compliance with MU code of research ethics, consent form and participant information sheet (Appendix G) were distributed at the beginning of each session/ or sent by email plus online form. All participants completed the demographic information sheet and countersigned consent form before the session;
- The online session via WhatsApp lasted for three (3) consecutive full days; with one question at a time posted in upper case font for sake of differentiating it from respective replies of earlier questions or meanwhile socialization among participants. Once all eight (8) participants replied at various time intervals, the next question was posted and so on and so forth. For those delayed replies, a private message was sent with a gentle reminder to share his/her thoughts with the group. However, posting of the next question was not delayed if one was remaining to maintain the momentum of the online session and avoid boredom of participants.

- On the other hand, the two traditional face-to-face focus groups lasted for around 70 and 90 minutes respectively; however, direct discussions triggered more arguments among participants, which the researcher had frequently to control tension and revert to the topic of discussion.
- The setting arrangement of face-to-face sessions was a round one to induce a friendly interactive discussion.
- The sessions were voice recorded in addition to written field notes by the researcher. For the online session, all data was extracted from WhatsApp and stored in word document. Regarding face-to-face sessions, there was voice recording during the live discussion upon consent of all participants. As the real advantage of both video- and audio-recording is that they act as validity checks in that raw data is available for scrutiny (Polgar, S. and Thomas, S., 1995), also allows events to be reviewed as often as is desirable or necessary (Bottorff, J., 1994).
- Analysis process;
  - Data per each question was aggregated and mapped to the respective participant's code. By doing this, the mobile numbers of participants in the WhatsApp group were removed to maintain anonymity of participants.
  - Data - whether WhatsApp messages, field notes and audio records - was transcribed and cleaned up. Arabic responses or comments were translated to English for homogeneity of the final version for analysis.
  - Participants were labeled per group by codes then data was categorized for each question following the grounded theory analysis practice. Nonverbal communications mimicking speech acts are common in social media in the form of emoticons and abbreviations (Lijadi, A. & Schalkwyk, G., 2015); which were considered during analyzing the positive and negative sentiments.
  - During the actual analysis phase: coding, cataloguing and grouping of categories into families was accomplished to serve classification of results.
  - Data in Microsoft Excel 2010 was extracted to NVivo 11 for creation of nodes and cases then presentation of themes and trends. The reporting of these themes is called "thematic analysis" which is a categorizing strategy for qualitative data supports in discovering patterns and trends then deducing themes (Braun, V. & Clarke, V., 2006). Thus, pattern matching technique lies in the heart of thematic analyses as earlier discussed in Chapter 3: Research Methodology.

### 6.1.3.4 Findings

**Table (6-4): Display of Socio-Demographic Characteristics of Focus Group (n=22)**

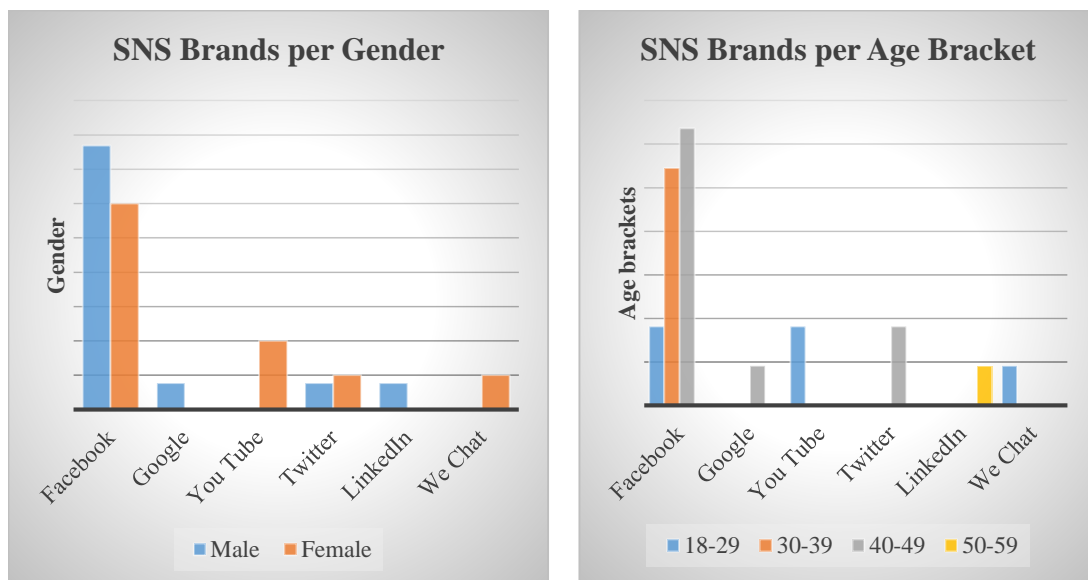
<b>Socio-demographic characteristics</b>	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	13	59%
Female	9	41%
<b>Age in years</b>		
18 – 29	5	23%
30 – 39	6	27%
40 – 49	10	45%
50 – 59	1	5%
<b>Social status</b>		
Single	9	41%
Married	13	59%
<b>Geographic location</b>		
Cairo	18	82%
Giza	3	14%
Sinai	1	5%
<b>Educational level</b>		
Secondary school	2	9%
Higher education – Undergraduate	4	18%
Higher education – Postgraduate	16	73%
<b>Occupation</b>		
Part-time employment	1	5%
Full-time employment	21	95%
<b>Most common device to access social sites</b>		
Smart phone	21	95%
Tablet	4	18%
Laptop	11	50%
PC	4	18%
<b>Most common browser</b>		
Google Chrome	19	73%
Mozilla Firefox	4	15%
Safari	3	12%
<b>Reasons for using SNS</b>		
To keep in-touch with family and friends	14	29%
To find information	12	24%
To know latest News	17	21%
For professional and business purposes	9	16%
Entertainment	6	10%

After illustrating the socio-demographic characteristics of focus groups' participants, the following sections present the analysis of the discussions:

#### 6.1.3.4.1 Socio-Demographic Characteristics

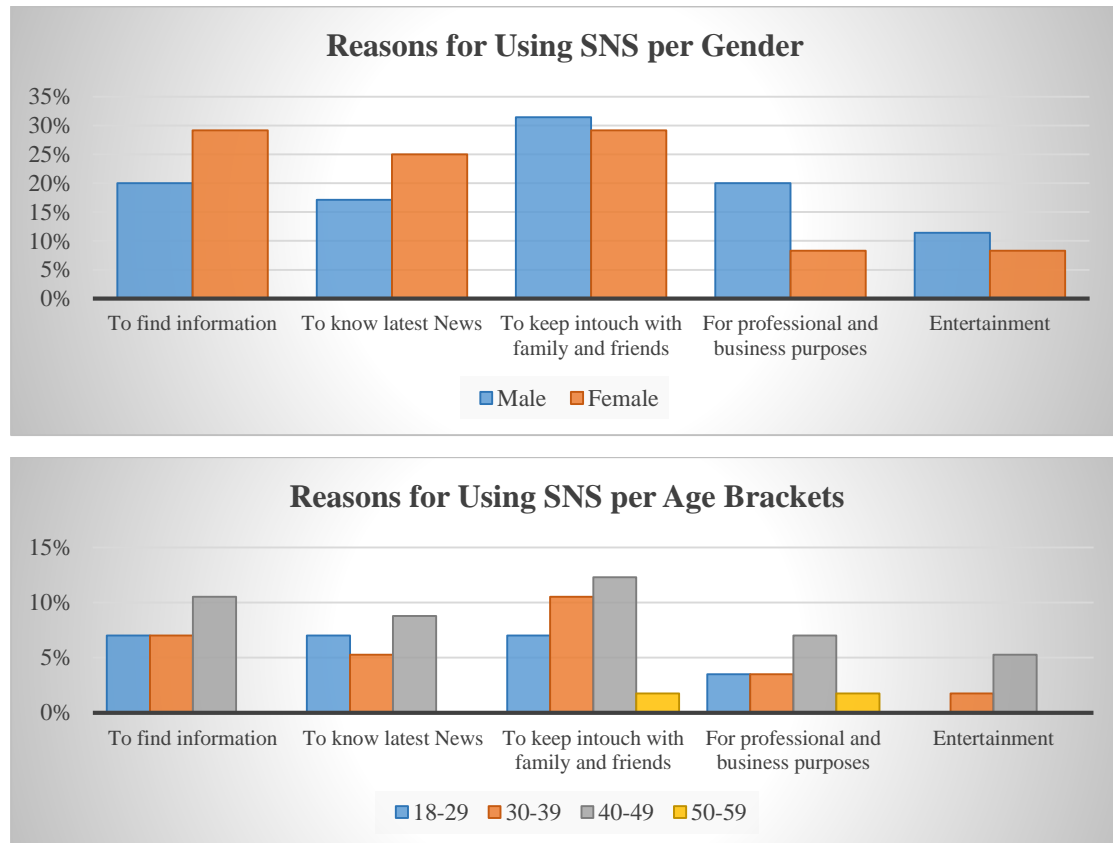
The focus group was conducted on 22 subjects in total, 13 out of 22 males (59%) and 9 out of 22 females (41%). All age brackets are presented; however, the predominant age category was 40-49 years old comprising 49% of the study sample, while the least participating category was 50-59 years old (5%). Three geographic locations were represented in the focus group; yet, responses from Cairo governorate were the most prevalent (82%) as it is the capital. Twenty subjects (91%) had higher education whether under or postgraduate levels. Almost majority of the subjects is full time employed comprised 95% of the study sample. The most common device used to access social sites was smartphones (95%) followed by laptops (50%); while tablets and PCs showed nearly equal percentages of use (18% respectively) which was in consensus with the statistics of the survey. The most common browser used was Google Chrome (73%) followed by Mozilla (15%) then Safari (12%).

Through analysing the relationship between SNS usage versus gender and age brackets, below graphs depicted that Facebook is the highly used tool for both genders by 77% and 60% respectively and along all ages brackets.



**Figure (6-16): Cross Analysis of Types of SNS versus Gender and Age Brackets**

Regarding the reasons for using SNS, ‘To keep intouch with family and friends’ was the highest by 31% for males versus 29% for females. Whereas concerning the relationship of the purpose of SNS use versus age brackets, simiraliy ‘To keep intouch with family and friends’ and ‘For professional and business purposes’ were displayed across all age groups; however the former purpose was at high percentages than the latter. The contribution of age bracket 40-49 is noticeable across all five reasons for using SNS.



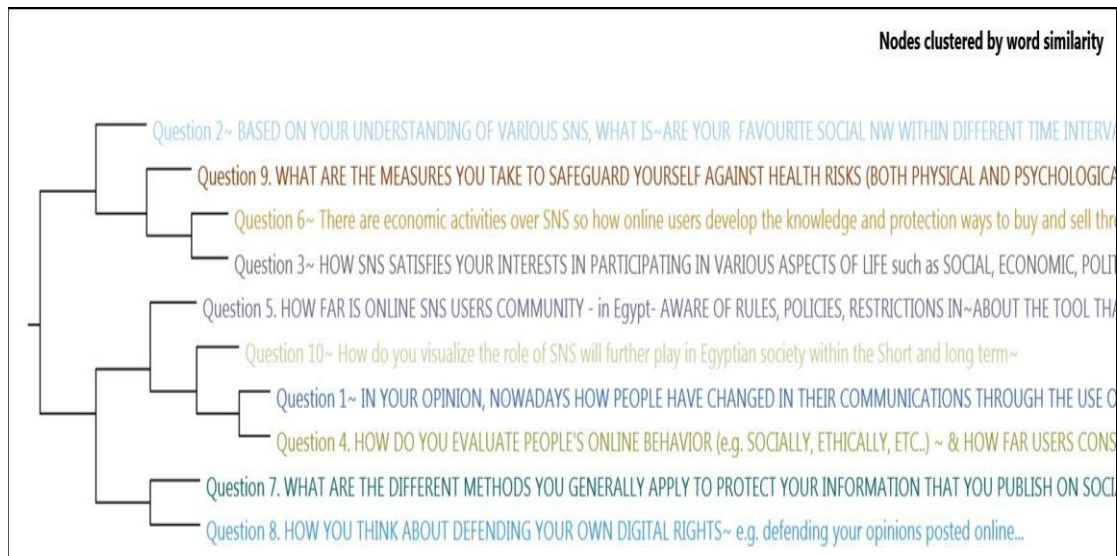
**Figure (6-17): Cross Analysis of SNS Usage versus Gender and Age Brackets**

Hence, results of focus group sessions coincided with survey findings except for gender proportion where male presence slightly surpassed females by 59% versus 41%.

#### **6.1.3.4.2 Qualitative Questions Analysis**

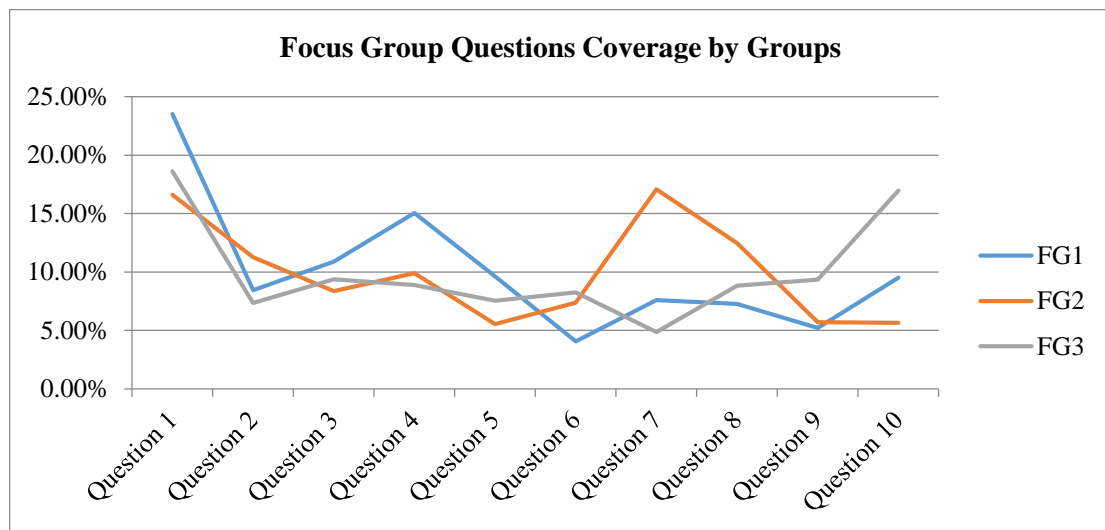
As for the most used 500 words during all discussions; here to follow a display showing the major used words such as SNS, people, use, change, content, etc....





**Figure (6-19): Words Similarity Across Questions in Focus Group Discussions**

Further, not all questions had the same proportion of elaborative responses from participants as illustrated in figure (6-20) below,



**Figure (6-20): Volume of Responses per Focus Group Questions**

**Question #1:** *In your opinion, nowadays how people changed in their communication through the use of SNS and have they taken the time to learn it well?* It is a generic opening question that had the highest percentage of responses across all sessions amounting to 59%. Next in enormity was **Question #4:** *How do you evaluate people's online behaviors and how far users consider others' feelings, views, etc. in using SNS?* It's a capacious question touching Egyptian SNS users' current anxiety about the growing cyberbullying attitude.

On the other hand, **Question #6:** *There are economic activities over SNS, so how online users develop the knowledge and protection ways to buy and sell through SNS in a digital world?* It had the lowest response volume of 20% as it tackled performance of economic activities over SNS which most of the respondents across the three focus groups didn't physically perform. Concerning economic or purchases activities, the role of SNS is only to get information, opinions and reviews of others' experiences with a certain product or service; but actually purchases transactions happen either through professional sites such as Amazon or eBay or through face to face interaction with the vendor. **Question #9:** *What are the measures you take to safeguard yourself against health risks (both physical and psychological) when using social networks?* It had low response rate as well since normally Egyptians don't give much attention to wellness issues until a complete collapse happens; so surprisingly people were aware of the negative side effects from using SNS but still no precautions are taken.

#### 6.1.3.4.3 *Application of the Nine Digital Citizenships Measures on Egyptian Online Society*

The aggregation of the three focus groups subjects' responses was transcribed and analyzed then mapped to Mike Ripple (9) nine themes of digital citizenships.

**Table (6-5): Illustration of Nine (9) Digital Themes on the Society of Egypt**

Digital Citizenships Measures	Focus Group Participants' Responses
<b>Educate yourself /connect to others</b>	
1. Digital Literacy, teaching process of technology use	Participants were fully aware of the uses of SNS; with consensus that users did not primarily learn how to use it; however, followed others steps in maneuvering through sites especially among seniors or those with limited education levels.
2.Digital Communication, e-exchange of information	SNS was used mainly for socialization; keeping track of news/ information and entertainment purposes. Companies addressed it for advertisement and promotional offers. At a growing scale are entrepreneurship projects for selling specialized products/service at attractive prices for profit. On the other hand, governmental and political uses were the least practiced.



3. Digital Commerce, e-buying and selling of goods and services	Concerning commerce, there was a consensus that SNS is not considered by Egyptian users – so far- as an economic transaction platform and its role is restricted to get products/services reviews before purchase.
<b>Respect yourself/ Respect others</b>	
4. Digital <i>Etiquette</i> , electronic standards of conduct	<p>People’s online behavior was a complete dissatisfaction across all participants. As the current online behavior lacks ethics, rules of interaction, sympathy or respecting others’ feelings and opinions, etc. Participants expressed the following statements:</p> <p><i>“People think they are on a stage when they use SNS and start to act freely without governing rules”;</i></p> <p><i>“On Twitter, turning tweeting to barking”;</i></p> <p><i>“Just running to spread news everywhere with no evidence or respect for other’s feelings”;</i></p> <p><i>“On Instagram people are too showy, even fake sometimes, and one gets the impression that social climbing is the key driver for what people post, so there is little regard to anything else”;</i></p> <p><i>“On Facebook there is a lot of abusive materials that people blindly share, without fact checking, and most of these are malicious and with no ethical grounding”;</i></p>
5. Digital <i>Access</i> , full e-participation in society	Whoever is connected is having a FB account or/and any sort of SNS. All types of interaction are implemented on the virtual platforms; however, e-participation occurs at varies scales where ‘reactions’ and ‘sharing’ is more than ‘comments’ i.e. content creation.
6. Digital <i>Law</i> , e-responsibility for actions	<p>Participants perceived that online users do not read rules or policies except if it is concerning payment of money (i.e. financial risk).</p> <p>A participant stated; <i>“The current state of awareness of Egyptian SNS users about such policies &amp; rules is very low evidently judging by the frequent blocking or removal of accounts by the SNS platforms/community managers because of abusive content”</i></p> <p>Other added; <i>“Maybe people are bit relaxed as they feel that online is not as embarrassing as face to face interaction”.</i></p>

Protect yourself/ Protect others	
7. Digital Rights and Responsibilities, one's freedom in digital world.	<p>Participants did not bother a lot about digital rights issue as they have more concerns in life to worry about. In online debates one team fought to the end to prove his/her point of view; second team declined to answer back any attack; and a third team clarified his/her point of view then blocked the counter debater. Majority of responses selected 2<sup>nd</sup> &amp; 3<sup>rd</sup> teams. Normally people- that do not want digital attack - interact on their personal pages with friends and acquaintances with zero chance of spasm.</p> <p><i>"I don't! I am not a public figure and am selective about who I allow on my personal FB page, so I write what I think and don't have any further agendas to protect";</i></p>
8. Digital Health and Wellness, physical and psychological well-being in digital world	<p>Consensus among all participants about the negative impact of SNS on human wellness both psychological e.g. stress, frustration, depression from negative news and physically e.g. back, neck pain, eye problems, lack of exercising; but really people do not concentrate a lot with it nor take any precautions.</p> <p><i>"Maybe over exposure can cause some stress. Have seen several cases where people tended to deactivate their SNS to regain their wellbeing";</i></p> <p><i>"I think that the excessive consumption of electronic content is tiring, at least for the eyes"</i></p>
9. Digital Security, e-precautions to guarantee one's safety	<p>Participants are aware of lack of privacy measures and that all data can be easily exploited especially after the latest Facebook scandal during US presidential election (2016). Therefore, they do not put sensitive information they worry about; while on the other extreme, minority put what they want and do not bother a lot about information security until hacking of accounts occurs, which create an alarm. Others restrict audience to friends only and some participants do regular house cleaning of their accounts.</p> <p><i>"An issue in Egypt for women of a certain social class/education level is that they avoid putting their actual personal photo as a profile photo, for fear of abuse (meaning by unethical men) so we end up with all those fake names".</i></p>

Lastly, concerning participants' opinions about the future of SNS, it was presented through the following illustrative table on the short and long-term scales;

**Table (6-6): Illustration of Egyptian Online Society's predications for SNS**

Dimensions	Short Term	Long Term
Social	<p>A more intensified role of SNS in people's social life and more dependency on it as a sole source of information and news; however, people will get to learn to identify fake news by double-checking in various platforms.</p> <p><i>“YouTube is the most SNS platform that has real potential for future developments, because of the various types of content that can be created on that broadcast medium”;</i></p>	<p>Spread of all types of communication:</p> <ul style="list-style-type: none"> <li>• Individual to Individual,</li> <li>• Business to Consumers,</li> <li>• Government to Citizens</li> </ul>
Economical	<p>More economical activities would be practiced by individuals to make profit especially with the launch of Google e-commerce platform besides other specialized SNS.</p>	<p>E-commerce growth rate is promising especially with the current governmental initiatives for e-financing.</p>
Political	<p>SNS may be used to influence decision making mechanism through propagating tailored information at a broader scale.</p>	<p>SNS may be manipulated for intelligence-backed information warfare;</p>
Governmental	<p>Governmental public services would be accessed through SNS gradually</p>	<p>Rise of national Egyptian SNS platforms encouraged by the government to control online behavior like in China, Russia, Japan and Korea.</p>
Technological	<p>More privacy measures by service providers besides the use of firewalls of specialized SNS.</p>	<p>Expansion in digital use of technology for individual practice like IoT, AI, smart cities, etc. Linking the well-established SNS with those new IT technologies for smooth practice.</p>

Focus group method was carried out in accordance to literature review along all stages from preparation, recruitment, logistics and analysis. Microsoft Excel 2010 and NVivo 11 were the analytical tools used to develop trends and themes from participants' discussions using statistical and thematic analysis techniques. Therefore, the responses of the participants supported in developing themes and trends that assented with the research proposed model of SNS's role in transforming to a digital society; however, its pace will depend on the technological infrastructure, people's digital literacy rate and governmental interventions as well as global events. Hence, focus group's findings supported directly the research's contribution to knowledge base regarding the application of the nine themes of digital citizenship on the society of Egypt.

## **6.2 PHASE II: Data Collection**

### **6.2.1 Interviews**

The study applied Interview as a fourth gathering method in its second phase of data collection, which is characterized by a more personal resources intensive approach. Based on literature, interviews may be useful as follow-up to certain respondents of questionnaires, e.g. to further investigate their responses as interviews are particularly useful for getting the story behind a participant's experiences (McNamara, C., 1999). Interviews involve conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation (Boyce, C. & Neale, P., 2006). Yin (2002) classifies two main types of interviews: open-ended interviews prevailing respondents' point of views while following the investigator's line of inquiry, and interviews producing quantitative data. In other words, interviews can be categorized into structured, semi structured and narrative interviews (Stuckey, H., 2013). Structured interviews have sequential and defined order in questioning; however, semi-structured interviews have a focus but are flexible in order based upon the direction of the participant's responses. While Narrative interviews are unstructured and typically begins with a wide open-ended question about a participant experience, where the participant is rarely interrupted in the telling of their story (Stuckey, H., 2013). This study strategy was to conduct semi- structured interviews; however, narrative interview just popped up in some sections of the interviews whereas participants recalled certain incidents as the conversation streamed.

### 6.2.1.1 Purpose

The choice of interview was based on the following three interlocked objectives:

- Verification of the suggested model about the impact of SNS on the society of Egypt;
- Generalization of the suggested model by its application on other multinationals SNS users through UK based student groups.
- Endorsement of the suggested model by experts of Digital Media Industry in Egypt



**Figure (6-21): Three Objectives for Interview Instrument Selection**

*To satisfy the first notion*, the researcher interviewed the founder of one of the famous Facebook page in Egypt called “**7ad ya3raf**”- in translation it means, “**Someone knows**”. The page was created back early 2015 with the urge of its founder – who is a young Egyptian woman - to know from where to get wedding objects with good quality and at favorable prices such as furniture, accessories, etc. Therefore, she searched for help from surrounding friends and relatives. Her idea started as a group created on WhatsApp among her friends; then migrated to Facebook platform for easiness of maneuvering and tracking replies of a specific inquiry as well as supporting wider range of members and providing resourceful information.

Next, *to fulfill the second objective*, the researcher thought of “**MDX Research Students**” Facebook page to take advantage of the multinationals nature of MDX’s postgraduate students. The site was a new experience that was created early 2017 in conjunction between MDX administration office and a postgraduate student for

facilitating a continuous channel of communication between the university's activities and postgraduate students. In addition to conducting twelve (12) group interviews with academic students at MDX university. Each group has developed a pilot FB page about a certain topic or a commercial brand as a part of their course assignments. Therefore, twelve (12) focus groups were carried out to test SNS's features and surrounding environmental contexts supporting digital transformation through their SNS experience and course projects.

Further, *to achieve the third objective*, the researcher accomplished two in-depth interviews (IDI) with digital media experts in Egypt. One of the interviewees is the director of a digital advertising company called 'People of the Internet'; while the latter is an adjunct digital media professional at the American University in Cairo (AUC). The in-depth interview (IDI) places the control of the interview with the participant, enabling this individual to tell his/her personal story concerning the subject matter without substantial "interference" from the interviewer (Roller, M. et Lavrakas, P., 2015). Thus, their valuable industry insights and academic discernments about digital media in Egypt have endorsed the gathered data and enriched the research findings whether regarding the current practices or about future predications for SNS in Egypt.

#### **6.2.1.2 Sample Selection**

The interview method has applied a purposive sampling approach in the selection of participants. The study has conducted sixteen (16) interviews with three diverse roles related to SNS: a) founder/administrators, b) users of SNS from diverse geography and c) digital media experts in Egypt. The UK based interviews aimed at generalization of the SDR model through application on multinational subjects.

#### **6.2.1.3 Interview Structure**

The interview is a semi structured one where the seventeen (17) questions were a mix between qualitative/ open ended (53%) and quantitative/ closed ended questions (47%). The questions were mapped to verify the hypotheses of the suggested model (as indicated in section 5.3 of chapter 5) as well as to satisfy achieving the outlooks proposed in contribution to knowledge base section. The interview questions were divided into three sections: introduction, research topic, wrapping questions (Appendix Ga). The interview with industry experts was shortened to fourteen (14) questions

(Appendix Gb); where topic questions was the same while tailoring of introduction and wrapping questions.

The qualitative/open-ended questions were framed to capture as much details as possible about SNS page's history, objectives, features, number of members, their types of online interaction, established monitoring process and implemented site's improvement actions. For example; "What is the aim for establishing the page?", "Identify the three most popular activities of the page's members and their participation measure?", "What is the process that you apply for monitoring and evaluating members' reactivity toward the site's activities?", "What changes have you made to improve interaction with members since the creation of the page?"

Alternatively, the quantitative/closed-ended questions were based on 5-points Likert's scale following the same measurement units of the earlier employed survey method in Phase I of data collection process to maintain consistency and reliability of results. So there were (3) three 5-points Likert scale questions where (1) as Strongly Disagree and (5) as Strongly Agree. In addition, there were (2) two ranking questions from 1 to 10 employed to measure the factors and challenges for digital readiness of societies using SNS, where (1) is the lowest importance and (10) is the highest importance. Further, the structure of the interview presented the chance for interviewees to visualize the life cycle of SNS's performance within a sketched life cycle graph, which was one of the contribution to knowledge base.

#### **6.2.1.4 Methodology**

The researcher conducted sixteen (16) semi-structured interviews lasting for 45-60 minutes with Egypt and UK based interviewees from diverse sectors and backgrounds, all involved in online activities to measure the impact of SNS on society's digital transformation. The interviews continued until the study reached theoretical and data saturation (Guest, G. et al, 2006), where no newer themes and trends were emerging.

- The details of the research topic and the aim of the discussion were fully explained at the beginning of the interview as well as its anonymous nature.
- In compliance with MU code of research ethics, the researcher presented a research consent form (Appendix G) for interviewees to sign after reviewing it.

- Respondents were also told that their participation in this study was voluntary, not required, and that their refusal to participate would not affect them in any way, and that they could withdraw from this study at any time.
- The questions were shared with the interviewees before starting the session for reasoning purposes especially for those quantitative ones.
- The interview questionnaire was filled during the interview; also, the researcher took voice recording upon interviewees' consent in addition to written field notes.
- In group interviews- similar to focus group sessions- the setting arrangement was round to induce a freely interactive shared discussion. That was applied for group interviews with pilot team projects of FB pages in UK.

**Table (6-7): List of Conducted Interviews**

S. N.	Sector	FB page Name	Gender	Role of Interviewee	Interview Date	Type
1	Social/Health (Founder)	7ad Ya3raf/ Someone Knows	Female	Founder/Admin	Jan 2019	Individual
2	Education (Admin)	MDX Research Student	Male	Admin/User	Dec 2018	Individual
3	Digital Media Expert (Academia)	Adjunct Professor at The AUC	Male	SNS expert	April 2019	Individual
4	Digital Media Expert (Industry)	People of the Internet	Male	SNS expert	April 2019	Individual
5	Academic Project #1	Group #1	Male	Admin/User	Dec 2018	Group
6	Academic Project #2	Group #3	Mixed	Admin/User	Dec 2018	Group
7	Academic Project #3	Group #4	Mixed	Admin/User	Dec 2018	Group
8	Academic Project #4	Group #5	Mixed	Admin/User	Dec 2018	Group
9	Academic Project #5	Group #6	Mixed	Admin/User	Dec 2018	Group
10	Academic Project #6	Group #7	Mixed	Admin/User	Dec 2018	Group
11	Academic Project #7	Group #8	Mixed	Admin/User	Dec 2018	Group



12	Academic Project #8	Group #9	Mixed	Admin/User	Dec 2018	Group
13	Academic Project #9	Group #10	Mixed	Admin/User	Dec 2018	Group
14	Academic Project #10	Group #11	Mixed	Admin/User	Dec 2018	Group
15	Academic Project #11	Group #12	Mixed	Admin/User	Dec 2018	Group
16	Academic Project #12	Group #13	Mixed	Admin/User	Dec 2018	Group

The unit of analysis was “the online user and his/her behaviors, perceptions and attitudes” in context of collective action/s to test their digital transformation tendency. Facebook pages were selected as the SNS brand for analysis similar to earlier observation and survey findings. Since the focus of the study was on FB users then it is deemed applicable to interview respondents that are founders, administrators, consumers as well as to recognize industry experts’ perspectives. All the interviews transcripts were coded, categorized then analyzed using NVivo11 software program for qualitative data and Tableau/ MS Excel for quantitative data.

## 6.2.1.5 Findings

### 6.2.1.5.1 *Qualitative Analysis*

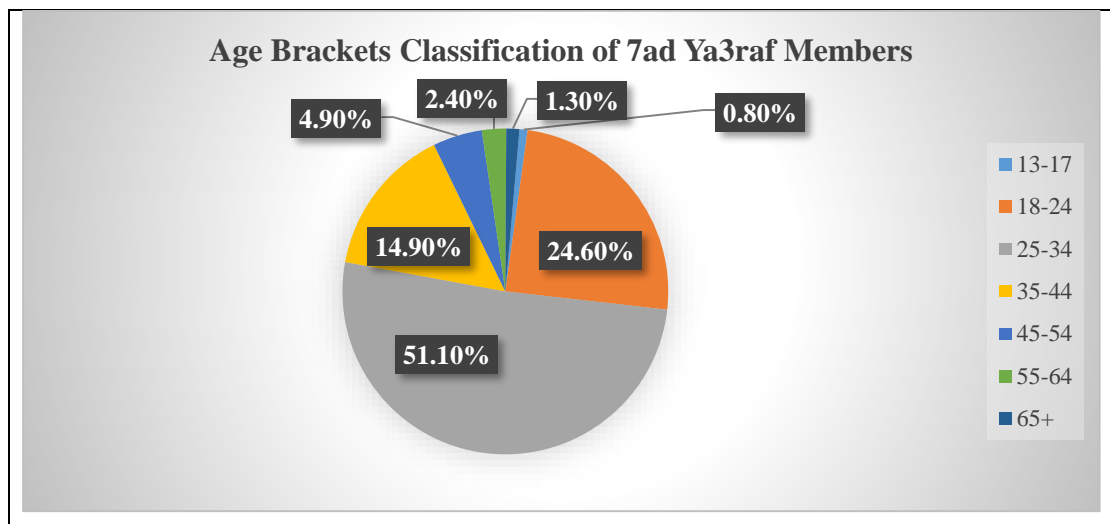
#### 6.2.1.5.1.1 “7ad Ya3raf” or “Someone knows” Facebook Page

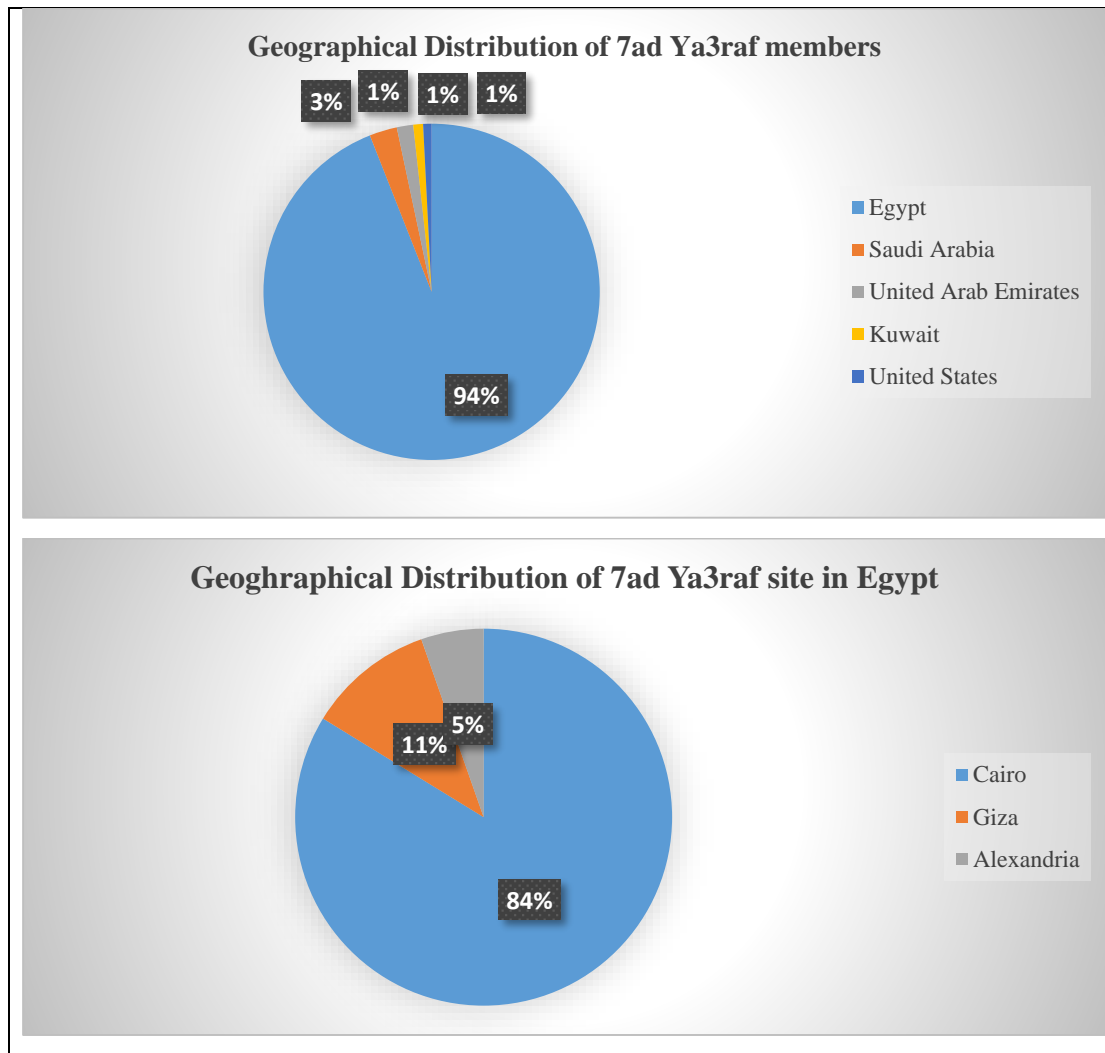
“7ad ya3raf”- Someone Knows- page is an Egyptian social site created early 2015. It was an open group until a time when its founder was accepting 3000 members per day so she decided to change it to a secret group for proper management. A “secret group” means no one can make search and find it; however, only its members could access it. The total number of members has reached an average of 535,000+ on Jan 2019.

- Interview started by **what are the unique features of the site**; “*actually it was a unique idea at its time for women searching for support as from where and how to find/buy something. Since at that time, there was only “Fatakat” which was a website not an interactive Facebook page. Afterwards there were numerous sites created under the same name or “7ad Ya3raf for men” as well as other imitators which forced me to change from public to closed group*” as per the interviewee.
- When asking the interviewee about **the main services she has applied to boost her site’s reach ...** “*she replied that the urge for information was enough to spread*

the site among females and as time went by friends got friends through word of mouth”.

- Concerning **the average monthly number of online activities**...she stated, “that comments accounted for 71%, followed by reactions at 27% then posts at 2% with a total participation volume of 424,800 which represented 80% of membership base”.
- Gradually 7ad Ya3raf’s interview moved to a **narrative style interview** as demographical features were tackled. Interviewee expounded, “that age classification among the 99.4% female membership went as follows: 51% represented the age bracket of 25-34 followed by 25% for the age bracket of 18-24 then age bracket 35-44 was represented by 15%”. Further, the site didn’t only serve online users in Egypt but extended across borders to have regional and international membership from Saudi Arabia, UAE, Kuwait and United States as illustrated in the below graph (6-22). Out of the 94% membership rate within Egypt, there was 84% from Cairo governorate, followed by 11% from Giza then 5% from Alexandria respectively. To follow are clustered graphical illustrations of ‘7ad Ya3raf’ socio-demographics features of its members;





**Figure (6-22): Accumulation of 7ad Ya3rfa Demographics Statistics**

When asking about **how the site was managed and monitored**, her reply “*it was a learning process of trial and error as it was a new experience at that time. So once problems started to rise between members of the site, ground rules were posted on site’s wallpaper. Ground rules were:*

- *No discussion at all in religious or political issues since it's a social site in essence;*
  - *Not accepted to attack someone else’s opinions or ideas;*
  - *Offers are presented whereas members are free to contact the providers of offers privately”*
- She added, “*Gradually there was a need to get administrators to assist and as the membership base increased she placed moderators as well; where each works remotely on shift basis to accept members, makes sure group rules are abided to*

*and replies to inquiries*". Currently 7ad Ya3raf site had 4 administrators and 13 moderators. On a further note, she "*clarified that administrators have more authorities than moderators as they interfere in case of major problems reported from moderators*".

- Regarding **what changes have you made to improve interaction with members since the induction of the page?** Reply was "*that all members' feedbacks whether through comments or private messages are taken into considerations*". Also, added "*that the site started to accept the requests of suppliers of products/services to place their offers or advertisements on the site to access such a huge female customer base*".

#### **6.2.1.5.1.2 MDX Research Students Facebook Page**

MDX Research Students Facebook page is a multinational academic site created early 2017 for dissemination of MDX news, share ideas and improve offered services among postgraduates. The total number of members at the time of interview (Nov 2018) was 191+ which represented 4% of postgraduate students however it has increased to 204 by mid-2019.

- Interview started by **what are the unique features of the site**, they stated that "*it's uniqueness lies in being a closed group for MDX postgraduates' students only where information flow is regulated by MDX*";
- Regarding **the main services that they have applied to boost site's reach ...** "*they replied that the site was announced through MDX website/ students' Unihub, Student Union promotion as well as during university's fall and spring orientations for new students.*" They added, "*the site is duly managed by MDX two administrative staff beside a postgraduate student, where the MDX staff published university news and the postgraduate student shared research reports, helpful studying tips, etc... both accepted members and tried to reply to messages.*"
- On asking about **the average weekly number of online activities**, they stated, "*that reactions accounted for 60% followed by posts for 30% where posts are classified into announcements and useful data; then 10% for comments or inquiries. The total participation rate of 155 active members represented 81% of membership base*".
- When asking about **how the site was managed and monitored**, they replied, "*the site followed MDX code of conduct as well as Facebook rules. Looking into*

*members' posts regularly so if someone is trying to sell something or inserting negative announcements, that is deleted immediately... concerning periodic posts, they are prearranged for one-month in-advance and automatically published into the page. Seasonal activities like induction, exam time, etc. are taken into considerations to create an interactive site matching students' needs".*

- Concerning **what changes have you made to improve interaction with members since the induction of the page....** they replied *"tailored posts more to students' academic interests and seasonal events; also there are plans to join efforts with student union management in the future so they can advertise about their activities"*.

### 6.2.1.5.1.3 Digital Media Experts in Egypt

To fulfill the 3<sup>rd</sup> objective of the interview – which is the endorsement of digital media industry experts in Egypt- there was two (2) in-depth interviews (IDI) carried out with the director of digital media company called “People of the Internet” and a Social Media adjunct at the AUC. The two interviews were supplementing each other; as the former provided experience data of market insights while the later shared academic outlook of social media in Egypt. Throughout the upcoming narration of the two interviews, the former was denoted as interviewee “A” and the latter as interviewee “B”.

- Interviews started by an introductory question of **how you could describe SNS in/for the Egyptian Society.**

Interviewee “A”	Interviewee “B”
<p>“SNS has widely affected people especially after 2011. Before 2011 it was only for technical professionals then revolution happened where FB was its catalyst so people started to notice that there is something called Facebook, Twitter, etc. which has changed the country. Thus, all age brackets and SECs wanted to join Facebook to stay up-to-date of news, connect with people, and get entertainment. SNS is exemplified mainly in FB as it is the comfort zone of most Egyptians especially above 45 years</p>	<p>“During the last 4 to 5 years, SNS has become a channel for Egyptians to express their opinions, a reflection of current political events as well as an entertainment platform for posting comic contents and sarcasm of surrounding conditions. Despite the fact that Facebook is widely accessed due to easiness of use, especially for old aged persona; youth has absorbed Instagram and it is picking up. <b>Social engagement</b> issues are mainly gossip platforms and debatable topics.</p>

old. Other brands require more time and effort to learn and curb the online socialization space. Egyptians prefer what they are used to with more online space for socializing and expressing point of views.  
 Egyptians do not care to check the source of information or news, which created the phenomenon of ‘fake news’.”

70% of news about celebrities’ lifestyles, football player “Mohamed Salah”, Gossip is a natural instinct. At a modest level, political and economic issues represent almost 30% of SNS audience attention. On the **business front**, multinationals, telco and FMCG are the most successful sectors in utilizing SNS for their marketing purposes. In addition, entrepreneurs that know how to practice SNS made good business use of it.  
 Regarding the **government side**, there are countable good examples e.g. National Council for women is doing great jobs due to the presence of qualified staff; however most of governmental entities are using it haphazardly with zero impact”.

- Regarding **the perceived impact of SNS on the Egyptian societies;**

Interviewee “A”	Interviewee “B”
<p>“The main effect is the introduction to the digital world, as Egyptians started to practice online activities such as communication, shopping, etc. via using social networks. For some the world became multidimensional and the desire to acquire the recognized benefits of the virtual life incites them to be more engaged”.</p>	<p>“There are a couple of negative influences such as:</p> <ol style="list-style-type: none"> <li>Media publishes unverified information from SNS.</li> <li>Aimless time consumed on social media.</li> <li>Some people started following not the optimal role model of celebrity...</li> </ol> <p>Also, there are positive vibes such as:</p> <ol style="list-style-type: none"> <li>Educational content &amp; teaching special skills for audience</li> <li>Egyptian government started to make use of SNS in promoting Aswan cities during youth annual conference to support tourism sector.”</li> </ol>

Therefore, Egyptians were introduced to the digital world thanks to social networking sites with its positive and negative implications.

- Concerning the **most popular activities over SNS platforms**;

Interviewee “A”	Interviewee “B”
<p>“Sharing is the most accomplished interaction type with a rough average of 60%, followed by Comments and Reactions of equally 20%. Generally, major social events are triggering the most usage rate over SNS.</p> <p>Classification of Egyptian SNS users can be grouped as follows: those over sharing about 60%, zero share (observers) with no timeline or updates on their profiles of 20%, content creators of 20% that are the top leaders in manipulating online debates”.</p>	<p>“Interaction is more as we go toward youth sharing, while on the other side of spectrum i.e. old age users tend to use reactions more. 70-80% negative criticism and 20-30% positive ideas as a reflection of economic and political circumstances on their lives, which can be felt at a magnified scale on virtual platforms.</p> <p>Generally, Reactions accounts for roughly at 60%, then Comments 30% and next Shares at 10%.”</p>

There was a difference in interviewees’ point of views about the most practiced type of interaction. Whereas the former interviewee specified ‘Sharing’ as the most applied type, the latter recognized ‘Reactions’ as accounting for the majority of online interaction. The latter’s perspective was in congruency with research survey’s result.

- As for **the process applied for monitoring and evaluating members’ reactiveness towards SNS’s activities**;

Interviewee “A”	Interviewee “B”
<p>“That’s what Facebook was made for since creation is monitoring how people react to certain things and their preferences. Before 2012, news was arranged based on timeline occurrence of interactions. After 2012, there was special programed algorithm based on users’ preferences and inclinations through his/her published information and interests which led to the creation of the notion of direct news feed.</p> <p>As for business accounts they used to post content which was viewed by millions of followers; now SNS charges business accounts so as their content can be viewed/ followed.”</p>	<p>“Only 10-15% of corporates- mainly are FMCG and Telco’s- are monitoring and evaluating people’s interactions over SNS to serve their business objectives of targeted content for better marketing activities.”</p>

There is an absence of well-established monitoring mechanisms of activities over SNS except by service providers themselves such as Facebook API, etc. which is used by multinationals focused on integrating SNS in their strategic communication plans.

- Regarding interviewees’ projection of **how SNS is developing in Egypt within the coming period.**

Interviewee “A”	Interviewee “B”
<p>“Youth are about 70% of main SNS users in Egypt. As new generation is evolving, their needs will change and types of used SNS will alter to more accessible ones that can be easily maneuvered on the road via mobile devices. In 10 years’ time, there will be a digital native generation that supposedly will take the leading positions in the country and control issues. Those digital natives will prefer to go back towards sharing economies where people use public transportation in the form of Uber or Careem and they rent real estate’s instead of owning ones. They will create their own rules and will be less appreciative of surrounding objects in life”.</p>	<p>“It’s difficult to predict a long term projection since it’s a superfast medium; however, on the short term, the upcoming trend of online people can be classified as followed;</p> <ul style="list-style-type: none"> <li>* <b>Brands</b>, due to all global privacy issues, people are moving more to secure medium e.g. El Warqa (<a href="https://www.facebook.com/Gawish.Elwarka/">https://www.facebook.com/Gawish.Elwarka/</a>) accessible via various types of SNS. Therefore, Egyptians will seek privacy in moving from open platforms to private messaging like WhatsApp.</li> <li>* <b>Content</b>, visual content is appealing more for youngsters. The uprising format is Stories that will be the most popular by yearend 2019 as it is more interesting and dynamic.</li> </ul> <p>The real harvest of SNS will be creating value between people, driving more transactions and more content that is educational and decreasing gossips.</p> <p>Further, the idea of e-commerce is currently inadequate due to improper ecosystem; however, in 3 to 5 years, the it is coming in place. Government need to set up the infrastructure, as there are already parallel economy benefiting i.e. which emphasizes that the need is there and only required to be directed to the right medium”.</p>



- Concerning the forecasting of **the pattern of people behaviors over SNS** within the coming years;

Interviewee “A”	Interviewee “B”
<p>“Negative behaviors will increase, as there is no online code of conduct to follow nor a recognized governing body. Cyberbullying will be there as well. People need to work on their digital literacy to better benefit from the online medium especially lower SECs”.</p>	<p>“It is very difficult to visualize Egyptian behaviors as it needs a rocket scientist; however, gossip talks will never decrease in fact will increase by time.”</p>

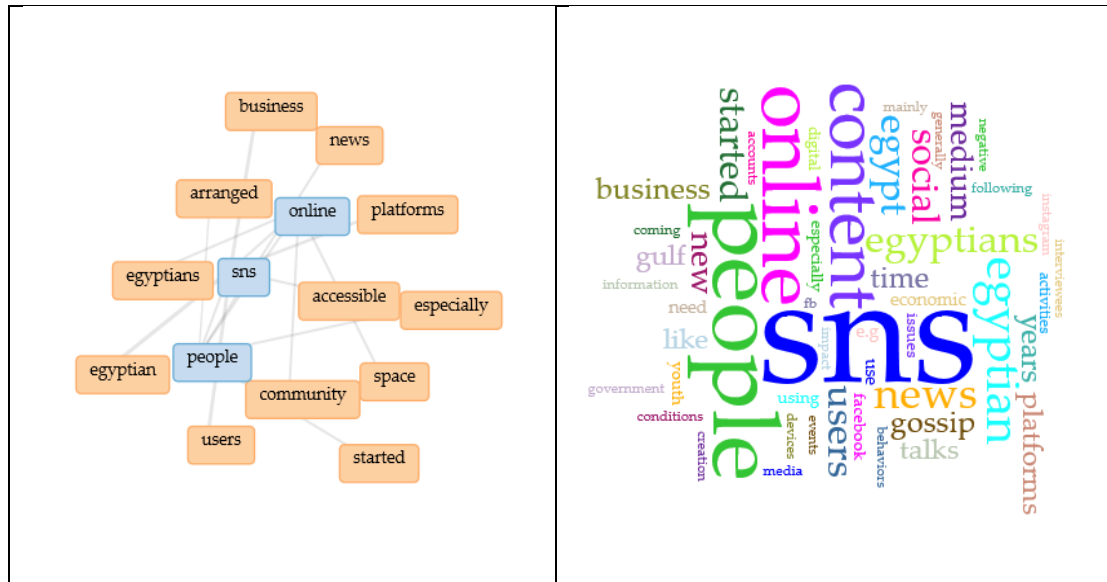
As per above interviewees’ narration, there is a shared disappointment from the general undisciplined attitude of online users in the cyber space as well as from the high dose of gossip talks. This point is in congruent with focus groups ‘findings earlier displayed in section 6.1.3.

Further, as the discussion flew, both interviewees addressed the difference in SNS usage pattern across Egypt and the Gulf Area;

Interviewee “A”	Interviewee “B”
<p>“SNS Gulf users, mainly UAE, tend to communicate online their daily happenings such as where to hang out and display of lifestyles. In addition, they tend to be proactive to events rather than reactive like here in Egypt. Egyptians are venting out their frustration from surroundings conditions. Generally, in the MENA region, there is a lack of content issue and creation of new ideas compared to western societies where there are millions of content creators.”</p>	<p>“Gulf SNS is about influencer talks rather than gossip talks like in Egypt due to the presence of influencers. They are more toward technology talks e.g. during the latest release of iPhone; Gulf online SNS were discussing its features; however, in Egypt the discussion was limited to the cost dimension. This is again due to surrounding economic conditions reflecting on peoples’ perceptions and online behaviors”.</p>

In wrapping up experts’ interviews, SNS has introduced people of Egypt to the virtual world, where different platforms are practiced; however, FB is special due its easiness of maneuvering and adequate socializing space. Business (especially Telco’s and FMCG) has attained good steps in this world; however, government is the last joining

stakeholder and requires skillful efforts to achieve recognized success. Gulf SNS users differ from Egyptians' in term of nature of virtual content as the latter is toward gossip talks but there are couples of positive vibes as per the learning curve process of SNS users in Egypt.



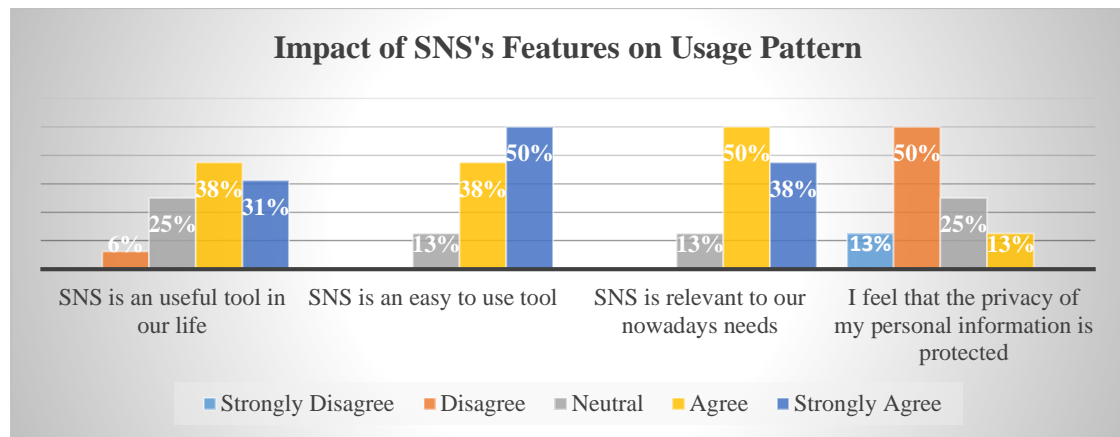
**Figure (6-23): Words Visualization of Industry Experts' Interviews**

The above graph (6-23) signifies the importance of online content over SNS platform for online people's communication, the more valuable the content is the lesser will be the purposeless gossip. Those qualitative replies endorsed the fact that SNS has an impact on culture and environmental contexts in the society of Egypt that are depicted in the proposed SDR model of the research.

#### **6.2.1.5.2 Quantitative Analysis**

This section described an accumulated analysis of the quantitative questions of the 16 conducted interviews, which provided more indications of SNS users' behaviors, perceptions and digital tendency. Also, presented the stage of SNS life cycle in Egypt. **As a guideline, graphs with grey background represent the accumulation of all sixteen (16) interviews' findings and those graphs with black background represent individual interview findings.**

## 1. Impact of SNS's Features on Usage Pattern

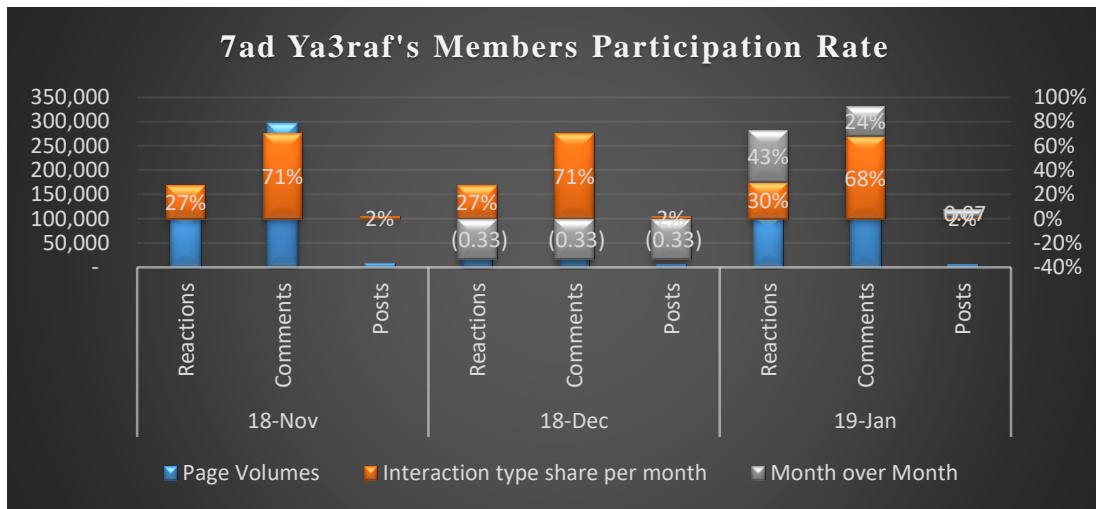


**Figure (6-24): Impact of SNS's Features on Usage Pattern**

The above figure showed that most interviewees agree/ strongly agree that SNS is an easy to use tool, a useful tool in our life and is relevant to our nowadays needs with 69%, 88% and 88% respectively. Further, the majority of interviewees did not feel that the privacy of their personal information is protected through SNS with 63% disagreement.

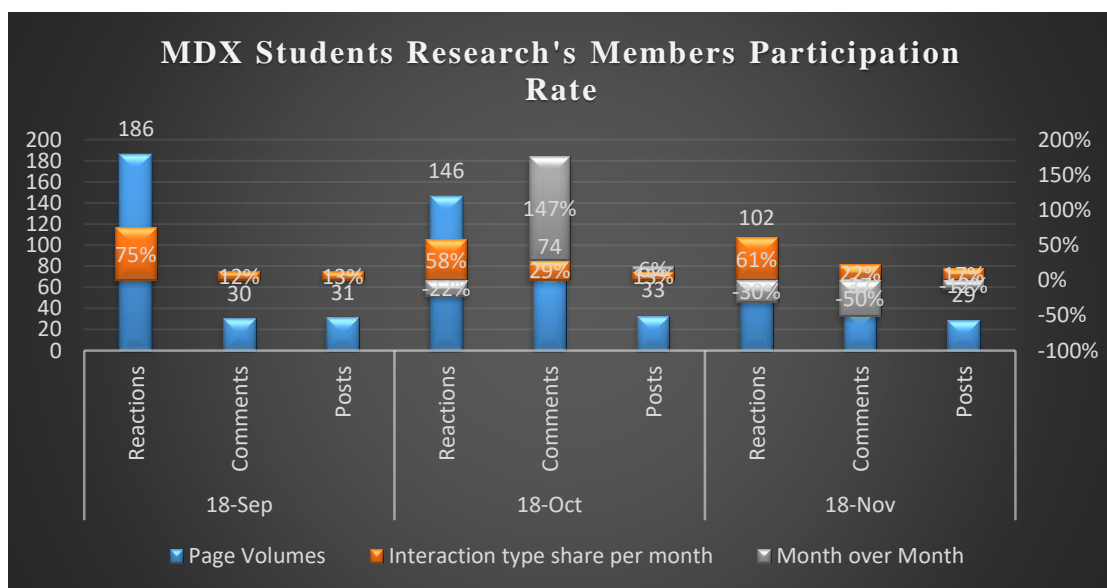
## 2. Tracking Site's Members' Participation Rate

Tracking members' participation rate required a span of time to be indicative. Thus operational Facebook pages i.e. 7ad ya3raf and MDX Student Research pages were able to provide historical data about reactions, comments and posts over a time span of 3 consecutive months. On studying 7ad Ya3raf page's volume of interactions, there was a decrease of 33% from November to December 2018 followed by an increase of 29% from December to January 2019 this can be related to celebration of the New Year. Majority of interactions resulted from comments with an average monthly ratio of 71%; followed by Reactions with an average monthly ratio of 27% as per below illustration. This can be considered normal for a social communication oriented page.



**Figure (6-25): 7ad Y3raf FB Site Participation Rate**

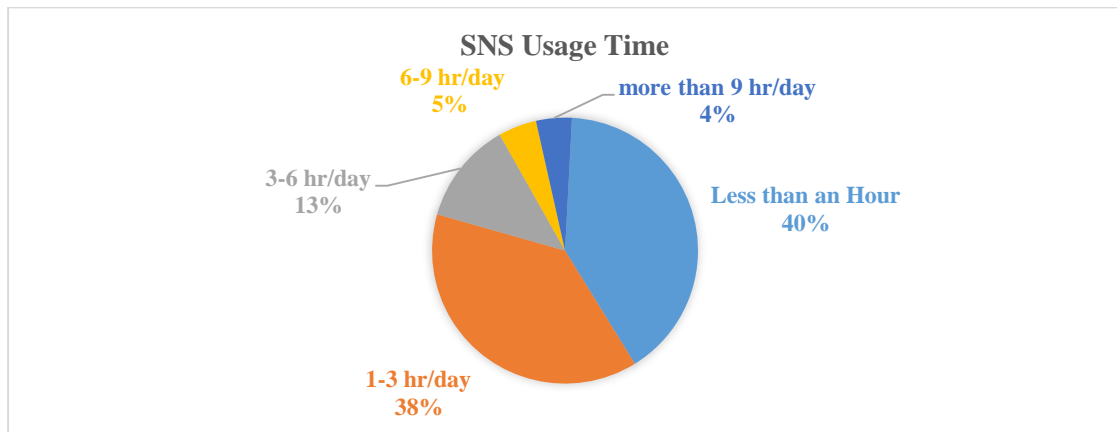
Concerning MDX Student Research page, it has achieved an increase in total volume of interactions from September to October 2018 by 2%; followed by 51% decrease from October to November 2018. Reactions have the highest rates compared to other types of interactions with an average ratio of 65% across the three examined months; where September was the most prominent month with around 75%. Second in ranking was Comments with an average of 21% across the examined 3 months where October scored the highest comments rate of 29%. Lastly was Posts with three months' average of 14%. MDX page interactions can be interpreted in relation to academic calendar activities such as orientation phase, exam time, etc.



**Figure (6-26): MDX Student FB Site Participation Rate**

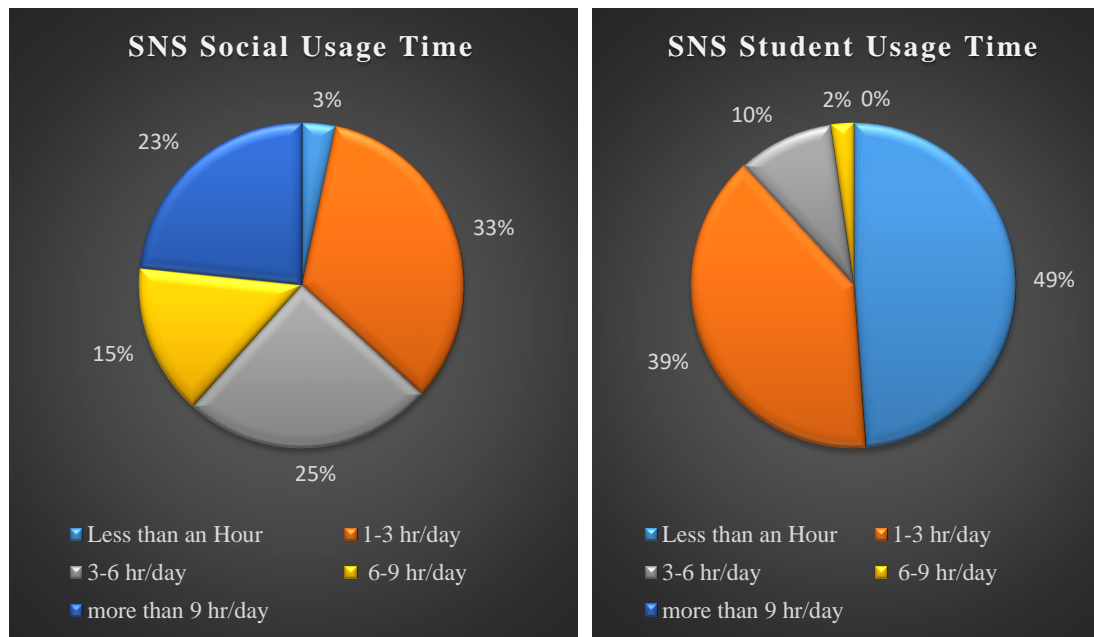
### 3. SNS Engagement Time

The input was calculated based on a sum of 100% for all usage time brackets to get a total vision of all durational patterns. Results showed that 40% is online for less than an hour for “checking page’s activities and replies from time to time and keeping track of contacts’ interactions”, followed by 38% is online for 1-3 hours/day; than 13% is online for 3-6 hours/ day.



**Figure (6-27): Online Engagement Time over SNS**

On further breakdown of the above aggregate engagement time in graph (6-27) for students versus social SNS users, results are shown in the following investigation of hours per day and days per week in the two graphs (6-28) and (6-29) below:



**Figure (6-28): Breakdown of Online Engagement Time over SNS**

(i) As per the graph (6-28), during the day, students' consumption time of SNS is distributed between *Less than an hour* by 49% followed by *1-3 hours* for 39% respectively. On the contrary, social users' consumption time is spreading along the day; 33% uses SNS for *1-3 hours/day* followed by 25% for *3-6 hours*; similarly, 23% for *more than 9 hours* and 15% for *6-9 hours*; finally, the least time bracket is *less than an hour* accounted for 3%. Thus, social users of SNS are heavy daily users around the clock, while students exhibit a limited consumption of SNS for less than an hour or 1-3 hours per day.

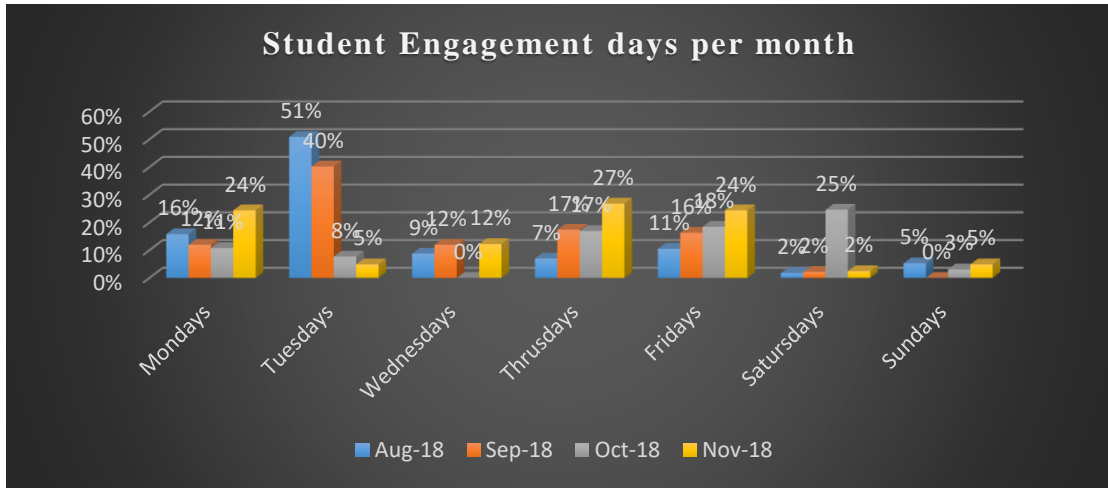
(ii) On further elaboration on engagement time in term of days of the week per examined page;

- ***7ad Ya3raf Page***

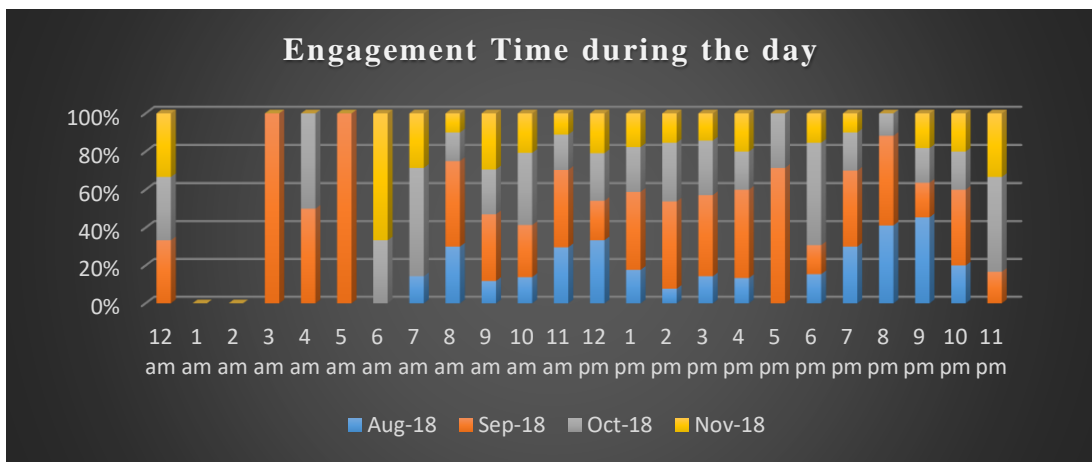
Interviewee added, "*That popular days were **workdays** i.e. Sundays through Thursdays mainly from 6pm to 12am due to Egyptian women's nature to dedicate weekends for family activities while during weekdays they search for their interests at night.*" Additionally, interviewee complemented "*that interaction during the month of Ramadan decreased as women are engaged in family treats and Ramadan serials*".

- ***MDX Research Students Page***

Similarly, interaction of students increases during **workdays** in respect to classes schedule; however, there are seasonal monthly variations. As per table (6-29) below, Tuesdays had the highest engagement during August and September 2018 with 51% and 40% respectively. Fridays and Saturdays had the highest participation score during October 2018 of 18% and 25% respectively; then Thursdays and Fridays had the highest participation rate during November 2018 of 27% and 24% respectively. This can be explained in light of the academic calendar where August and September are an orientation phase; November is usually exam time where finalization of assignments and/or projects happens at the end of the week. Aside from these earlier discussed workdays, the weekend in UK, Saturdays and Sundays, had the lowest consumption along the months except for Saturdays on October due to the preparation for exam period commencing on November. To follow are illustrative graphs about the analyzed engagement days per month then time during the day;



**Figure (6-29): MDX’s SNS Engagement Time Pattern per days**



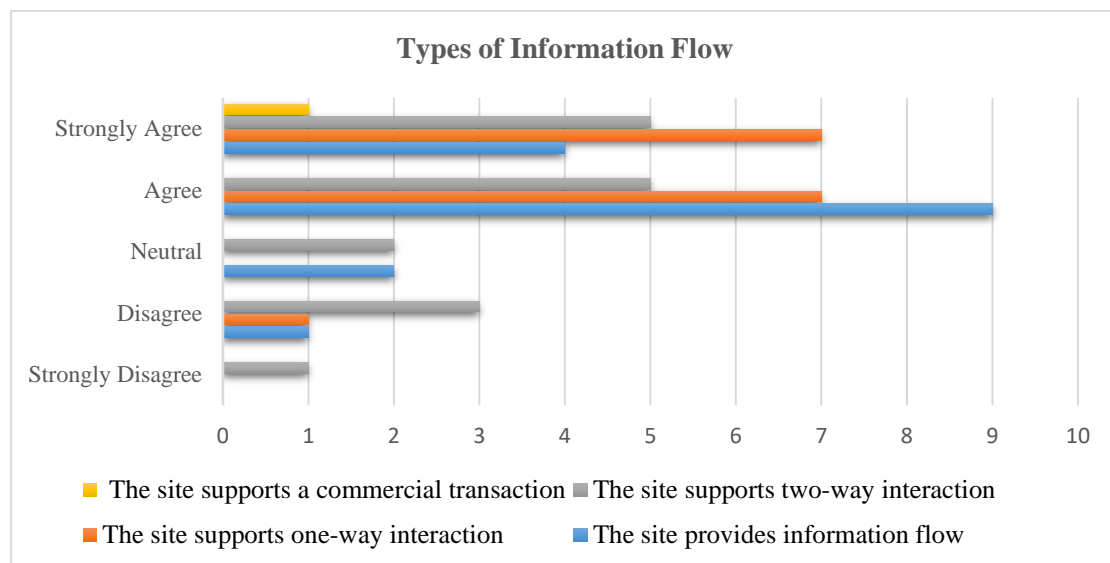
**Figure (6-30): MDX’s SNS Engagement Time Pattern per Time of the Day**

As per table (6-30), across the observed months, engagement time spanned within the period from 8am to 10pm along the day across all months that is a lengthy period but as mentioned earlier is sporadic as the majority of students’ access SNS for less than an hour. September 2018 has the highest engagement hours around the clock since it is the start of the academic year.

As a general observation of SNS’s engagement time, sixty per cent (60%) of social users are heavy consumers of SNS for 1-3 or 3-6 hours per day; whereas fifty percent (50%) of students’ users consumed SNS for less than an hour per day. Further, Social users are primarily ‘comments’ oriented with 71% average ratio, whereas, students SNS users are mainly ‘reactions’ oriented with an average of 64%. Finally, social and students’ users are active during workdays, however, social users’ activities are at night (especially for females); while, students are scattered along the day.

#### 4. Types of Information Flow Over SNS

Across all conducted interviews, the information flow exhibited a spectrum where “site provides information flow” and “site supports two-way interaction” are equally highly perceived by audience. At a limited scale were sites exhibiting “one-way interaction communication of uploading posts”; while not much interaction over “site supports a commercial transaction” via SNS is witnessed by social nor students SNS users in both countries.

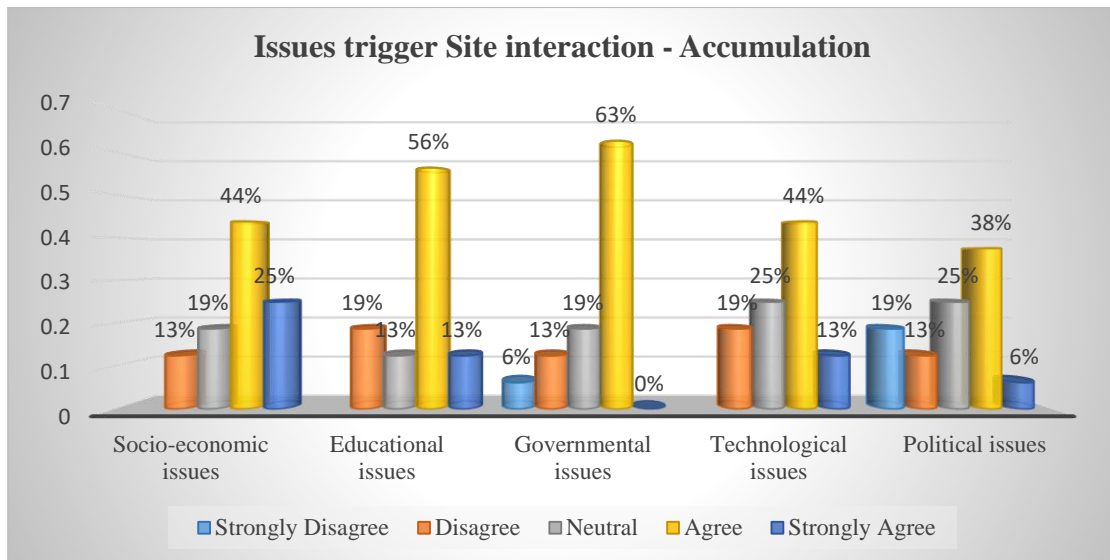


**Figure (6-31): Types of Interaction Flow in SNS**

#### 5. Issues Triggering Site Interaction

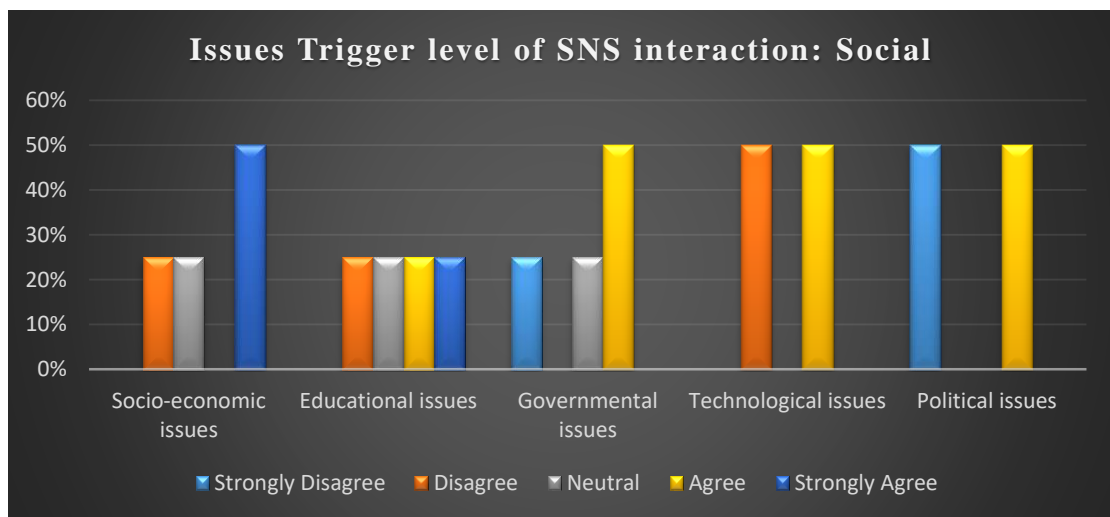
As per interviews, socio-economic and educational topics triggered the most level of sites’ interaction among SNS community by 69% each followed by governmental/regulatory issues by 63% then technological issues scored 56%. That is in line with the nature of interviewed sites, which are mostly social and educational ones. Further, there was a little bit of confusion about the influence of political issues in SNS’s interaction.



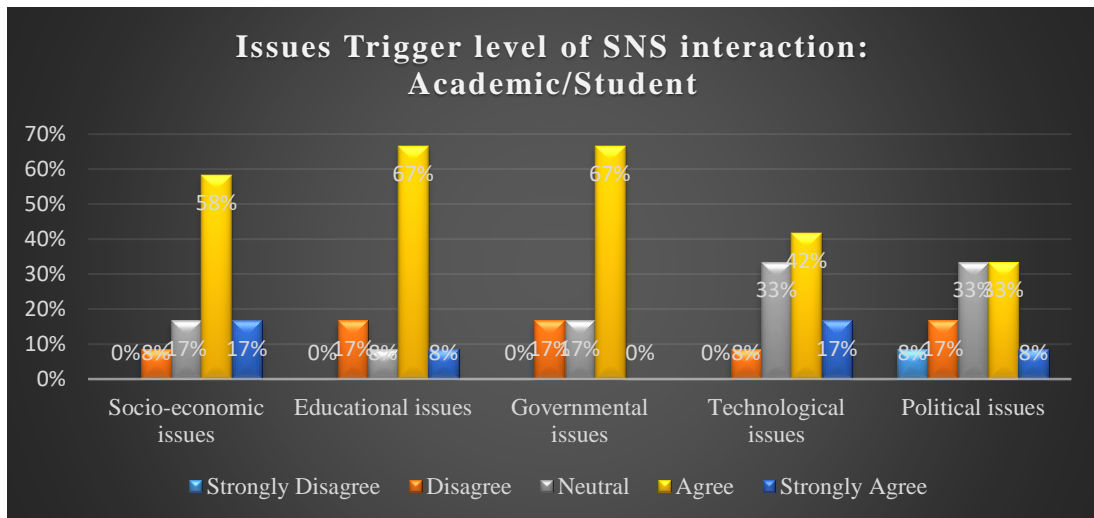


**Figure (6-32): Issues Trigger High level of SNS Interaction**

As per below elaborative user's specific graphs, social users tend to interact more towards diverse issues such as socioeconomic, governmental and political; on the other hand, students are inclined to engage in educational and surprisingly governmental and regulatory ones may be due to the multicultural nature of MDX students. Thus, nowadays, socio-economic and educational issues are a common concern for both types of SNS users across the two countries.



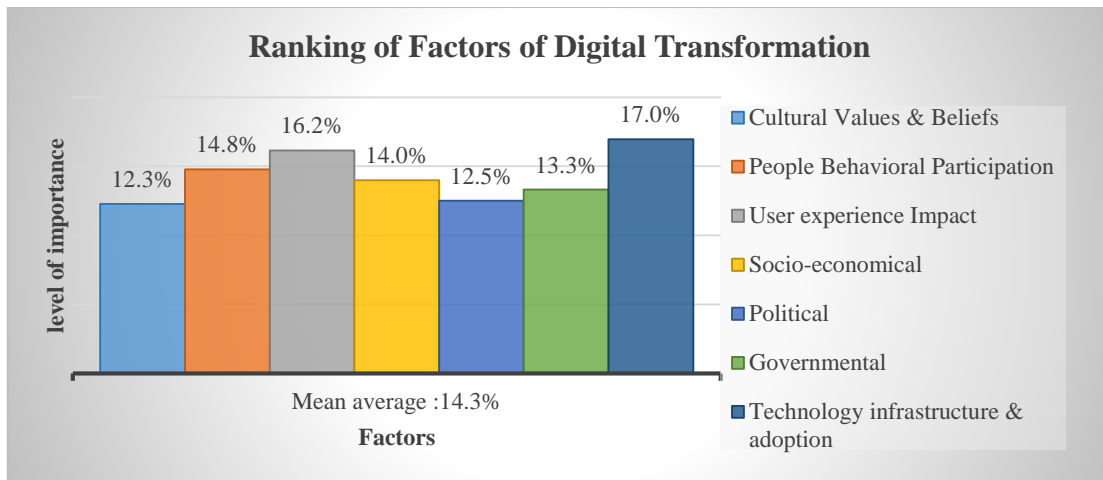
**Figure (6-33): Breakdown of Issues Trigger SNS Interaction (Social)**



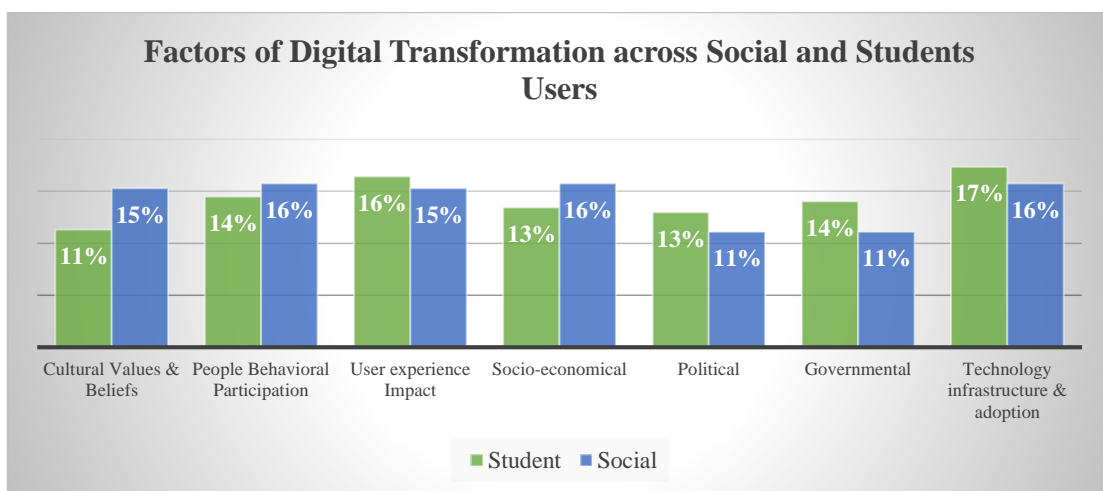
**Figure (6-34): Breakdown of Issues Trigger SNS Interaction (Student)**

### 6. SNS associated Factors for Digital Readiness of Online Community

‘Technological infrastructure and adoption’ has the highest impact factor on digital readiness by around 17%, which is logical since without reliable, scalable and robust telecommunication infrastructure in terms of diverse submarine cable systems connections, advanced fiber optic backhails and last mile appropriate speedy internet coverage there will not be online practice. Then, second in importance was ‘User Experience Impact’ with 16.2%; thirdly was ‘People Behavioral Participation’ with 14.8%. Therefore, “People” construct achieved 31% accumulated score for society digital readiness. Fourth in ranking were ‘Governmental’ (13.3%) and ‘Political’ (12.5%) variables. Lastly but not the least, is ‘Cultural Values and Beliefs’ with 12.3% contribution. The average mean value is 14.3% with a short-range scale indicating that the selected factors are well chosen and those are directly affecting SNS consumption for a gradual transformation to a digital society.



**Figure (6-35): Factors for Digital Transformation**

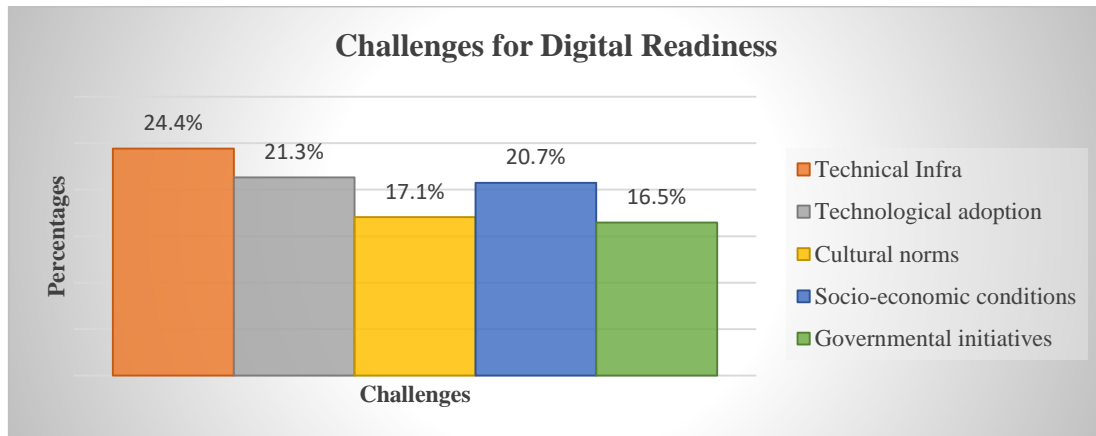


**Figure (6-36): Breakdown of Factors for Digital Transformation**

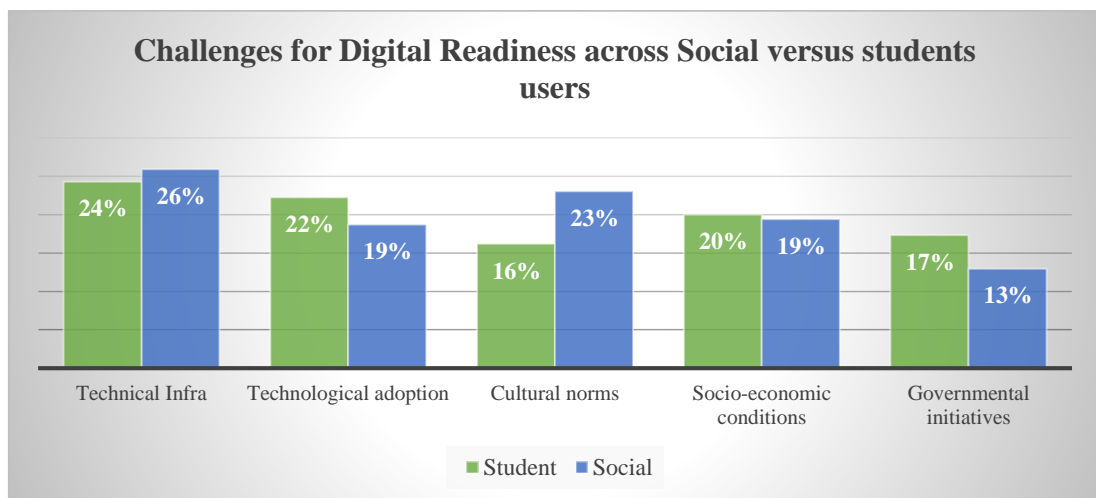
On breaking down those aggregated values; it was noticeable that social SNS users perceived ‘Technology infrastructure & adoption’, ‘Socio-economic’ and ‘People Behavioral participation’ factors as the most important contributors for digital transformation with 16% score; while the least influencing factor is ‘Political’ and ‘Governmental’ factors of 11% each. Thus, technology must serve people’s needs in accordance to socio-economic conditions. Similarly, students SNS users shared the same perception as ‘Technology infrastructure & adoption’ has the highest ratio of 17% followed by ‘User Experience Impact’ of 16%; while at lower rate were ‘Political’ and ‘Socio-economic’ factors achieving 13%, then ‘Cultural values & beliefs’ has the least importance of 11%.

## 7. Challenges for Transformation to a Digital Society

Concerning the challenges for digital transformation of online society there were a couple of elements narrated to the interviewees and their replies showed the following ranking; technical infrastructure capacity and quality scored 24.4%; secondly, technological adoption of users scored 21.3%; thirdly, socio-economic conditions was at 20.7%; fourthly cultural norms scored 17.1% and finally government initiatives at 16.5%.



**Figure (6-37): Accumulation of the Challenges for Digital Transformation**



**Figure (6-38): Breakdown of the Challenges for Digital Transformation**

In social users' opinions, the sequence of challenges facing digital transformation via SNS is 'technical infrastructure' at 26%, then 'cultural norms' at 23%, followed by 'technological adoption' and 'socio-economic conditions' at 19%; finally, 'governmental initiatives' at 13%. Similarly, the student SNS users' perceived 'technical infrastructure' as the most obstacles for digital transformation with 24% followed by 'technological adoption' of 22% and 'socio-economic conditions' at 20%.

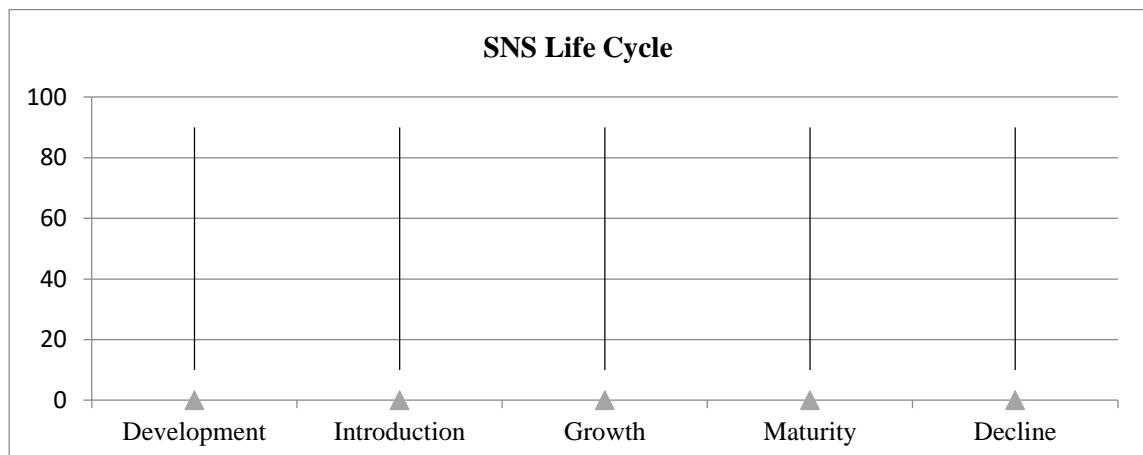
then at lesser percentages are ‘governmental initiatives’ of 17% then ‘Cultural norms’ of 16%. Again, difference in the perception of cultural values across the two types of SNS users can be explained in term of generational differences of the weight of cultural norms and its reflection on their way of communication. Further, it is a practical example of Hofstede 6-Ds framework across West versus East culture on the adoption of ICT and behavioral impact.

### 8. SNS Life Cycle

The life story of most successful products is a history of their passing through certain recognizable stages (Levitt, T., 1965). The product life cycle has (4) four well-defined stages, each with its own characteristics and features. Those four life cycle stages are Development/Introduction, Growth, Maturity and Decline (Living Better Media, 2019). Each stage differs in nature and timespan from one product and/or service to another.

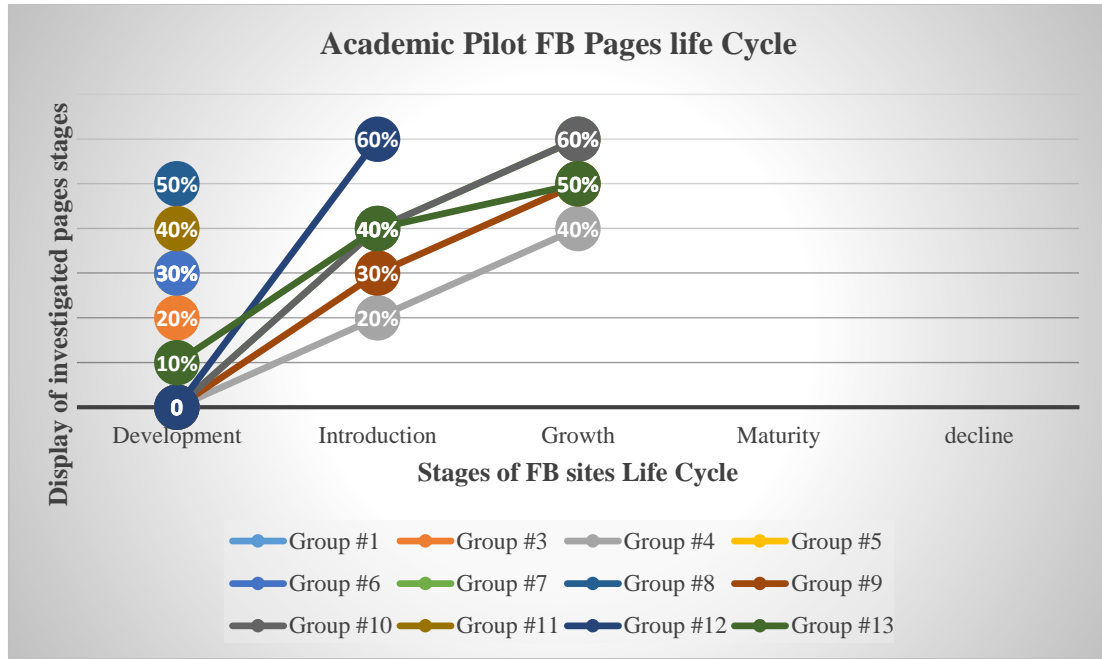
On an attempt to visualize the interviewees thoughts of SNS’s life cycle; they were presented with a life cycle graph exhibiting the four stages whereas they were asked to articulate, choose and quantify at what stage SNS or their FB pages is currently positioned within their society.

*The interview Question was: Indicate a mark on the graph to show the stage of SNS page. Elaborate on your selection?*



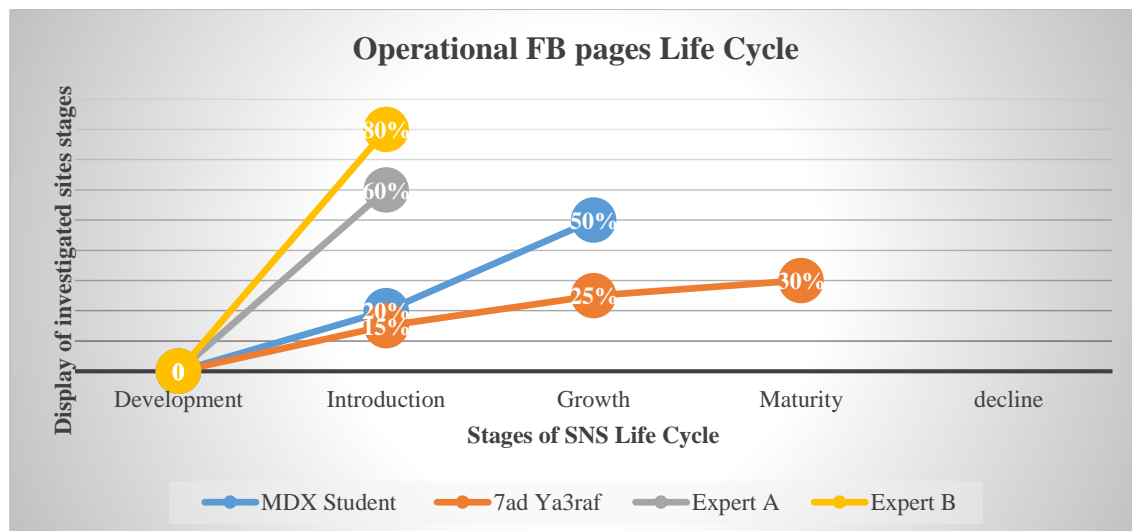
Then, replies of the interviewees were assembled into two figures as indicated below. Whereas those two figures displayed the two clusters of perceptions resulting from the 16 interviews: *academic pilot FB pages and operational FB pages.*

- i. Most of the *academic pilot FB pages*’ interviewees considered that their pages are in the developmental stage at various proportions. However, minorities perceived that their pages have reached the introduction stage as they are daily using it for cross communication. Below is “Academic Groups” representation graph.



**Figure (6-39): FB pilot pages Life Cycle Visualization**

- ii. The second cluster is *operational FB pages* whereas “7ad Ya3raf- Someone knows” and “MDX Research Student” pages have been functioning for a while now- the former has been for 5 years and the latter for 3 years; besides, industry experts’ perceptions. Those insights exhibited a linear upward curve. “7ad Ya3raf” perceived that it has reached the early maturity stage since it’s the most established page in term of membership base, features, volume of interaction, enterprises’ urge to insert advertisements in it, etc. Yet still its administration has plans for further improvement and enhancement. On the other hand, “MDX Student Research” page is in the midway of the growth stage since it’s a new practice implemented by MDX for communication and interaction among postgraduates from diverse nationalities for educational purposes partially managed by MDX officers to maintain adherence to generally applied rules. However, still more efforts must be made to increase its current modest membership base and benefits offered.



**Figure (6-40): SNS Life Cycle Visualization**

Concerning SNS general practice in Egypt within the past 8-9 years, industry experts have evaluated it –as per marketing surveys, companies’ activities and academic studies, to be positioned in the advanced introduction stage in relation to volumes and types of content, level of users’ digital literacy and online code of conduct as well as nature of cyber practiced activities. As per all these research findings, SNS has a noticeable effect over the lives of 37 million Egyptian users, interfered in most aspects of life as well as shaken the habits of traditional cultural communication. Yet still there will be a continuous transformation of attitudes of Egyptian SNS users and their ways of interacting with SNS in the short-term for the realization of more tangible paybacks and valuable content.

### 6.3 Main Remarks on Data Collection Process

Empirical fieldwork about the impact of SNS on the Egyptian online society through utilization of grounded theory methods, which are observation, focus group and interviews as well as survey, has revealed a vast amount of data, which has developed rich layers of informational knowledge along the research period. One of the important issues to ensure the reliability of the collected data from surveys, focus group or interviews was assisting respondents, participants, or interviewees as much as possible in understanding and clarifying the questions before responding. Such approach helped in ensuring that subjects understood well every part of the questionnaire to provide the

appropriate replies. In addition, it created opportunities to listen to subjects, gain insights and encourage them to express their views freely.

Upon completing the data collection phases, the researcher was able to recognize the main difficulties encountered in gathering data in Egypt that may affect the reliability of the data. However, the researcher was able to minimize this effect; through practicing more than one data collection technique for triangulation of results later on presented in the next chapter (7) seven. Those concerns can be summarized as follow for future reference:

- *Lack of reliable data*: As the researcher did not find consistent up-to-date data records, the study was built on fresh collected data from fieldwork.
- *Egyptian cultural issues*: generally, there is a sensitivity from data collection practices in Egypt. As some of the subjects, either did not want to participate in the questionnaire or was conservative in their replies especially for age bracket above 50. Further, some were reluctant to express negative feedbacks or insights, which the researcher was able to grasp from focus group sessions via participants' body language as discussion warmed up.
- *Ever changing/vitality SNS nature*: made the researcher always alert to keep track of the continuous changes in SNS aspects and its observed impact on online community throughout the 3-4 years of the data collection period of the research.
- *Absence of benchmarks*: usually there are models that may guide the researcher in his/her implementation; however, in this study there was no well-established benchmark addressing digitization of online society in developing nations due to the continuous use of SNS either on global or regional level.

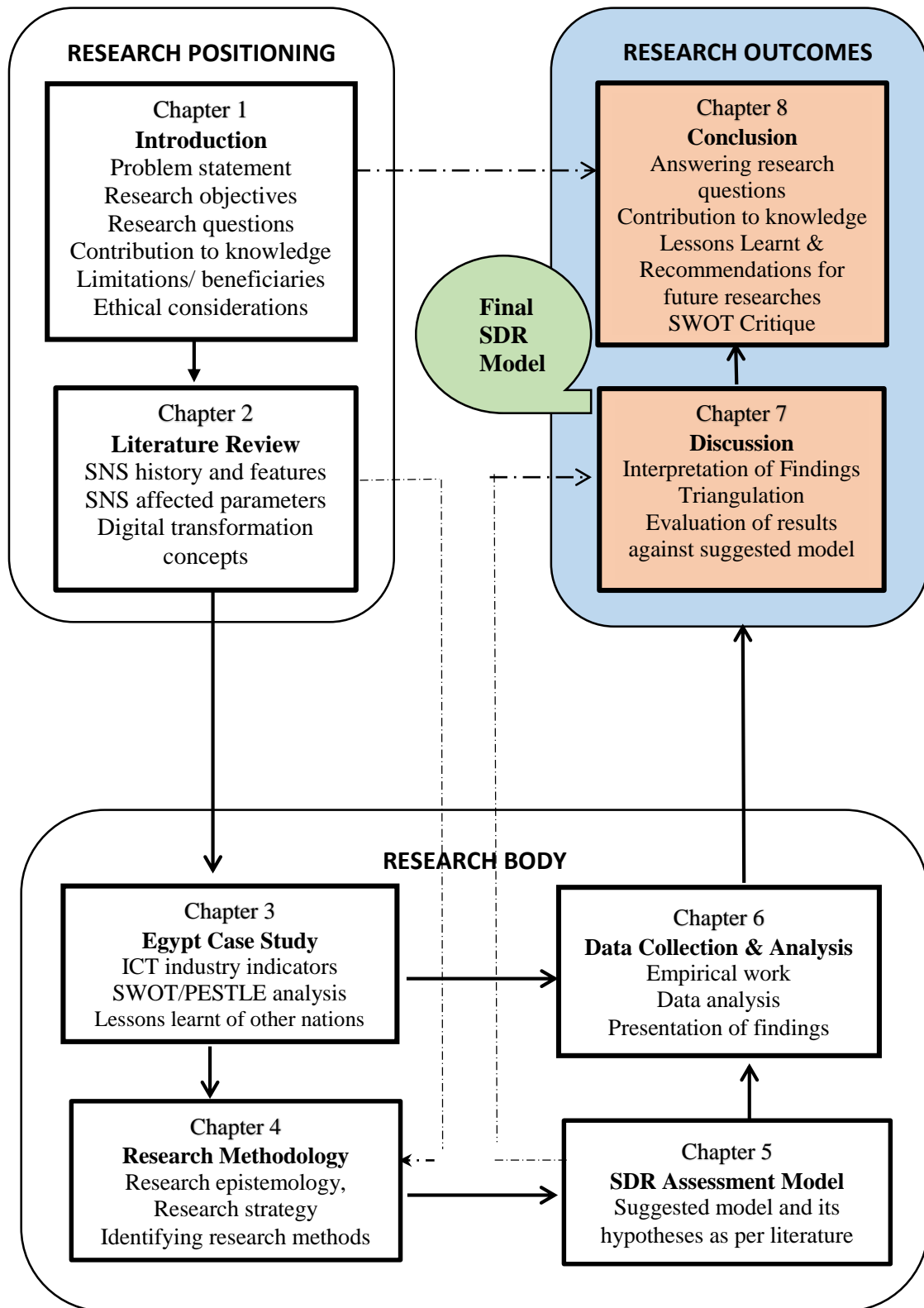
## **Summary**

This chapter has described the empirical tools deployed by the study in order to collect the needed data mapped to earlier mentioned research questions and objectives. Those implemented data collection techniques were divided into two phases and arranged in a certain sequence so as the outcome of each one was the input for the next tool. Phase I instruments were Observation, Survey then Focus Group sessions followed by interviews technique in Phase II with social and students' users as well as professional



experts. The study addressed the collected data as complementing to each other and providing a rich source of applied information for further investigation and triangulation, which is displayed in the next chapter, Chapter 7: Discussion of Findings.

**Blue Shaded Section is Next Step of Thesis's Organization Plan**



## **Chapter 7: Discussion and Evaluation of Findings**

### **Objectives of the Chapter**

- To discuss the findings obtained from each empirical research method
- To compare quantitative and qualitative data through triangulation concept
- To present the verified version of SDR assessment model of Egypt

After the empirical work implemented throughout the four interconnected data gathering instruments across Egyptian and UK SNS users that was accurately analyzed using adequate analytical tools and visualization techniques, this chapter compares the findings of those applied grounded theory techniques and survey method. Then it triangulates research's quantitative and qualitative data for inference of contribution to knowledge thoughts. The objective is to verify the extent to which produced data from the empirical work attested the suggested research model derived from literature and theoretical concepts as well as assisted in deduction of contributions to knowledge base.

The chapter starts with a tabulation of data collection methods across the experimental phases of this study as per below table (7-1).

**Table (7-1): Comparison of Data Collection across the Experimental Phases of the Study**

<b>Data Collection Technique</b>	<b>Time/ Duration</b>	<b>Contacts/ Subjects</b>	<b>Size of sample</b>	<b>Usefulness</b>	<b>Relevance to thesis/hypotheses</b>
Observation	2016/2017	Popular Facebook pages in Egypt	7 FB sites	Extremely useful	Highly relevant in measuring SNS influence on the proposed model's dimensions; in specific culture.
Survey	2018	SNS Egyptian users (all demographics except under 18 years old)	300 respondents	Extremely useful	Highly relevant in measuring SNS usability features and influence on the proposed model constructs
Focus Group	2018	<ul style="list-style-type: none"> <li>• Telco executive</li> <li>• Ordinary SNS users</li> </ul>	3 sessions / 22 participants	Extremely Useful	Highly relevant in measuring the level of nine themes of digitization on Egyptian society
Interview	2018/19	<ul style="list-style-type: none"> <li>• Founder of 7ad ya3raf famous FB site (Egypt)</li> <li>• Digital Media Academic Expert (Egypt)</li> <li>• Director of People of the Internet (Egypt)</li> <li>• MDX student Research FB site Admin (UK)</li> <li>• Undergraduate MDX students (UK)</li> </ul>	4 individual interviews/ 12 group interviews	Extremely useful	Highly relevant in measuring and generalization of SNS influence on the proposed dimensions plus support in visualization of SNS product life cycle in Egypt.

## 7.1 Discussion of Findings from the Four Applied Research Methods

After accomplishment of data collection phases, each one of the four applied research methods was viewed as a building block where each one was purposely selected since its outcome was the input for the subsequent tool. The foremost controlling theme in the development of observational measures, survey's questions, focus groups' discussion and lastly interviews' inquiries was the research's objectives, questions and the hypotheses of the proposed model. The subsequent figure (7-1) depicts the inductive bottom-up approach of data collection methods applied in this study.



**Figure (7-1): Data Collection Methods Building Blocks Concept**

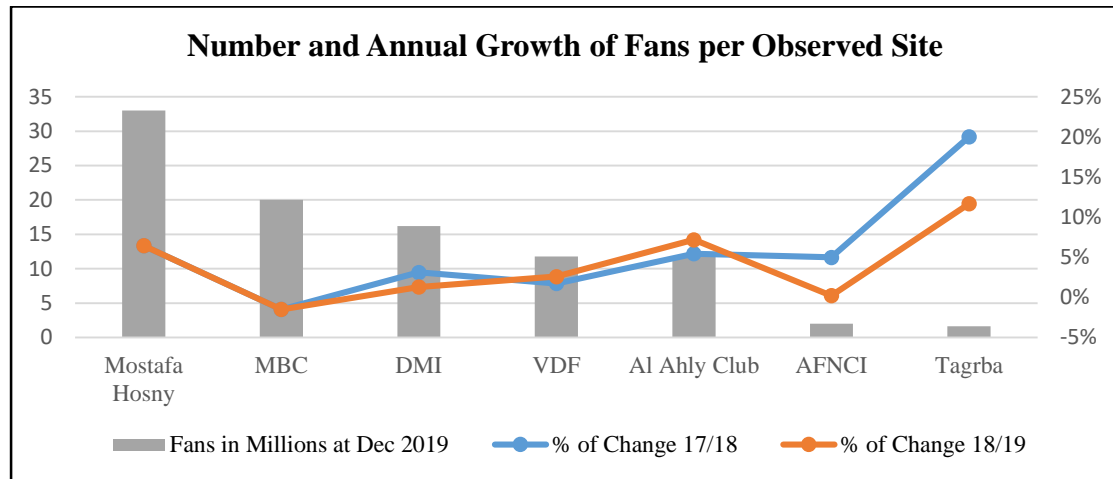
Integration of qualitative and quantitative data at the interpretation and reporting level occurs through three approaches: (1) integrating through narrative; (2) integrating through data transformation; and (3) integrating through joint displays (Stange, K., et al, 2006; Creswell, J. and Tashakkori, A., 2007). This study followed two types of integration out of these three reporting types. The first type is *narrative integration*, where the contiguous approach to integration involves the presentation of findings within a single report, but the qualitative and quantitative findings are reported in different sections (Fetters, M. et al, 2013). This approach was already applied in the last chapter, Chapter 6. Second is integration through *joint displays*, researchers integrate the data by bringing the data together through a visual means to draw out new insights beyond the information gained from the separate quantitative and qualitative results (Fetters, M. et al., 2013). This joint displays integration is the essence of this chapter. Consequently, the following discussion contrasts the research's four applied research methods through interweaving their findings as a preparation for triangulation process in section (7.2).

**Table (7-2): Summary of Findings of Data Collection Tools**

<b>Data Tool/ Measured Item</b>	<b>Observation</b>	<b>Survey</b>	<b>Focus Group</b>	<b>Interview</b>
<b>Reasons for SNS Usage</b>	Diverse (e.g. finding information, expression of opinion, know latest news, etc.)	Finding information 26%, Know Latest News 24%, Keep in touch with family & friends 23%	Keeping in-touch with family & friends 29%, Finding information 24%, Know latest news 21%	Diverse (e.g. finding information, know latest news, seeking support, expression of opinion, etc.)
<b>Online Consumed Time</b>	Fluctuating year over year	1-3 hours/day (45%); 3-6 hours/day (28%);	NA	Less than an hour/day (40%), 1-3 hours/day (38%)
<b>Types of Post</b>	Photo (67%) & Videos (33%)	Photos 68%, Links 49%, Videos 43%	NA	NA
<b>Interaction Types</b>				
• <b>Reactions</b>	Year 1: 80%, Year 2: 87%	75%	Reactions and sharing is more than comments or content creation	Social (27%) vs. Students (65%)
• <b>Comments</b>	Year 1 & 2: 4%	13%		Social (71%) vs. students (29%)
• <b>Shares</b>	Year 1: 15% , Year 2: 9%	12%		Social (2%) vs. Students (13%)
<b>Types of Reactions</b>	Positive and negative	Positive is double the negative	NA	NA
<b>Types of Discussion</b>	Religious, Social (sports, medical, charity, experiences), businesses (media and brands)	Social (66%), Educational (57%), Technological issues (52%), Economical issues (41%), political issues (31%)	NA	Socio-economic and Educational topics (69%), governmental issues (63%) technological issues (56%)
<b>SNS Features</b>				
<b>PU</b>	NA	91%	NA	69%
<b>PEU</b>	NA	99%	NA	88%
<b>PC</b>	NA	76%	NA	63%
<b>SNS Impact on Aspects of Life</b>	Multiple as per site's nature	Business (75%), Political (59%), social (47%), governmental (43%)	Mainly social communication but economic effect is in process	Socio-economic (69%), educational (69%), Government (63%), technological (57%) and political (44%)

### 7.1.1 Observation

The *Observational* method provided an initial screening of the Egyptian online community’s interests and preferences in term of social networks accessed and aspects of life involved. Through an up-to-date observation of the designated sites, figure (7-2) represented the annual growth rate of fans of the seven observed sites as per mid-2019, reflecting a mild variation in the number of fans respectively since the research observation period during 2017/2018.



**Figure (7-2): Number and Growth Rate of Fans per Observed Seven Sites**

Overall findings revealed that online behavior in Egypt could be categorized into two main perceptions:

- i. Factors of online behaviors:
  - a. *Seasonal* based on events such as Al Ahly Club’s 4-year presidential elections or climate changes as per DMI and scheduled promotional offers as per Vodafone.
  - b. *Cultural* based on beliefs and habits such as the increase of use of media as per MBC, charity activities as per AFNCI and access to celebrities as per Mostafa Hosny’s religious celebrity site during the month of Ramadan in Egypt.

- ii. Pattern of online behaviors:

There is a gradual migration in users’ online behavior from clicking ‘Reactions’ icons to participating with ‘Comments’ year over year which is a sign of more engagement. As most sites (Tagrba, Al Ahly Club, AFNCI, Daily Medical Information) displayed a rise of comments by average of 128% due to increasing awareness, learning experience and involvement with the site’s members and its activities.

Hence, observation's findings confirmed the study model assumption that there is a direct correlation between SNS and Culture dimension as cultural communication is becoming more digitized over time whereas SNS is a pure reflection of societal interests.

### 7.1.2 Survey

At the data collection method phase, integration through *building* occurs when results from one data collection procedure informs the data collection *approach* of the other procedure, the latter building on the former (Fetters, M. et al, 2013). Accordingly, survey structure was built on the previously conducted qualitative observational method where the identified parameters of types of post and interactions were tested on broader scale.

As per the above table (7-2), there was congruency in types of posts used across FB pages whereas photos are practiced three-quarters more than videos or Links. Further, types of interaction showed similarity in results where 'Reactions' accounted for almost three-quarters of total interaction volumes in both observation and survey results. However, 'Shares' and 'Comments' exhibited almost equal ratios in survey results demonstrating one year after observation time.

Hence, survey's findings have indicated the following;

- There is a relatively high satisfaction level of SNS attributes across the examined sample (n=300). The highest satisfaction attribute was "*I'm satisfied with the layout feel and look*" accounted for 59% and the highest dissatisfaction issue of 49% was about "people's online behavior", followed by 44% for "privacy measures".
- Sixty-five (65%) are satisfied from using SNS and 75% affirmatively responded that they would resume using it; moreover, 60% will recommend SNS for new members to expand their virtual network.
- Regarding the impact of SNS on Egyptian culture, 86% perceived that Egyptian culture has changed due to SNS consumption with a breakdown of 57% females versus 43% male; this endorsed the proposed model assumption.
- Statistical measures of the survey;
  - i. H1, H2, H3 were proven with very high to high impact value,



- ii. H4 was proven with a moderate impact whereas H7 had a weak impact value since SNS affected 'Culture' dimension through its people's two constructs; people behavioral participation and user experience; however, digital change in this dimension is still at a weak impact value. Precisely, cultural values construct in relation to SDR was not proven. Since over the last decade, in a world with platforms such as Facebook, Twitter, and Wikipedia, scholars have argued that entirely new forms of non-market and non-proprietary production of knowledge and culture have sprung up through the unique affordances of digital technologies, and this has changed who is empowered to create in society (Brennen, S. & Kreiss, D., 2014). Thus, culture requires further specialized examination for future studies whether in Egypt or in any other cultural setting.
- iii. H5 and H8 were proven with weak impact factor due to the blurring effect of political aspects and the insignificant efforts, so far, done by the government in employing SNS for public interaction.
- iv. H6 was proven with moderate impact as SNS users in Egypt are still preparing for the process of digitization

Hence, survey findings matched the study model assumptions that there is a direct strong relationship between SNS and its independent three (3) variables from one side as well as a direct correlation of SNS with culture and environmental contexts, which are the two core dimensions of the proposed model. These correlations are main contributors for the gradual digitization of modes of life in the society of Egypt across all aspects but at various strides respectively depending on the driving force.

### **7.1.3 Focus Group**

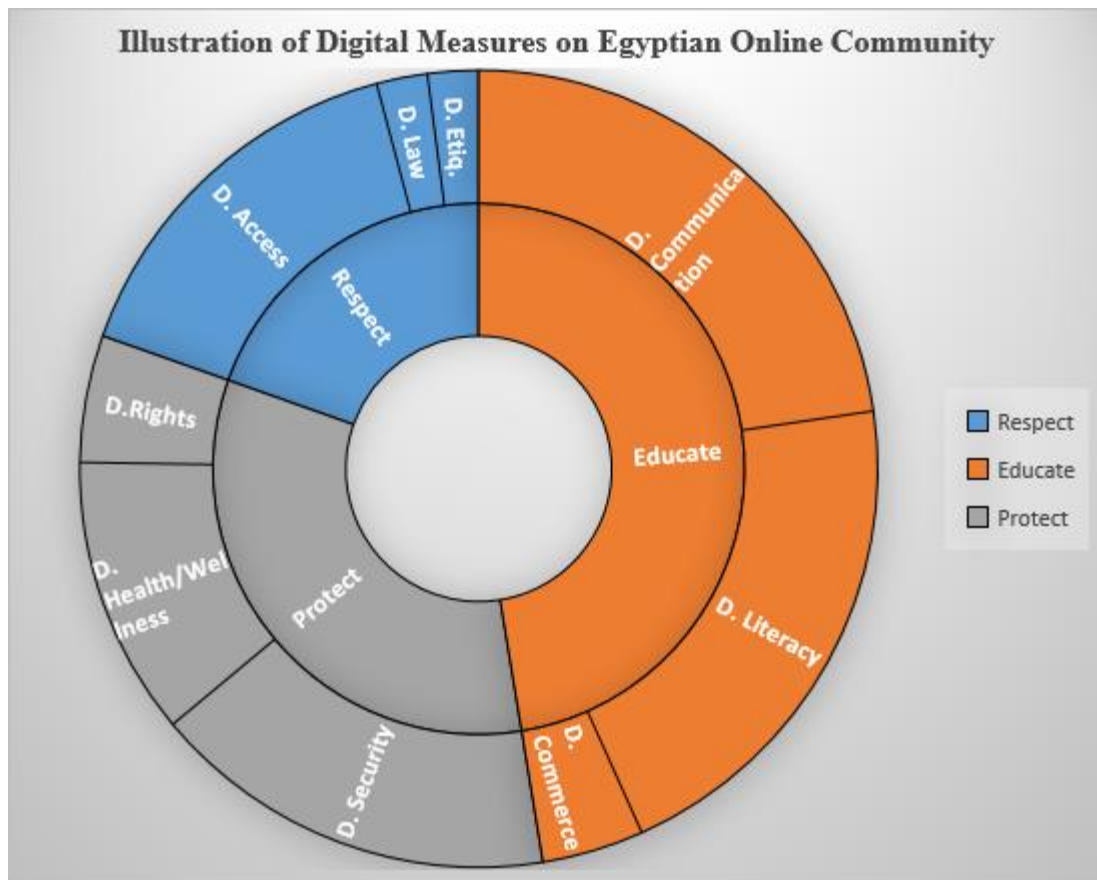
Once more, at the method level, integration through connecting occurs when one type of data links with the other through the sampling frame (Fetters, M. et al, 2013). The focus group participants were selected from the population of respondents of the survey. Survey's findings have drawn the attention towards the need to quarry in the themes of digitization to quantify the impact of SNS usage on the transformation of the Egyptian online community to a digital society. Thus, the Focus group sessions' discussion based on Mike Ribble nine (9) digital themes aiming at measuring the level of digital citizenship achieved, so far, among Egyptian SNS users.

**Table (7-3): Analysis of Digital Themes on Online Society of Egypt**

Digital Nine Measures	Present/ Absent	Justification as per Focus Groups Responses
<b>Educate yourself /connect to others</b>		
1. Digital Literacy, teaching process of technology use	Achieved	<i>“People learn using SNS through following others footprints; while, few spent some time building technician capabilities in field of proxies and filters”;</i>
2. Digital Communication, e-exchange of information	Achieved	<i>“Platform to express opinion (As if it is my own private journal). Connect and share with close ones’ contents and remote ones. Listening to others’ opinions of all above and to discuss. They became more involved in public issues” “For telecoms the customer voice coming through Social media is very important”; “Companies are realizing its important and influence as a marketing and promotional tool and using it now.”</i>
3. Digital Commerce, e-buying and selling of goods and services	Absent	<i>“There is a value in economic activities but still unexplored by individuals in Egypt”.</i>
<b>Respect yourself/ Respect other</b>		
4. Digital Etiquette, electronic standards of conduct	Absent	<i>“People think they are on a stage when they use SNS and start to act freely without governing rules”; “On Twitter, turning tweeting to barking”; “Just running to spread news everywhere with no evidence or respect for other’s feelings”; “On Instagram people are too showy, even fake sometimes, and one gets the impression that social climbing is the key driver for what people post, so there is little regard to anything else”; “On Facebook there is a lot of abusive materials that people blindly share, without fact checking, and most of these are malicious and with no ethical grounding”;</i>

5. Digital Access, full e-participation in society	Achieved	<i>“SNS removed a lot of the previous barriers on communications across all social classes of the online community”</i>
6. Digital Law, e-responsibility for actions	Absent	<i>“The current state of awareness of Egyptian SNS users about such policies &amp; rules is very low evidently judging by the frequent blocking or removal of accounts by the SNS platforms/community managers because of abusive content” and other stated; “Maybe people are relaxed a bit as they feel that online is not as embarrassing as face to face interaction”.</i>
<b>Protect yourself/ Protect others</b>		
7. Digital rights and responsibilities, one’s freedom in digital world.	Absent	<i>“I would like people to respect my own space.” “I am not a public figure and am selective about who I allow on my personal FB page, so I write what I think and don't have any further agendas to protect”;</i>
8. Digital Health and Wellness, physical and psychological well-being in digital world	Awareness is Present/ enactment is Absent	<i>“Maybe over exposure can cause some stress. Have seen several cases where people tended to deactivate their SNS to regain their wellbeing”; “I think that the excessive consumption of electronic content is tiring, at least for the eyes”</i>
9. Digital Security, e-precautions to guarantee one’s safety	Absent	<i>“An issue in Egypt for women of a certain social class/education level is they avoid putting their actual personal photo as a profile photo, for fear of abuse (meaning by unethical men) so we end up with all those fake names”</i>

In an attempt to envision table (7-3), the researcher generated the figure (7-3) below for demonstration of the intensity in fulfillment of the nine themes of digital citizenships among the Egyptian online community as per SNS usage;



**Figure (7-3): Illustration of the Percentage of Realization of the Mike Ripple’s Nine Digital Measures on Egyptian Online Society**

This figure (7-3) illustrates the proportion of digital citizenship in Egypt, where the inner sunburst represented the three main categories: Educate, Protect, Respect. While the external sunburst represented the nine themes, whereas each category has three themes respectively. This sunburst was developed based on the number of replies of focus group respondents (n=22) to the nine questions.

Hence, focus group findings have revealed that Egypt’s online community has effusively realized four (4) out of the nine (9) themes of digital citizenships as per SNS usage. Educate theme achieved an advanced stage compared to Protect, then Respect was at a lesser stride. Remarkably, participants were aware of the concepts of digital themes; however, they perceived that these themes still need more time and efforts by all stakeholders to be set in place for the creation of Egypt’s digital ecosystem.

Therefore, it is a matter of time for online society to regulate themselves as per intense cross-interaction or through governmental interference via setting laws and regulations. Actually, both directions are working in parallel. SNS users in Egypt are getting frustrated from cyberbullying or cyber harassment, which gradually is diverting them to more private online communities. At the beginning of 2019, the Egyptian's parliament approved a new law regulating social media practices. The law empowers the Supreme Council for Media Regulations to place people with more than 5,000 followers — on social media or with a personal blog or website — under supervision (Tech Gist Africa, 2018). It is an attempt from the government to control the misuse of SNS by some categories of online users; whether it was dissemination of fake news, cyberbullying, etc. that threaten national security.

#### **7.1.4 Interview**

Last but not the least, interview technique is implemented to verify the proposed research model, generalize it beyond Egyptian online community and endorse it by industry experts in Egypt. From a cultural perspective, this instrument proved to be the most effective method in Egypt as it reinforced earlier data sets. The harvest of the sixteen (16) interviews in Egypt and UK – both individuals and groups – has not only coincided with earlier collected data testing research hypotheses but also assisted in creating a sketch of SNS life cycle for the Egyptian online community. Since interviews were carried out at two countries: Egypt and UK; and across two categories of users which are social versus students' users. The Egyptian versus UK based SNS interaction was a useful understanding of the behavior of SNS users across nations and for contrasting the application of the proposed model on both respectively.

Aside from the harmony already realized in the above table (7-1) between the findings of interviews and survey in term of purposes of use, online consumed time over SNS, types of interactions, issues triggering online discussion and SNS three independent featured variables. There were some further lights shaded as follow:

- The congruence between Egypt and UK based SNS users especially students segment, the youth of nations, was clear in the small scale of replies per questions. As, youth seems to have similar perception and attitudes across nations diluting cultural effect in the virtual sphere gradually.

- Nowadays, the main distinguished impact of SNS across nations is the socio-economic aspect since the research survey (done on Egyptian subjects) exhibited 75% for business and 47% for social and interview (done on multinational subjects) depicted 69% for socio-economics issues.

The difference between social and students' SNS users was apparent whereas the interview sample had representation ratio of 75% students versus 25% social users that why further breakdown was achieved in Chapter 6 to visualize each respective weight. The table below demonstrated the analogy of social versus students SNS users of the sixteen (16) conducted interviews.

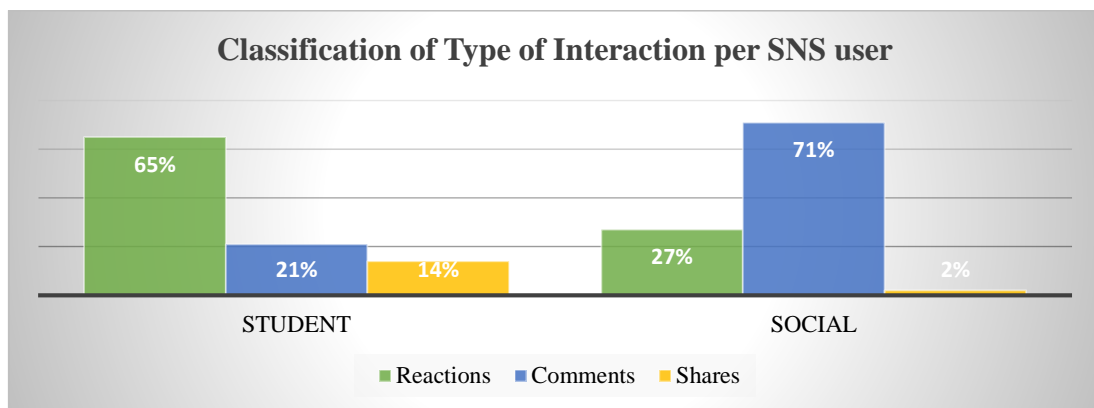
**Table (7-4): Analogy between Social versus Students SNS Users**

Measured Unit	Social	Students
<b>1. Types of Interaction</b>		
Reactions	27%	65%
Comments	71%	21%
Shares	2%	14%
<b>2. SNS consumed time per day</b>	<i>1-3 hours (33%), 3-6 hours (25%)</i>	<i>Less than an hour (49%), 1-3 hours (39%)</i>
<b>3. Issues trigger SNS interaction</b>		
Socio-economic	50%	75%
Educational issues	50%	75%
Governmental regulations	50%	67%
Technological issues	50%	58%
Political issues	50%	42%
<b>4. Factors of Digital Transformation</b>		
Cultural Values & Beliefs	15%	11%
People Behavioral Participation	16%	14%
User experience Impact	15%	16%
Socio-economic conditions	16%	13%
Political issues	11%	13%
Governmental	11%	14%
Technology infrastructure & adoption	16%	17%
<b>5. Challenges for Digital Transformation</b>		

Technical Infrastructure	26%	24%
Technological adoption	19%	22%
Cultural norms	23%	16%
Socio-economic conditions	19%	20%
Governmental initiatives	13%	17%

To follow are graphical explanations and commentaries of the five listed measurable units in the table (7-4) above;

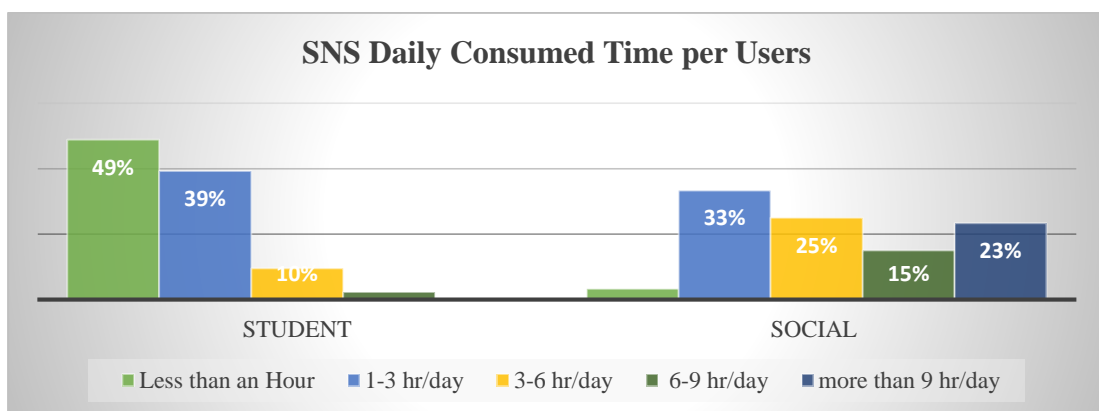
### 1. Types of Interactions



**Figure (7-4): Classification of Interaction Types between Students versus Social**

This above graph illustrated that social SNS users are into intense interaction mode through exchanging of comments; however, educational SNS users are a quick surfer for major news or information through using fast reaction icons.

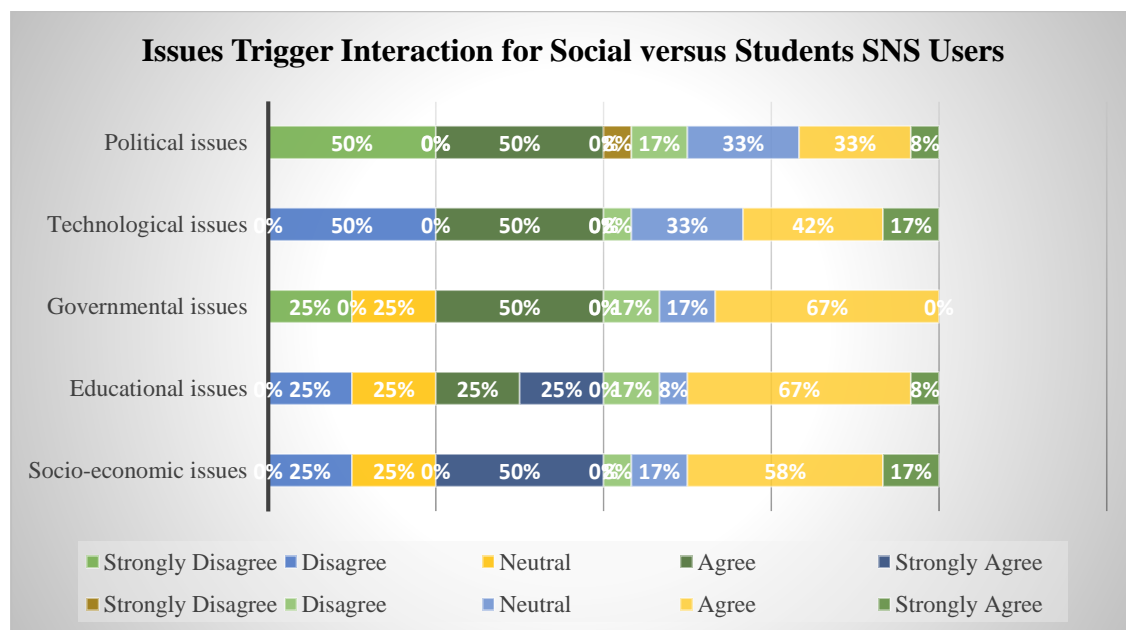
### 2. SNS Daily Consumed Time



**Figure (7-5): SNS Daily Consumed Time between Students versus Social**

SNS daily consumed time can be explained in line with the above types of interaction in figure (7-4). So students that are mainly ‘reactions’ oriented, half of them tend to use SNS for less period of time per interaction session. On the other hand, one third of heavy ‘comments’ social users tend to spend longer period of time of 1-3 hours since this type of interaction requires more time for writing and responding to counter arguments. Further, others have stated that they keep SNS online and engage in other activities in parallel which results in the occurrence of prolonged time intervals such as 3-6 hours or more than 9 hours/day.

### 3. Issues Trigger SNS Interaction

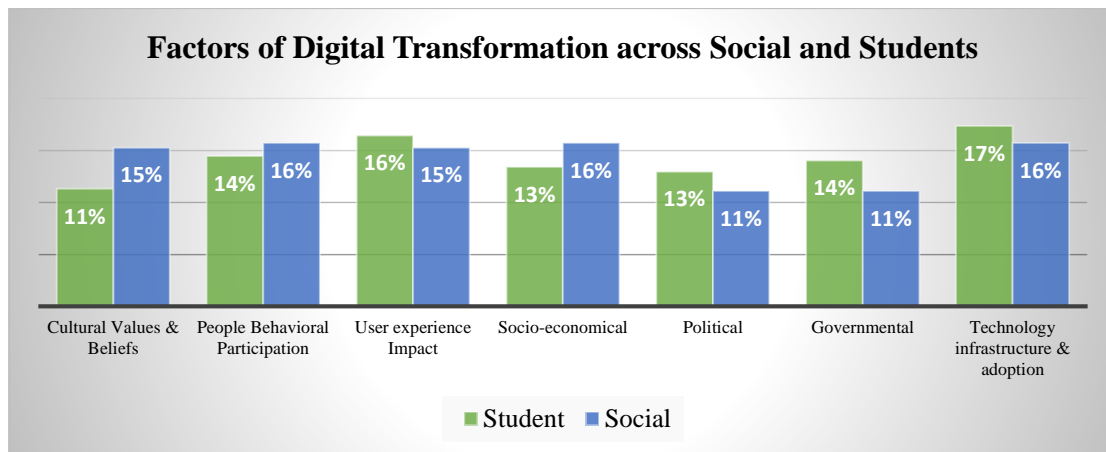


**Figure (7-6): Classification of Issues Triggering SNS Interaction**

In addition, online topics of interest seemed to be common across nations as socio-economic and educational topics triggered the most level of sites’ interaction among globe online community across both types of users followed with governmental/regulations then technological issues and finally political. This is clear from the above figure (7-6) where social users are represented by the left half side of the graph while students’ point of views are in the right half side. Once more, that is in harmony with the nature of examined pages, which are social and educational in essence.



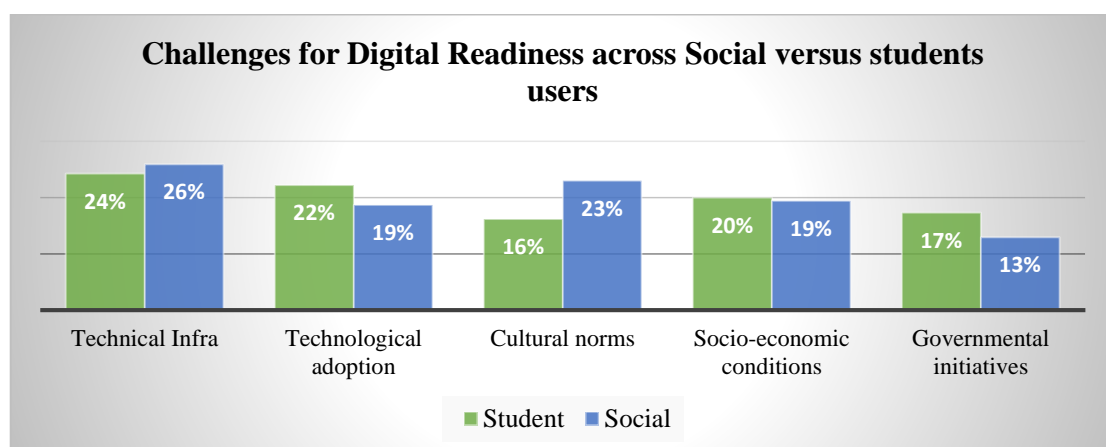
#### 4. Factors of Digital Transformation



**Figure (7-7): Factors of Digital Transformation across Social and Students**

Table (7-7) depicts that the ‘technical infrastructure and adoption’ factor had the highest percentage (17%) on the accumulated values as well as the breakdown per each user group (student of 17%) and (social of 16%) respectively. However, the least important factors varied in the breakdown. While on the aggregated graph, ‘cultural values and beliefs’ (12.3%) and ‘political’ (12.5%) had the lowest percentages across the range of factors; social SNS users perceived ‘political’ and ‘government’ factors as of lowest importance of 11% each; on the other hand, students SNS users considered ‘cultural values & beliefs’ as the lowest in importance of 11%. Thus, generational differences, that Hofstede has earlier addressed through the sixth dimension of restraint versus indulgence, impact technology adoption for the need of instant gratification.

#### 5. Challenges for Digital Transformation



**Figure (7-8): Challenges for Digital Readiness between Students versus Social**

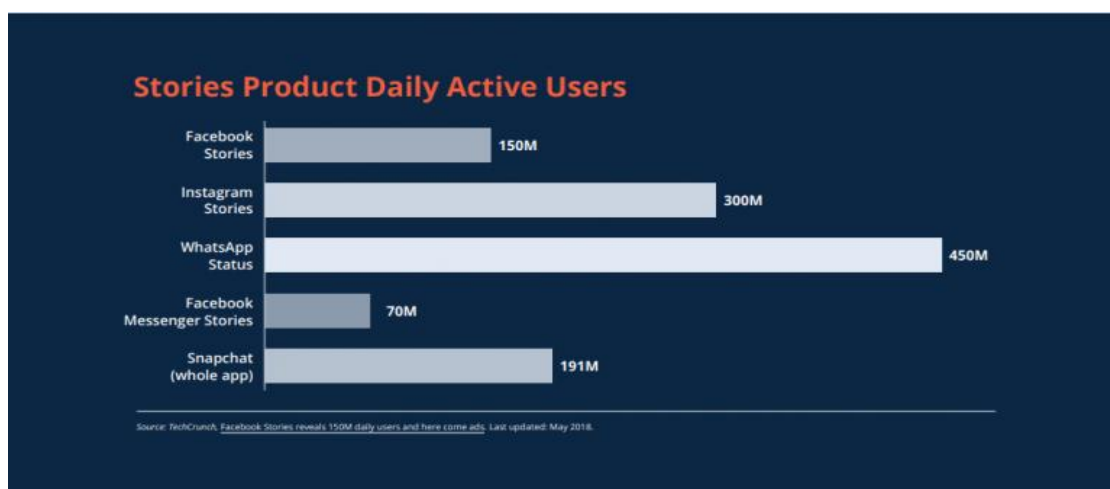
Similarly, the absence of 'technical infrastructure' is deemed the major obstacle for digital transformation on both the aggregate and the breakdown analyses. This demonstrated the vital role of resilient backbone, digital communicative applications and advanced processes in affecting people's way of interaction across nations whether on individual, business or governmental perspectives. Second in ranking is 'technological adoption' in the aggregate score as well as for student SNS users (22%); however, for social SNS users it is ranked the third (19%) after 'cultural norms' (23%). Rogers (2003) has defined the level of adoption as, "a mental process through which an individual passes from first hearing about an innovation to final adoption". In specific, the level of technological adoption is "the extent by which a given technology becomes accepted and incorporated into approved social practices (Whitworth, B. & De Moor, A., 2009). Thus, it is crucial to understand and quantify the level and features of the technological adoption of any studied online community in order to evaluate the impact of SNS on this society for digital readiness.

Hence, the study can deduce that the selected factors of and challenges for digital transformation are the major ones as the scale in each situation is close to each other with no huge variation in the selection across both types of users. The key drivers of digital transformation are 'technical infrastructure and adoption' followed by the two constructs of "People" i.e. user experience impact and people behavioral participation. At a lesser concern were 'culture norms' and the four related constructs of 'Environmental Contexts". Therefore, if "People" -SNS users around the globe regardless of their culture- has the adequate technical infrastructure (tools) and digital literacy, they can transform themselves to a digital society as the desire is there and all other factors will react to this desire respectively. Consequently, the main challenges will be the lack of those key drivers, so poor 'technical infrastructure and technological adoption' hinder digital readiness of any society. It is worth mentioning that student SNS users mitigate the impact of 'Culture' on the virtual life; however, social SNS users still ponder culture norms and beliefs but at a lesser percentage which requires further study to measure its degree of dilution over the virtual life as digital interaction intensified.

A further contribution of interview technique to knowledge base was the creation of SNS life cycle. SNS's life cycle curves for operational pages demonstrated an upward

linear curve with variation in proportions in accordance to years of experience, nature of the page, number of members and their interactions volume, features and services offered, etc. Facebook page's development phase can take extended time until a well contained page is developed depending on "the product's complexity, its degree of newness, its fit into consumer needs, and the presence of competitive substitutes of one form or another" (Levitt, T., 1965). The research has focused on experts' insights to depict SNS's life cycle curve in Egypt in light of the performance of the 37 million users. This curve displayed that SNS is still in the nascent stages of adoption. Since youth, who is dynamic and self-motivated, is the major player over SNS, where still more changes to happen in SNS's development curve in Egypt throughout the coming years.

Youth will require different types of SNS that allow more privacy, less effort for interaction, preferences of visual content over text and accessibility. That's why Facebook management is monitoring youth's needs for change and accordingly acquired WhatsApp and Instagram with their differentiated features as well as the introduction of 'Stories' aspect that is soft typed news with a 'short user-generated photo or video collections that can be uploaded to the user's account' (Read, A., 2018). Facebook, Instagram and WhatsApp have already placed Stories at the forefront of their applications due to the growing volume of content that people put up and the increase in people using the feature (Business World, 2019).



**Figure (7-9): Stories Feature Performance among SNS**  
*Source: Digital Marketing Intelligence (2019)*

As per the figure (7-9) above, one of the most important social media trends during 2019 is Stories product, which is considered a major shift in focus by most of brands as 64% of respondents have either implemented Instagram stories into their social strategy or plan to do so in the next 12 months (Digital Marketing Intelligence, 2019). As per Egyptian interviewed experts, ‘stories’ is expected to be the most popular feature within the Arab world by yearend 2019.

This above joint displays integration has entwined the results of the four implemented data collection methods as they are thematically interconnected; moreover, ‘the qualitative and quantitative data weave back and forth around similar themes or concepts’ (Fetters, M. et al, 2013). Regarding the fit of the quantitative and qualitative data, the integration resulted in an expansion of researcher understanding of the topic under investigation to develop the following triangulation acumen.

## **7.2 Triangulation of Findings**

Triangulation is an approach in verification that uses multiple sources to contrast and compare study data to establish supporting and/or contradictory information to ultimately give the researcher and users of the research a more balanced and deeper understanding of the outcomes than relying on the study data alone (Roller, M. and Lavrakas, P. 2015). The forms of triangulation applied in this chapter are those that compare study data with data obtained from another data source i.e. “data triangulation” and from a different method i.e. “method triangulation” (Roller, M. and Lavrakas, P., 2015).

Conducting mixed methods research allowed for the identification of the convergence and divergence of qualitative and quantitative data, contributing to results that mutually complement each other (Dos Santos, J. et al 2017). Qualitative inquiry can inform the development or refinement of quantitative instruments or interventions, or generate hypotheses in the qualitative component for testing in the quantitative component (O’Cathain, Murphy, and Nicholl, 2010). In this study, observation results served for survey construction. Quantitative data can also be used to help generate the qualitative sample or explain findings from the qualitative data (O’Cathain, A. et al, 2010). Likewise, survey findings supported in the generation of focus group discussion theme

and selection of multi-demographics' participants, as well as data expansion through interview technique. So in order to test the research proposed model's hypotheses, it was beneficial to triangulate findings across used quantitative and qualitative data collection tools. Quantitative data retrieved from the survey and structured section of the interview is compared with qualitative data obtained from observation, focus group sessions and unstructured sections of the interview.

**Table (7-5): Summary of Methodological Aspects of the Study**

Study Design	Mixed Methods Research With Concurrent Triangulation of Data	
	Quantitative	Qualitative
	Survey	Grounded Theory (GT)
<b>Purposes/ Objectives</b>	<ul style="list-style-type: none"> <li>To measure online users' behaviors, perceptions and satisfaction level toward SNS</li> </ul>	<ul style="list-style-type: none"> <li>Initial observation of the Egyptian online community's interests and preferences in term of categories of pages involving main aspects of life and types/volumes of interactions.</li> <li>To measure the impact of SNS usage on the transformation of the Egyptian online community to a digital society.</li> <li>To generalize the model beyond Egyptian online community and endorse it by digital media industry experts in Egypt.</li> </ul>
<b>Data collection</b>	Questionnaire	<ul style="list-style-type: none"> <li>Observation</li> <li>Focus group</li> <li>Semi-structured Interviews</li> </ul>
<b>Participants</b>	300 respondents	<ul style="list-style-type: none"> <li>7 observed sites of popular FB pages in Egypt</li> <li>3 focus group sessions with 22 participants</li> <li>16 Interviews (4 individuals and 12 group interviews totaling 48 interviewees)</li> </ul>
<b>Data analysis</b>	SEM descriptive statistics: <ul style="list-style-type: none"> <li>SPSS®, version 20</li> <li>AMOS®, version 20</li> <li>Tableau, version 10.2/ 10.4</li> <li>MS Excel, version 2010</li> </ul>	Content analysis: <ul style="list-style-type: none"> <li>Selective and focused coding</li> <li>Thematic Coding</li> <li>NVIVO®, version 11</li> </ul>
<b>Researcher's Role</b>	An objective observer and analyzer of results	Participated and become immersed in the social settings

This table (7-5) showed that mixed methods allowed for implementing different methodological designs. Qualitative and quantitative data were contrasted for similarities and differences then integrated, as appropriate, to produce mutually complementary results leading to more complete, robust and extensive interpretations of the phenomenon under investigation.

After summarizing the methodological aspects of the research, it is time to triangulate data resulted from each method against the generated hypotheses of the proposed SDR model in the coming table (7-6).

**Table (7-6): Comparison between Quantitative and Qualitative Research Methods**

Hypotheses	Observation	Survey	Focus Group	Interview
<b>H1: SNS-PU</b>	√ Various categories of sites witnessed different perceived usefulness	Accepted, Very High Impact	√ Participants admitted the usefulness and accessibility of information & relevancy to needs	√ Interviewees admitted the usefulness and accessibility of information & relevancy to needs
<b>H2: SNS-PEU</b>	√ Ease of use of all interaction types	Accepted, High Impact	√ Participants admitted the easiness to learn and use SNS	√ Interviewees admitted the easiness to learn and use SNS
<b>H3: SNS- PC</b>	√ Not much concern about privacy was observed	Accepted, High Impact	√ Participants were aware of privacy concerns and take precautions respectively	√ Interviewees were aware of privacy concerns
<b>H4: There is a relationship impact of SNS on Culture</b>				
SNS-PBP	√ Increase in numbers of interaction year over year	Accepted, Moderate Impact	√ Participants engaged at all scales of SNS	√ Achieved by social and students users
SNS-PUEXP	√ New types of pages like Tagrba & various seasonal interaction along the year	Accepted, Moderate Impact	√ SNS satisfied users' needs to get news, socialize and perform tasks	√ Achieved through various age brackets/ social classes and across various nations/ circumstances
SNS-Cultural Values	√ Culture played major role in sites activities (religious rituals)	Accepted, Moderate Impact	√ Culture affects SNS usage pattern	√ Only considered by Social SNS at a decreasing influence
<b>H5: There is a relationship impact of SNS on Environmental Contexts</b>				
SNS-SE	√ SNS shared people social activities, seasonal changes and life events	Accepted, Weak Impact	√ SNS shared people social activities and life events	√ SNS topics are a reflection of socio-economics conditions of a community
SNS-Political	√ Not much indication as no political site was observed	Accepted, Weak Impact	√ Users admitted that SNS has started through politics but spread to all life aspects	√ Multinational subjects use SNS for awareness of political issues

SNS-Gov.	Not much indication as no governmental site was observed	Accepted, Weak Impact	Participants could not see any role for government over SNS, impact still to happen	Government responding to people's SNS needs
SNS-ICT	More added up followers means enhancement in ICT	Accepted, Moderate Impact	SNS affected ICT infrastructure; applications and privacy measures	Technological advancement in IT and access devices
<b>H6: There is a relationship between SNS and society's digital transformation readiness</b>				
	Gradual dependency and intensified use of digital tools across various life aspects	Accepted, Moderate Impact	Early stage in digital citizenships, e-responsibility need to be acquired	Societies with desired adequate technical setup can reach digitalization over time
<b>H7: There is a relationship of change in Culture because of SNS's usage leading to transformation to a digital society</b>				
PBP-SDR	Gradual digitization of online people's behavior	Accepted, Weak Impact	Users' interests & attitudes are changing over time via SNS use	SNS users (youth) are one of the key drivers for digital era
PUEXP-SDR	Gradual adaptation of online user experience	Accepted, Moderate Impact	Users are unsatisfied of online people behaviors and cyber attitudes	Users (basically youth) are changing Tomorrow's SNS types and features
Cultural values-SDR	Gradual change in cultural rituals via SNS	Non	There is a perceived gradual change in rituals	Cultural Values and norms are mitigated over the virtual world
<b>H8: There is a relationship of change in Environmental Contexts because of using SNS leading to transformation to a digital society</b>				
SE-SDR	Impact is clear through online users types of interaction	Accepted, Weak Impact	Social values have changed e.g. digital congratulations and condolences. Optimal platform for informal sector economic activities	Modified social aspects and economic transactions over SNS
Political-SDR	No much indication	Accepted, Weak Impact	New types of political use via SNS i.e. information war	Governance and privacy regulations
Gov.-SDR	No much indication	Accepted, Weak Impact	Gov. needs to make more purposive efforts for online engagement	Some governmental vibes towards digitization
ICT-SDR	Still more changes to be witnessed	Accepted, Weak Impact	ICT will adapt to people's ever-growing digital demand, e.g. IOT, smart cities, etc.	ICT- as a vehicle-is required to exhibit continuous development

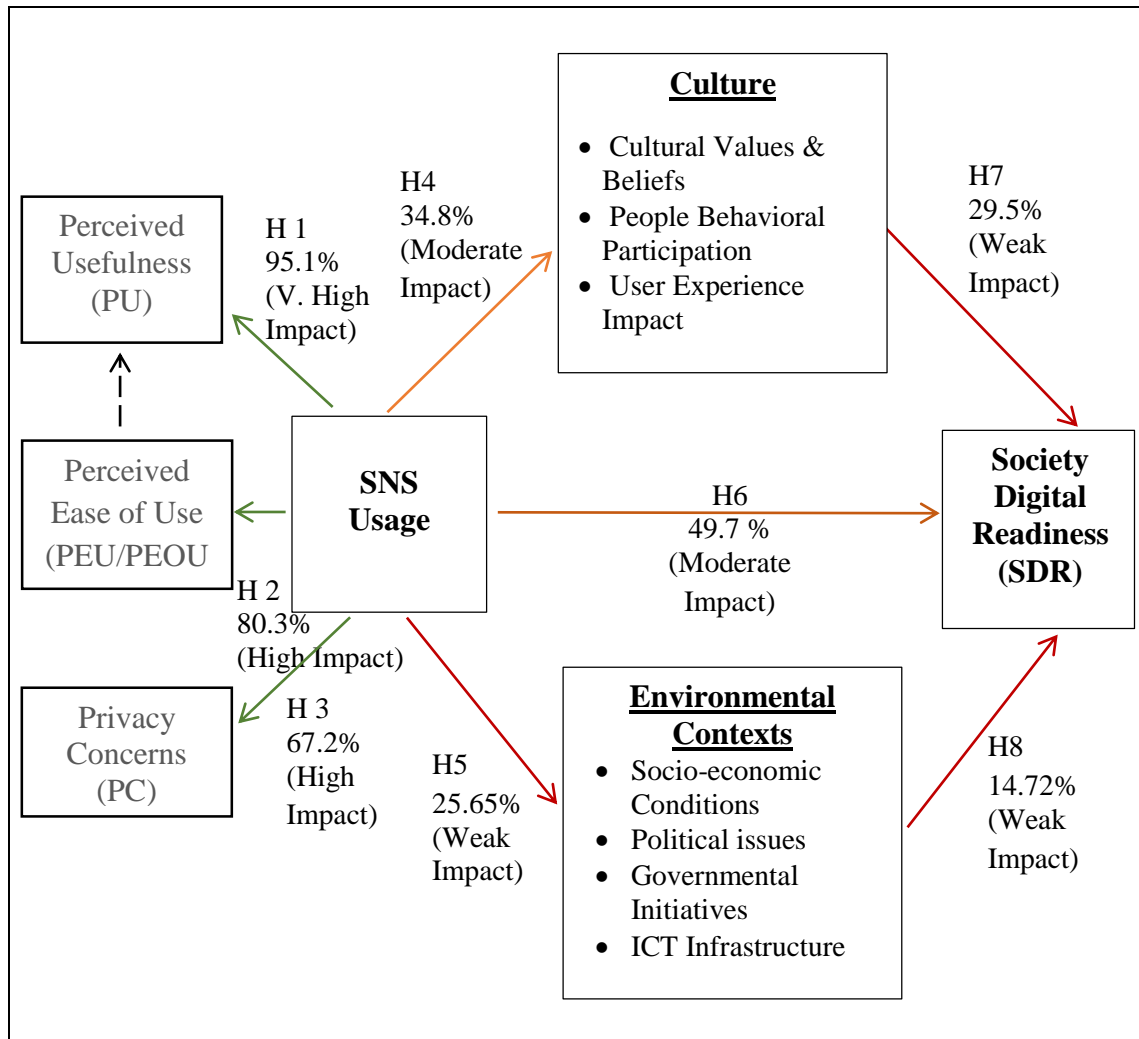


Hence, the study achieved equal contribution weights of qualitative and quantitative methods. Statistically, Digital Society Readiness has a direct positive correlation with SNS usage by an adequate ratio of 49.7% with respect to the Egyptian online community that is still in the introductory stage in SNS life cycle. In nutshell, statistical tests showed that all hypotheses have significant direct positive correlation whether between SNS and its independent variables on one side or its interacting dimensions on the other side; except culture values and beliefs construct in H7, which requires more profound study. Additionally, interview findings expressed how different types of SNS users i.e. students are mitigating Culture influence in the virtual world. Qualitatively, results deduced that online community is affected by SNS in direction of digitalization; however, the Egyptian online society need to pass through certain stages before whole digital fulfillment. Therefore, the model is accurate in describing the relationships between SNS and its internal and external variables. Consequently, the implemented research methods proved the suggested model and its hypotheses at a satisfactory level.

### 7.3 SDR Verified Assessment Model of Egypt

The application of the outcomes of the four applied data collection methods have confirmed the research suggested SDR model in its modified version (V.0.2) as depicted below.

**The Impact of SNS on Society Digital Readiness (SDR) Model**



**Figure (7-10): Verified Proposed Research SDR Readiness Model (V.0.2)**

The relationships among the dimensions and sub-constructs of the model have well represented the factors that affect and being affected by SNS towards the digital transformation of a society due to intense use of SNS. This was achieved due to strong relationships exhibited between SNS and its featured variables. The eight (8) hypotheses, (3) internal and (5) external, are well proven and verified by the applied interrelated methods. Further specialized frameworks need to address the only kept

unsatisfied sub construct of ‘cultural values and beliefs’; as it’s ‘as a series of practices and habits that are fluid, dynamic, and changing, especially as generated by intercultural communication online’ (Ess, C. & Sudweeks, F., 2001). In accordance to the outcomes of this study, specifically in interview method, the influence of culture was mitigated by youngsters (students) across nations; however, adhered to by social users at decreasing rates. This can deduce the emerging of new cultures affected by intercultural online communication.

This model was proven across various nationalities – where young generation whom is the main users of SNS was the highest participant – depicting that SNS has diffused in all aspects resulting in intense usage rate. However, the level of involvements differs across users in term of their demographics, intention of use and level of digital literacy. SNS is one of the preparative digital tool for introducing societies into the digital epoch; thus a society can’t migrate to the broad digital era without adequate widespread practicing of its tools and their associated developed norms.

## **Summary**

This chapter has integrated the four applied data collection methods through the weaving of their findings interchangeably. The integration happened through joint displays, where the researcher integrated the data by comparing and contrasting related data of each method together through a visual demonstration to draw out new insights beyond the information gained from the separate display of quantitative and qualitative results in the previous chapter (Chapter 6). This integration process paved the way for triangulation of research outcome that supported in the verification of the proposed research SDR model. Last but not the least, is the next closure chapter, Chapter 8: Conclusions and Recommendation.

## Chapter 8: Closure

### Objectives of the Chapter

- To provide a summary of the entire thesis and its organization
- To answer the research questions
- To highlight considerations for research beneficiaries
- To indicate the limitations of the research
- To discuss contribution to knowledge base
- To highlight recommendations for future research efforts
- To develop new SWOC Critique for digitalization in Egypt
- To wrap up with research's epilogue

Chapter 7 has contrasted the findings of the four implemented data collection instruments. It presented a comprehensive triangulation of the four applied methods. It concluded that findings confirmed the proposed research hypotheses thus proved the vitality of the proposed model derived from literature. This chapter concludes the entire thesis beginning with summarizing the whole study journey, recalling the research motivation and answering the research questions earlier raised in Chapter One. Then, it pinpoints how thesis's outcomes provided considerations for beneficiaries to articulate on, while illustrating the research limitations. Moreover, it details how this study augments the contribution to knowledge base and provides recommendations for future research work. Lastly, it depicts SWOC critique for SNS impact on digitizing the society of Egypt.

### 8.1 Summary of Thesis

The literature reviewed throughout this study indicated that there is a scarcity in researches focusing on the impact of intensively utilized ICT tools upon societies of the MENA region. The available countable scholarships presented a portraiture of the situation without projection of what society will transfer to nor associating SNS with the current wave of digitalization. Nevertheless, most of the digitalization models and frameworks are about theoretical presentations or lessons learnt of developed countries' success stories without highlighting developing nations' endeavors, which MENA region is a part of, except concerning few E-government applications. As for digital

marketing survey institutes, they mainly consider basic SNS's parameters on annual basis among their criteria in evaluating SNS performance in a specific society serving the commercial and marketing practices of FMCG and telecommunication multinational companies operating in that region. Likewise, MENA governments found themselves forced to deal with social networks sites for collecting information about their citizens as well as approaching them with the desired message they want to propagate; however, efforts are modest with the exception of Gulf States. In Egypt, government still needs to exert innovative genuine efforts to migrate toward the provision of seamless public-governmental digital services. Further, more studies need to spot the gradual transformation of online community to a digital society in accordance to the acknowledged intense practice of SNS, emergence of new technologies e.g. IoT and speedy global wave of digitalization to various modes of life.

Hence, this thesis sought after filling in this gap. The intention was not to initiate the research in isolation, though, to build on pervious literature then to ground the research into the context of information repository already attained for contribute to knowledge base. Accordingly, the study has followed the interpretivism paradigm to benefit from the objective approach of relying on factual and quantitative data knotted with qualitative data resulting from subjective meanings of human interaction, interests and behaviors in the surrounding environment. This approach ensured objectivity in selecting the examined dimensions, depicting its relationships and developing the hypotheses of the SDR model from related literature about SNS, IT theories and global digital transformation frameworks, then in determining the best matching data collection methods from theoretical techniques. A suggested SDR model was developed encompassing two main themes: *first*, the impact of the two essential features taken from TAM theory which were (i) utility, (ii) credibility of SNS on the usage pattern of Egyptian SNS users; *second*, the impact of SNS on the two core dimensions which were (i) Culture, (ii) Environmental Contexts for society digital readiness.

The researcher followed a building blocks technique in selecting the research data collection methods. Accordingly, observation was a valuable initial technique in gathering relevant information about this broad query in SNS field, as it served afterward in the construction of a wide scale questionnaire that allowed for in-depth investigation of (i) SNS users' social demographic characteristics, (ii) SNS usage

pattern, (iii) Attitude towards SNS, and (iv) Level of satisfaction of SNS. Then, the researcher felt the need for more excavation in the area of cultural impact as per survey outcomes, where 86 percent of respondents agreed “that SNS somehow/very likely has changed Egyptian culture”. Therefore, focus group questions were created with the aim of qualifying and quantifying the level of this impact on culture in term of digital transformation of Egyptian society. As data collection progressed, each piece of information is reviewed, compared, and contrasted across methods. By this stage, the findings of all data analysis methods have proved the eight research hypotheses of the suggested SDR model leading to shaping a final model of society digital readiness in Egypt. After verification, the researcher proceeded to generalize and endorse the proposed model through the application of the famous grounded theory technique, ‘semi- structured interviews’ with sites creators and digital media experts in Egypt as well as UK based subjects. Congruently, interview quantitative results reconfirmed the already proven hypotheses and its qualitative findings assisted in depicting SNS life cycle in the Egyptian society as well as behavioral typology of SNS users in Egypt. Throughout this knowledge curve, ultimately a theory that explained the model is inductively developed which is SNS – as an ICT tool- can assist in preparing the society for transformation to a digital one.

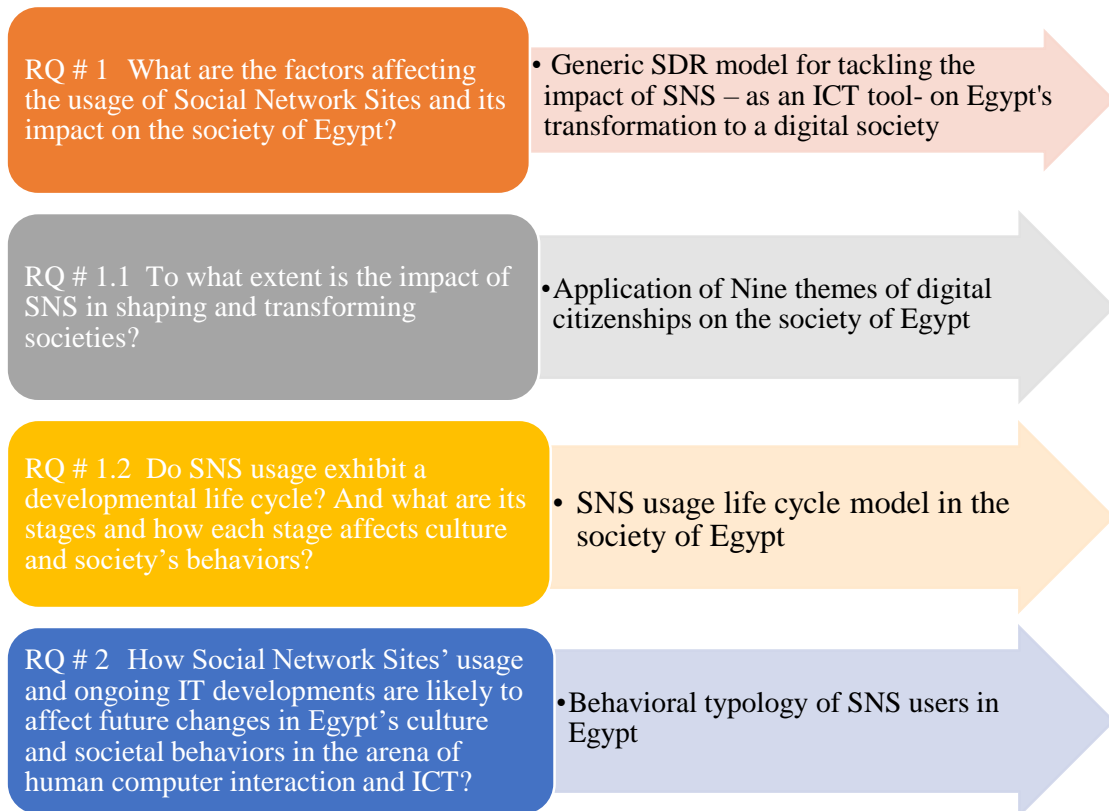
Hence, the research did not rely only on literature or secondary data in creating the SDR model but also on empirical exertion to support the researcher in understanding the context of the study. The four empirical methods were well-chosen and operated in harmony, as each served a certain knowledge objective. The approach and outcomes of this research have provided valuable information that enriched the body of knowledge in the field of human computer interaction in general and about a populous country like Egypt in the MENA region in particular. The thesis provided highlights about the future of SNS if it is purposively employed especially in light of the current GoE initiatives toward a digital sustainable economy in terms of policies reforms, the 2030 Vision Strategy and its associated ICT approaches aiming at digitalization of public services (earlier discussed in Chapter 4). Therefore, the study is an endeavor to forecast the impact of the intensive use of SNS on societies and how technology gradually diffuses people’s ways of living for steady transformation to the digital wave.

## 8.2 Answering the Research Questions

The research questions speculated at the initiation of this thesis were the following:

- RQ # 1 *What are the factors affecting the usage of Social Network Sites and its impact on the society of Egypt?*
- RQ # 1.1 *To what extent is the impact of SNS in shaping and transforming societies?*
- RQ # 1.2 *Does SNS usage exhibit a developmental life cycle? and what are its stages and how each stage affects culture and society's behaviors?*
- RQ # 2 *How Social Network Sites' usage and ongoing IT developments are likely to affect future changes in Egypt's culture and societal behaviors in the arena of human computer interaction and information communication technology?*

Herein is the fulfilment of each of the above research questions respectively;



**Figure (8-1): Research Questions mapped to Contribution to Knowledge Base**

Each of the above answers to the research questions is a standalone contribution to the knowledge repository which is deliberated in details in the upcoming section (8.5) of this chapter.

### **8.3 Considerations for Research Beneficiaries**

After answering the research inquiries, there are a number of considerations targeted to beneficiaries earlier highlighted as ‘digital transformation stakeholders’ in chapter one of the study. The following considerations are arranged in sequence of drivers for change; however, all must work simultaneously in harmony for not only to migrate smoothly to a digital society but also to reap the utmost benefit and minimize impediments of implementation of digitalization.

i. *To People of Virtual Communities,*

SNS users in Egypt is experiencing a massive learning process- since people related constructs amounted to 59% accumulated effect value as per survey findings- in SNS practice during its introduction stage with its detected positive and negative yielding. The positive vibes are the technological adoption that support creation of a digitally literate society able to use technology for its welfare and prosperity; as well as, the increased sense of social responsibility among the members of the society due to connectedness. The negative implications are the misuse, inappropriate code of conduct of some online users and lack of e-responsibilities of actions due to the absence of structured regulation in addition to the superficial quality of cyber content. Accordingly, online society of Egypt needs to consider the following;

- Applying a self-regulating responsible online code of conduct including respect for each other rights, opinions and privacy for the welfare of all interacting parties.
- Enhancing of the level of topics of discussion to be a more mature and enlightening one aiming at generating value content that will upgrade the community intellectual level.
- Converting from a content ‘consumer’ cyber community to a ‘creator’ one with the objective of focusing on internal matters for creating constructive solutions for their existing problems.



ii. *To Businesses,*

Few businesses have already taken good steps towards manipulating SNS for their commercial objectives and customer reach. As SNS is about to depart from the introductory stage of its life cycle in Egypt, enterprises have to reconsider their current digital marketing plans to adjust according to the changing matrix of SNS users;

- Need to investigate the real value of applied SNS and to associate it with social responsibility perspective rather than mere peer competition objective in order to add value.
- To capture the growing demand for e-Commerce by the Egyptian community through participating in the current wave of electronic initiatives by the government and ensuring digital trust to customers for their economic gains.
- The leading economic sectors on cyber space, are FMCG and Telecommunications, have to adopt “new business models with mature technologies and ecosystems that boost productivity by defining a new digital operating model aligned with Industry 4.0 requirements of flexibility, customer proximity, product personalization and reduced time to market” (Gonzalez et al, 2017).
- Apart from FMCG and Telecommunications sectors, it is the optimal time for more industry sectors to join the SNS race for a total synergy of nation’s economic segments. From those sectors is tourism for its influential impact on Egypt’s GDP and the best matching service sector to benefit from SNS wide reach to tourists around the globe.

iii. *To Government,*

By now, the GoE has realized that SNS cannot be further ignored after this profound impact expressed on the society of Egypt. In fact, the government construct in the SDR model was the lowest in digitalization effect value (14.4%) as per survey’s statistical findings since the recent started governmental efforts haven’t been yet realized by citizens. In the Arab region, there are already numerous experiments and applications where data from social media and the “Internet of Things” (IoT) are informing and influencing government practices as sources of big data, effectively changing how societies and governments interact (ASMR, 2017). Thus government must more

expansively participate in the scene to regulate, interact as well as benefit by considering the following;

- Changing the governmental outdated mentality through increasing knowledge of SNS platforms and its best practices for better public engagement, enhanced digital services offering and up-to-date community awareness.
- More emphasis on reforming the educational systems to raise new generation able to deal with latest technological challenges for the welfare of the country. In addition to invest in skills and competency for human capacity development as one of the key drivers for digital progression.
- Enforcement of the implementation of current 2019 e-initiatives such as e-financing, e-Health ID card, etc. across all governorates under the umbrella of Egypt Vision 2030 Strategy by concerned governmental ministries and agencies. This requires changing the internal business processes, upgrading infrastructure, regulating policies and above all enhancing employees' expertise who are running the show through training or hiring of new skillful generation.
- Continuous renovation in the technological infrastructure, which is the vehicle of ICT services (including SNS) to achieve digital social inclusion.
- In light of the current set of issued cyber laws so far, there is a necessity to have a wise governor that regulate without suppression, provide without deprivation and participate without dominance.

iv. *To Academia,*

Apart from the widely spread marketing surveys and governmental statistics, academia needs to engage in more profound studies about what after using SNS in Egypt as well as in the Middle East where paucity exists. Academia should not work in isolation to the above stakeholders; in fact, there must be harmony to create channels of information that support researchers in assessing people's perceptions and behaviors towards SNS. Therefore, academia must consider the following in researching of SNS or any influential ICT tool;

- To widen the angle, as it won't be just limited to prove the impact of SNS (or any specific ICT tool) on people but also to measure and evaluate its diffusion within all aspects of life.

- More studies about the notion of ‘digital citizenships’ need to be implemented in light of the current technological impact bearing in mind the abstract influence of culture that vary across regions to guide people for the good use of technology for their welfare.
- Need to analysis the synergy between IT applications in light of SNS - as a user interface tool- integration with other implements such as IoT, AI, etc. for users’ benefits and life satisfaction.

#### **8.4 Research Limitations**

The study employed four data collection methods over two phases of the thesis journey. Aside from the general difficulty of conducting researches and the sensitivity of gathering data in Egypt, each method possessed its specific limitations respectively;

- *In Observation*, there was difficulty in extracting this longitudinal gigantic volume of data about users’ interactions with the selected popular sites over 24 months’ duration. This was maneuvered through extraction on multiple intervals basis that consumed more time.
- *In Survey*, as per local policies, before distribution of any questionnaire in public areas, there should be a prior permission to access this public space to collect information as well as to approve the content of the questionnaire. The reluctance of participants to join surveys due to the culture of fear in sharing information coupled with the lengthy questionnaire (forty MCQ questions over four sections) could lead to less accurate answers due to fatigue and unwillingness of participants to commit to answer a large number of questions. That is why the researcher has developed bilingual versions as well as two medium of formats to provide options for participants and encourage them to answer as well as to mitigate inaccuracy effect.
- *In Focus Groups*, the idea of conducting an online WhatsApp session was a born solution for the difficulty to gather participants together in a one venue especially concerning the telecommunication executives’ session. Apart from the management of debates during discussions, which sometimes was approaching tension especially when tackling SNS online users’ unsatisfactory

behaviors among young enthusiastic participants, or regarding political issues aroused as discussion warmed up.

- *In Interviews*, there was difficulty in the arrangement of UK situated interviews as the researcher is based in Egypt. Similarly, there was dilemma in finding the appropriate digital media experts that why researcher used academic and business consultancy viewpoints to develop a comprehensive perspective.

Henceforth, the researcher tried to get as much workable information as possible from the four practiced data collection methods as well as triangulate results to deduce valid inferences.

## **8.5 Thesis' Contribution to Knowledge Base**

As per the above summarizing sections, this research adds and contributes to the given body of literature in the arena of human computer interaction with the following acumens;

1. Generic SDR model for tackling the impact of SNS – as an ICT tool- on one of the populous countries in the MENA region as Egypt for the transformation to a digital society;
2. Extension of the classification table of the phases of SNS beyond 2006 earlier developed by Boyd and Ellison dated 2008;
3. Behavioral typology of SNS users in Egypt;
4. SNS usage life cycle model in the society of Egypt;
5. Application of Mike Ripple's digital citizenship themes on the society of Egypt.

To follow is elaboration of each of the above five listed contributions respectively:

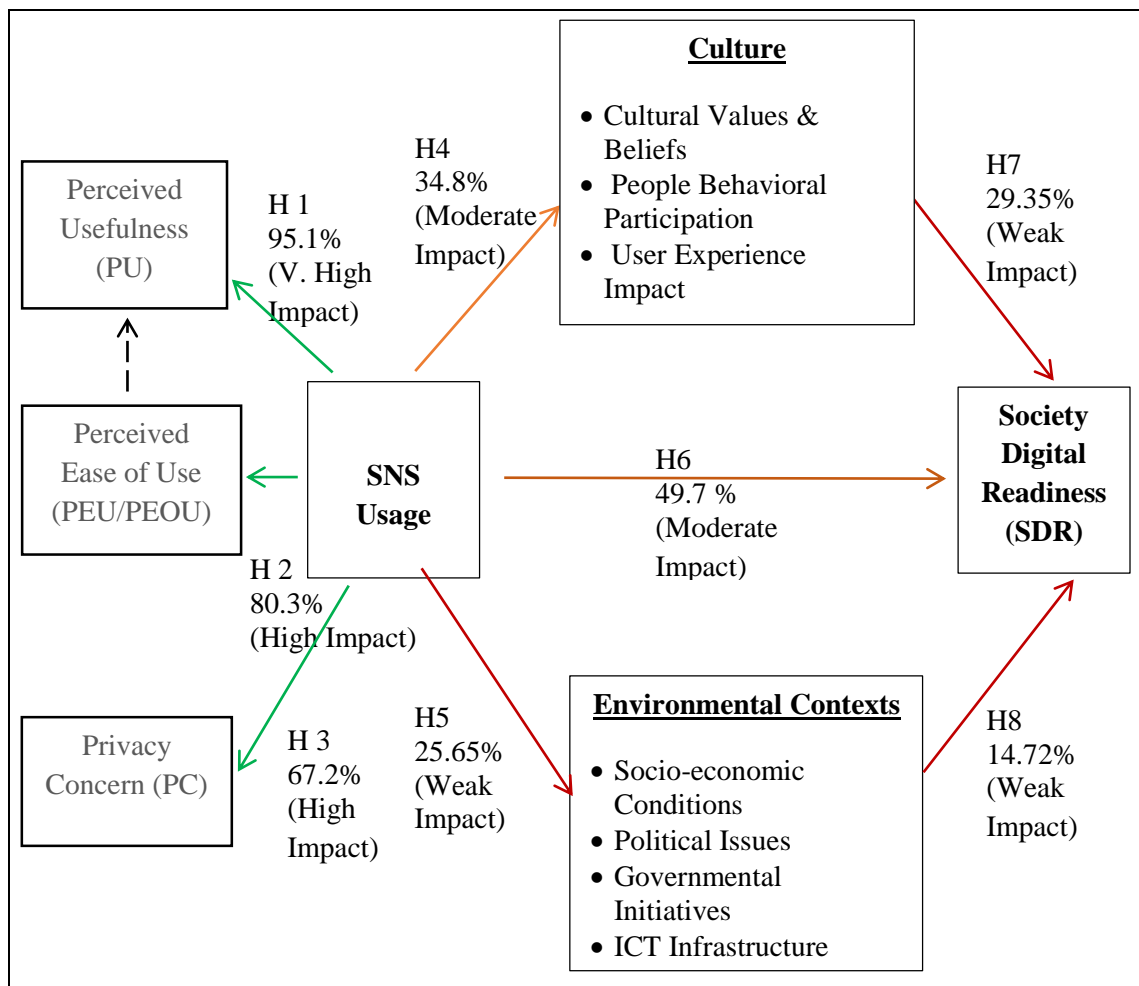
### **8.5.1 Research Proposed SDR Model for Egypt**

The verified proposed model of society digital readiness applied on Egypt- as a case study- was discussed in details in Chapter 5, then tested and proven through the four data collection methods in Chapter 6. Moreover, the SDR model was tested on UK based subjects to develop a generic model that can be applied in any context, that to

say, in developed countries as well as developing ones since it is discussing a global human computer interaction application. Digital expectations of millennials are the same regardless of their country or culture; likewise, the digital disruptors and competitive dynamics influencing digital economy are very similar across geographies (Gonzalez, A. et al, 2017).

The developed model of the research comprised of three internal independent variables affecting SNS usage which are (i) Perceived usefulness, (ii) Perceived ease of use and (iii) Privacy concerns; as well as, the two core dimensions, (i) Culture and (ii) Environmental Contexts.

### The Impact of SNS on Society Digital Readiness (SDR) Model



**Figure (8-2): Research Proposed SDR Readiness Model (V.0.2)**

In the figure (8-2) above, there are number of constructs within each core dimension to measure the impact of SNS usage on digitalization of Egyptian online society. The

model's dimensions and its constructs were extracted from EFA for validity and Cronbach's alpha was assessed for reliability measures, whereas all found to be statistically significant except 'cultural values and beliefs' construct with a non-statistically significant  $P$ -value = 0.165, indicating that further sophisticated cultural tests are required. In the present study all Cronbach's alpha values for different constructs ranged from 0.728 to 0.834 indicating very good level of internal consistency or homogeneity among the items under each dimension/construct. Moreover, CFA revealed that the construct validity of the model's parameters was appropriate.

Therefore, each hypothesis, in the above figure, is exhibited with its significance ratio and impact level. The figure depicted the strong direct relationship between SNS and its three features reflected in the intense practice of SNS in Egypt. Respectively, the moderate impact of SNS on the digital readiness of society of Egypt was supported by people's two constructs embedded in 'Culture' dimension then by the four constructs encompassed in the 'Environmental Contexts' (identification of these constructs are described in details in chapter 5 & 6). Based on all these results, the study can deduce that the model consisted of homogeneous parameters that are valid and reliable in measuring the impact of SNS on digitalization process. Respectively, the intense use of SNS by people supported by more future endeavors in 'Environmental Contexts' which is represented by government initiatives, robust infrastructures, socio-economic demands and stable regime can transform a society to a digital life over time.

### ***8.5.2 Extension of Boyd & Ellison (dated 2008) SNS's Classification Phases***

Based on literature review and understanding of the global SNS market, the researcher extended the time classification table of SNS by Boyd & Ellison dated 2008 as illustrated in the next table (8-1).

**Table (8-1): Extension of SNS's Classification by Time Period**

SNS Phases	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	YASNS* (Yet Another SNS)	FASNS** (Further Another SNS)
<b>Duration</b>	1997-2000	2001-2002	2003 –2006	2007-2019
<b>SNS Launched</b>	Six degrees, Live Journal, Asian Avenue, Black Planet, LunarStorm, MiGente	Cyworld, Ryze, Fotolog, Friendster, Skyblog	Couchsurfing, LinkedIn, MySpace, Tribe.net, Open BC/Xing, Last.FM, Hi5,Orkut, Flickr, DodgeBall, Catster, Hyves, yahoo 360, Facebook, Bebo, Cyworld, YouTube, Windows Live Spaces, Twitter, etc.	Tumblr, Instagram, Pinterest, Google+, The Sphere, Stage 32, Science Stage, Influenster, Friendica, del.icio.us, digg.com, Reddit
<b>Enabling Features/Purposes</b>	Basic Profile creation, listing of friends, then surfing friends list.	Leveraging on business relationships; personal and professional related objectives; arising of technical difficulties and social collisions, rupture of trust between users and the site	Addition of features and introduction of user generated media content sharing, and mobile based applications	Micro blogging platform (real time updates), Visual discovery tool, personalized services, Collaborative work, Online product sampling, social tagging / bookmarking, Opensource, tailored push notifications, Stories features.

\*YASNS is Clay Shirky's term (2003)

\*\*FASNS is the researcher's developed term (2019)

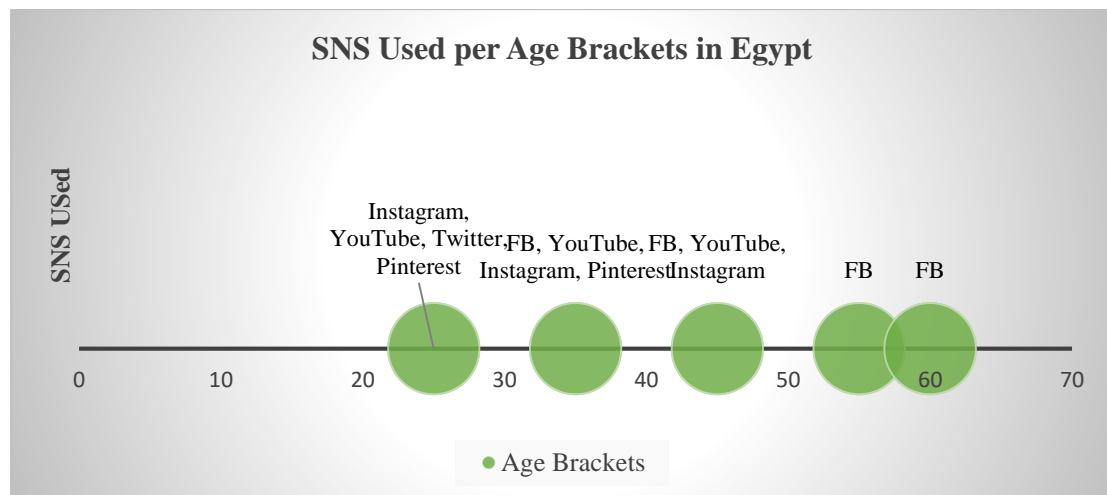
This table (8-2) was presented in chapter 2 during the literature review phase I, where the researcher articulated all the studied scholarships and decided to expand on Boyd and Ellison (2008)'s work through adding a fifth shaded column to resume classifying SNS till the present time. This fourth phase, labeled as FASNS, depicted the last 10

years' period that have witnessed a variety of SNS brands with distinctive services and specialized features. From those introduced differentiated features are micro blogging, virtual collaboration, personalized services such as stories and mentioning, social tagging, open source work, new analytics, etc. which are the core foci nowadays based on users' changing needs.

### 8.5.3 Behavioral Typology of SNS Users in Egypt

Moreover, the study contributed with the development of a conceptual model of Egyptian SNS users and their behavioral pattern forecasting the future phase. The findings of interviews have depicted the impact of SNS on users' experience yielding a gradual differentiation across Egyptians social pyramid in term of practiced SNS's brands, types of interaction and kinds of users' participation.

#### i. Age Brackets versus SNS Used



**Figure (8-3): Classification of SNS per Age Brackets**

Figure (8-3) exhibited the preferred SNS brands by Egyptians in relation to age brackets:

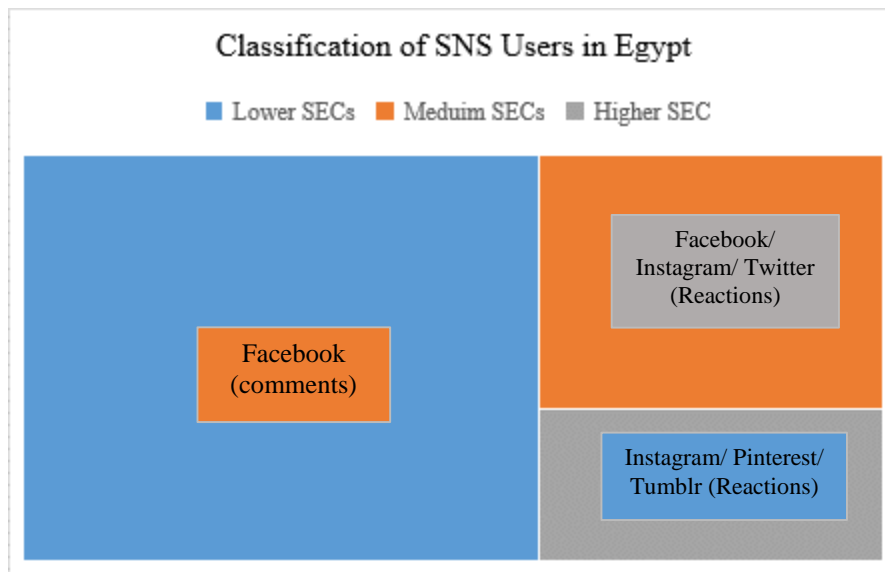
- Youngest generation between 18-29 years old prefers Instagram, YouTube and Twitter and Pinterest.
- For age bracket between 30 to 39 years old, Instagram, YouTube and Pinterest are sharing the online space with Facebook.
- Concerning age bracket between 40 to 49 years old, users still prefer Facebook with some YouTube and Instagram usage.



- Facebook, as the grandparent of SNSs, remains the comfort zone for senior Egyptian online users that are 50 years old and above.

Hence, the age associated brands notion requires dedicated studies to further evaluate the results of the born competition between SNS brands and each employed competitive advantage struggling over users' online time.

ii. *Social Economic Classes (SECs) versus SNS Brands and Types of Interaction*



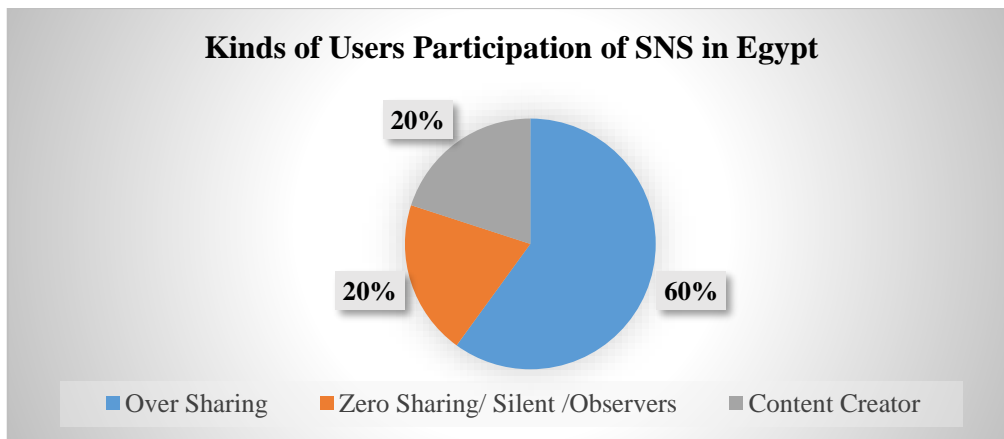
**Figure (8-4): Classification of SNS Brands across Egyptian Social Classes**

Building on pervious figure (8-3), figure (8-4) demonstrated SNS brands used with respect to Egyptian social classes and their preferred types of interaction respectively.

- Lower social economic classes (SECs) heavily practice Facebook that is used across all age brackets but with various intensity for 'Comments' i.e. massive social interaction type that is mainly in the form of online gossip.
- Medium social economic classes (SECs) utilize Instagram and Twitter besides the forerunner Facebook for 'Reactions' which is a quick type of interaction in the form of mentioning.
- Higher social economic classes (SECs) use Instagram, Pinterest and Tumblr with the elimination of Facebook from their online time for 'Reactions' as well.

Therefore, on upward climbing the Egyptian social pyramid, Facebook – the heavy comments tool- is fading away gradually to be replaced by quick visual interactive content brands such as Instagram, Twitter, Pinterest, Tumblr, etc.

iii. *Kinds of Behavioral Participation over SNS*



**Figure (8-5): Kinds of SNS Users' Participation in Egypt**

The figure (8-5) above revealed the following insights about kinds of SNS users in Egypt:

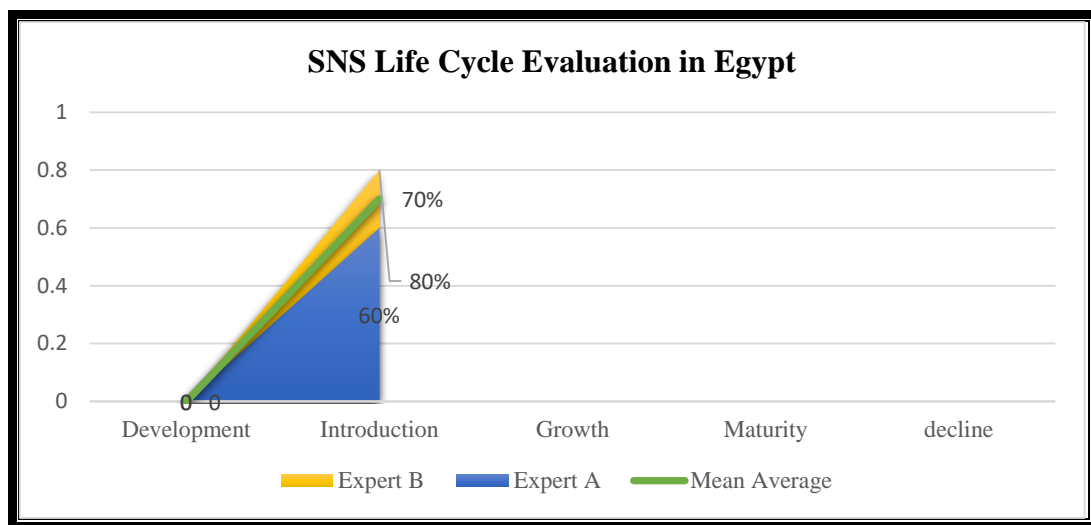
- Majority of Egyptian SNS users (60%) are 'Over sharing' of received content even though without verification. This negative users' behavior –earlier mentioned in chapter 6- has created the occurrence of fake news phenomenon propagated from SNS online platform to offline one.
- The residual percentage is equally distributed between 'Zero sharing' SNS users (20%), so called 'Silent Users or Observers'; that simply read content and do nothing.
- While, the other (20%) counted for 'Content Creator' SNS users whom are the initiator of content that 'Over sharing' users circulate and 'Zero sharing' users read. Within the Arab world there is a shortage of 'Content creators'; however, this region has its specific language, culture, civilization and conditions that bestow the opportunity for the development of profound unique content of its own.

In concluding this third contribution notion, the conceptual development model of Egyptian users' behavior depicted three worthwhile articulations. *First*, as Egyptians' new generation is currently demanding fast-paced visual interactive brands – represented by medium and high social classes-, this supports in migration from basic cyber gossip discussion to a more beneficial content. *Second*, this value content creation over time might change SNS users from 'consumer' to 'creator' of their own substances

representation. *Third*, this content creator community will definitely cultivate a more digitally literate society that migrate SNS from introductory to growth stage in Egypt.

#### 8.5.4 SNS Life Cycle Model for The Society of Egypt

One of the interview objectives was to allocate SNS phase in the society of Egypt in order to develop SNS life cycle curve during 2019. The figure (8-6) below averaged digital media experts' insights about SNS phase as per current enactment of online behaviors and level of discussion within the society of Egypt.



**Figure (8-6): SNS Life Cycle Evaluation of Egypt**

Generally, it is obvious that SNS practice in Egypt – after around eight (8) years of intense consumption- is about to depart introduction stage in direction towards growth stage as per professionals' perceptions of SNS performance. Henceforward, SNS in Egypt is passing through a prolonged introduction stage at high percentages; this can be reinforced throughout the study in term of:

- i. More than 35 million SNS users representing 70% of the connected half population of Egypt, out of which 89% is Facebook subscribers. Those 35-37 million Facebook subscribers represent 23% of MENA region subscribers covering all socio-demographics in Egypt.
- ii. Egyptian SNS users have experienced a wide range of brands more than sixteen (16) SNS as depicted in chapter 4, section 4.2.5. Currently visual content oriented brands are more appealing for Egyptian users especially youngsters that represent

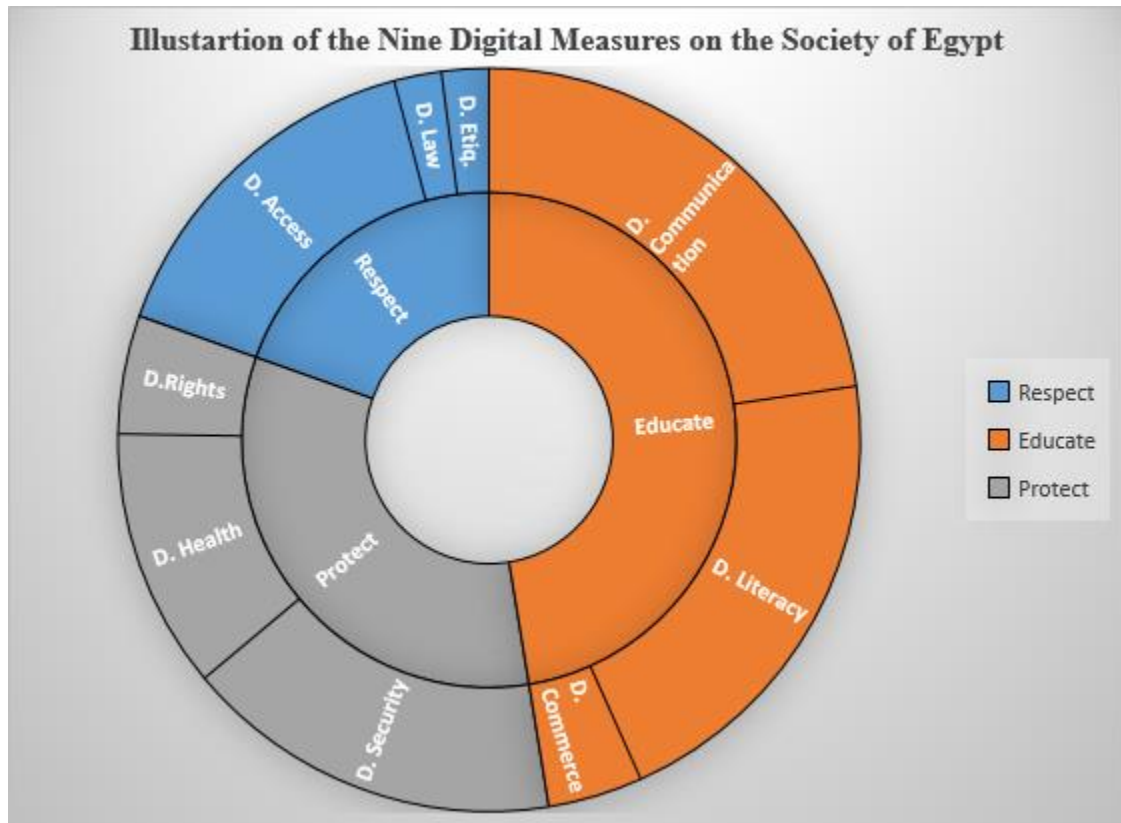
around one quarter of the population of Egypt and the highest percentage of research survey sample (45.5%).

- iii. The obvious shift in Egyptian cyber discussion from political issues during SNS initial entry back 2010/2011, followed by nowadays-practiced social and community issues in the introduction stage. This alteration is accompanied with sporadically economic exertions of social commerce on a limited scale that would lead to a gradual move to a third economical stage that may convey SNS life cycle curve towards growth stage. However, this growth stage will not be achieved without more determination and sincere efforts on part of the government to enforce the adequate policies, establish facilitating processes such as e-commerce procedures, enhance the telecom infrastructure, apply digitalization theme within governmental bureau and build digital trust. That is starting now through 2030 national strategy in Egypt.
- iv. There is a growing privacy and behavioral concerns among Egyptian SNS users, the former fear resulting from global anti privacy incidents and the latter from the local cyber negative attitudes. Those worries drove some to seek more private networked brands where a secure medium can be guaranteed to a certain extent such as: El Warka (The paper) retrieved at: <https://www.facebook.com/Gawish.Elwarka/>. This preference process is reached through a learning curve that Egyptian online users are gaining throughout practice. Alternatively, it may lead to a self-governing behavior of digital etiquette and e-responsibilities to be set in place respectively for transferring Egyptian to digital citizenships.

### ***8.5.5 Application of Nine Themes of Digital Citizenship on the Society of Egypt***

Focus group objective was to scale the society of Egypt on a digital spectrum. The researcher navigated the literature profoundly and found Mike Ripple's ERP nine (9) themes (2011) of digital citizenships, which was addressed to K-12 USA curriculum to teach young people the good use of technology in order to be a good digital citizen in the real and virtual worlds; however, can go beyond students to apply on adults. The updated definition of 'digital citizenship' is the continuously developing norms of appropriate, responsible, and empowered technology use (<http://www.digitalcitizenship.net/nine-elements.html>). These ERP themes can be classified into three broad categories, which are Educate, Respect, and Protect.

In an attempt to envision focus group’s findings (n=22) to serve the research mission, the researcher drafted the below figure (8-7) in chapter 7 for the demonstration of the level of digitalization of the society of Egypt as per SNS usage;



**Figure (8-7): Application of Nine Digital Citizenships Themes in Egypt**

Accordingly, Egyptian SNS users – represented in a sample of 22 participants of focus group sessions of multiple demographic features- have acknowledged each one of the nine themes with the following explanation;

- ***Educate Category***

Online society of Egypt has attained remarkable paces in the ‘Educate’ category as per the above sunburst of figure (8-7).

- All participants have admitted that digital communication, where digital exchange of information and news, is fully practiced at wide scales.
- Twenty out of twenty-two have expressed that digital literacy, where teaching process of technology use, is almost achieved through on-the-use

training of SNS and following the steps of earlier adopters especially that SNS is an ease to use tool.

- Four out of twenty-two have stated that digital commerce, where e-buying and selling of goods and services, is performed but at a very limited scale while the majority doesn't perform electronic transactions at all. Social commerce, in Egypt, is still on the way as per the gradual changing of online users purchasing habits as well as the encouragement of e-financing transactions by GoE.

- ***Protect Category***

The second category in achievement is Protect as per the sunburst of figure (8-7).

- Sixteen out of the twenty-two have stated that digital security, where e-precautions to guarantee one's safety, is acknowledged by some online users after series of incidents or possible threats.
- Twelve out of twenty-two have indicated that they are aware of digital health and wellness, where physical and psychological well-being in digital world, but without taking any tangible protection measures.
- Five out twenty-two have designated that digital rights and responsibilities, where one's freedom in the digital world, is mismanaged in the virtual platforms due to lack of governing laws.

- ***Respect Category***

The last category of the least fulfillment was Respect mainly due to low realization of digital law and etiquette.

- Fifteen out of twenty-two have admitted that digital access, where full e-participation in society, is mainly accomplished through the 50.8% connected Egyptians out of which 70% is SNS users practicing massive quick type of interactions; however, yet to derive valuable contents.
- Two out of twenty-two have noticed that digital law, where e-responsibility for actions, can be established by time however there was a consensus that it is currently almost lacking in the virtual world of Egypt.
- Similarly, two only out of twenty-two perceived that digital etiquette, where e-standards of conduct within their virtual networks, is greatly correlated to the absence of digital law.

Therefore, this sample of online society of Egypt practicing SNS, has acknowledged and is aware of the nine theme of digital citizenships; however, time is required for the full realization on the virtual world. Hence, the active interaction among citizens in the digital environment with the appropriate knowledge, ethics and codes of conduct with constructive purpose toward solving various problems of their society will create a responsible digital citizen.

Moreover, after deep dives of reasoning regarding all above thesis outcomes, the researcher was able to depict SNS phases in Egypt as follows:

**Table (8-2): SNS Phases in Egypt (2010-2019)**

<b>SNS Egyptian Phases</b>	<b>1<sup>st</sup> Wave</b>	<b>2<sup>nd</sup> Wave</b>	<b>“Value Creation”</b>
<b>Duration</b>	<b>2010-2013</b>	<b>2014-2018</b>	<b>2019+</b>
<b>Brands Used</b>	Facebook/Twitter	Facebook/Twitter/ WhatsApp/YouTube /Instagram	Facebook/Twitter/ WhatsApp/YouTube/ /Pinterest/Tumblr/ Reddit
<b>Types of Users</b>	Young tech savvy	All youth and middle aged	All age brackets
<b>Type of Interaction</b>	Reactions	Reactions & Shares	Reactions, Shares & Comments
<b>Aspects of Life</b>	Political turbulence	Social networking and Community work	Economical characteristics through social commerce & self-learning experience
<b>Purposes</b>	<ul style="list-style-type: none"> <li>• Lobbying for mobilization of public opinion</li> <li>• Information dissemination and shared awareness</li> <li>• Community social support in Crisis situation</li> <li>• Provision of unlimited sense of freedom</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain and enhance relationships</li> <li>• Contact Management</li> <li>• Self-promotion and public relations</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits</li> <li>• Self-construction</li> <li>• Collaborative production</li> <li>• Educational and learning purposes</li> <li>• Government-citizen interaction</li> </ul>

*Note: purposes are acquired from earlier literature narration of global SNS purposes in Chapter 2: Literature Review.*

SNS will not reach maturity stage until the community harvest the real value of this ample virtual content, through driving more economic transactions, educational learning and governmental happenings. Simultaneously, decreasing gossip and superficial miscommunication towards a more purposeful constructive content. At that time online users in Egypt will migrate to a digital literate citizenships- as per the nine themes earlier analyzed- which paves the way for safe transformation of the whole society into a digital ecosystem.

From all of the above-developed contributions, the study can make the following tentative equation for digital transformation of a society:

**Study's Proposed Digitalization Equation:**

[Competent SNS Users + Communicative Technology] \* appropriate Environmental Contexts = Informative Digital Society reflecting on all sectors of life

## **8.6 Recommendations for Future Researches**

This thesis provided the foundation for further work in number of venues and on dual scale, which can be identified and explained as below;

### **8.6.1 Worldwide Recommendations**

1. As per survey findings, measuring culture requires specialized experiment to evaluate current gradual modifications in people's value systems and beliefs resulting from using SNS whether in Egypt or in any other extensive SNS oriented country. This measuring method has to bear in mind regional specific features such as the role of religion in the life of the Arab World.
2. The application of this research SDR generic model on other neighboring countries sharing the same circumstances, language, civilization and broad culture to evaluate the impact of SNS on their societies' tendency for digitalization.



3. The longitudinal study of SNS on one of the three tackled perspectives in the SDR model; that is to say, a full investigation of SNS practice in the governmental segment in developing countries.
4. In depth endeavors for studying the role of SNS after digitalization of developing societies as communities will continue to use SNS but definitely in a different format and/or context.
5. The age associated brands notion requires dedicated studies to evaluate the results of the born competition between SNS brands and each employed competitive advantage/s struggling over users' online time.
6. The relationship between E-commerce and SNS needs more dedicated study to identify factors, disruptors, competitive dynamic and benefits of practicing e-commerce through SNS in developing countries.

#### **8.6.2 *Egypt Specific Recommendations***

1. Future studies of the progression of SNS life cycle curve within the society of Egypt after three-five years' time from the research time.
2. Future application of the nine measures of digital citizenships on the society of Egypt as per continuous SNS usage after three-five years' time from this study date to measure the progress in citizens' responsible use of technology.

## 8.7 SWOT/C Critique of Digitalization of Egypt Society

While much remains to be accomplished to transform Egypt into a digital society; however, the government has initiated ambitious plans to transfer the Egyptian population into the information society for the digital era. As per an accumulation of knowledge throughout the research journey, the thesis presents the following SWOC critique of the digitalization of the society of Egypt.

Strengths	Weaknesses
<p>1. The determination of the current governing regime in Egypt to enter the digital age There is a genuine will of the GoE to move toward a digital society proven by the launching of a sustainable development strategy; Egypt Vision Strategy 2030 (<a href="http://www.mcit.gov.eg/ICT_Strategy">http://www.mcit.gov.eg/ICT_Strategy</a>)</p> <p>2. Adequate ICT infrastructure with the supporting services Egypt has a satisfactory ICT infrastructure that is currently evolving through the gradual replacement of copper infrastructure with optical fiber in the country's national backbone network to cater for high speed Internet services. Telecom Egypt's last year rollout of fourth generation (4G) of wireless mobile telecommunications technology that significantly improved broadband services and amplified offered speeds. Also, the country has a good infrastructure of data centers, and is well positioned to grow its cloud computing industry (MCIT, 2019).</p> <p>3. Competitive ecosystem for investment in IT &amp; telecom industry</p>	<p>1. Difficulty to adjust to new changes in life (especially seniors) There is an inherent cultural preference for old ways of doing things (due to short-term orientation and restrained culture as per Hofstede's 6-Ds application on Egypt earlier identified in Chapter 2, section 2.3.3); however, youngster generation is gradually influencing this status quo.</p> <p>2. Low investment in Research and Development (R&amp;D) There is a less emphasis given for research and development practices across disciplines in Egypt; accordingly, investment is minimal in that respect.</p> <p>3. E-commerce still at infancy stage E-commerce transactions, which complete the circle of the digital economic transactions in any market, is still at its infancy in Egypt. There was some enactment of e-commerce-friendly laws, such as the e-signature law in 2004 and the consumer protection law in 2006, which have helped to pave the ground for more Egyptians' engagement in e-commerce and for growing the online consumer</p>

Securing a competitive ecosystem calling for local, regional and international investment in ICT infrastructure and the development of digital services across various sectors of the economy (MCIT, 2019).

4. Numerous GoE initiatives for the creation of a digital economy in various sectors (e.g. health, education, etc.)

Current initiatives for the creation of e-government capable of offering reliable digital public services via launching around 25 digital services per year such as notarization, renewing driving licenses, utilities and electricity, municipalities, agriculture and marriage officiants (Mohamed, H., 2019). In addition to the automation of the governmental agencies including digitizing processes like the E-Visa, Endowed Asset Management, Farmer's Card, Law Enforcement, Health Insurance, and more (Mohamed, H., 2019).

5. 49.5% Internet penetration rate out of which almost 75% is online users of SNS

Telecommunications market deregulation, coupled with large-scale measures to introduce quality ICT services increased the Internet penetration rate of 49.5 percent with the projected growth to 53.5 percent by yearend 2019 (Statista, 2019). Also have led to improved affordability of smartphones, tablets and personal computers, which achieved a jump in the numbers of Egyptians with online aptitude.

6. 101.63% mobile penetration rate and spread of smartphone devices in Egyptian market at a 28% penetration rate (Statista, 2019)

Mobile penetration in Egypt stands at 101.63 percent, out of which 35 percent is mobile Internet, which is forming a considerable market size for online activities (Yasser, A., 2017).

market (United Nations, 2017). Although Egypt boasts the largest number of credit card holders in the MENA region, albeit small as a proportion of the population, they are often reluctant to use their cards. The penetration of debit cards is rapidly expanding, but they are frequently not activated for e-commerce purchases (United Nations, 2017). By mid-2019, GoE launched e-financing campaign to encourage electronic transactions in dealing with public services.

4. Inadequate logistics service cycle especially in underprivileged regions and rural areas of Egypt

Need to improve the logistic sector, as standard service is less viable in rural and remote areas and at governorate city centers outside of Cairo or between governorates. Alternatively, to capitalize on well-established postal sector, with postal offices in nearly every part of the country (<http://www.egyptpost.org>), though this is largely untapped for e-commerce and digital services.

5. Relatively high illiteracy rate of 15.9%

Illiteracy rate stands at 15.9% (Egypt Today, 2018), which is the percentage of illiterate population between the ages of 15-35 years old. In Egypt's Vision Strategy 2030, there is an ambitious plan to diminish illiteracy to reach 7% then gradually absolute zero by 2030.

Opportunities	Challenges
<p>1. Emerging global new technologies in hardware, software and processes deployment at favorable cost and better quality (Mckinsey Global Institute, 2019) Those innovative technologies allow speedy digital implementation of ecosystems at favorable cost and better quality encouraging governments to migrate to new digital systems at manageable risk factor.</p> <p>2. The strong potential of Egypt’s large consumer population, in particular its large youth social media-savvy segment to practice latest IT applications global trends The 23% of social media-savvy youth segment in Egypt is the main driver towards digital citizenships through exploitation of the latest technological trends for better way of living.</p> <p>3. Geographical proximity to innovative hubs i.e. Europe, The United States, Far East countries Geographical proximity to innovative centers of the West and East allows Egypt the opportunity to benefit from time differences and immediacy to knowledge centers</p> <p>4. Introduction of automated robust financial systems and digitized processes in the banking and financial sector Egypt possesses a robust automated financial systems and processes which can be the foundation for a solid digital economy as per World Bank extension of Country Partnership Framework (CPF) 2019.</p> <p>5. A growing entrepreneurship digital environment adopted by the government and individuals</p>	<p>1. Relatively high population growth rate 2% per annum (Worldometer, 2019) Limited governmental resources coupled with a high population growth rate of around 2% year over year (i.e. almost 2.3 million added each year). This relatively high growth rate absorbs any foreseen developmental efforts.</p> <p>2. Relatively low GDP per capita Relatively low GDP per capita set at 3,005\$ which is 0.257 times the world average of 11,673 that makes Egypt’s ranking is 134 out of 192 countries (Statista, 2019). This modest GDP makes citizens more concerned with earning their daily living rather than engaging in latest technological practices for better quality of life.</p> <p>3. Lack of governance and enforcement of laws It is crucial in the digital working environment to enforce the governing law to create trust among citizens, maintain smooth flow of transactions, and avoid risk of abuse or fraud. Nowadays, law enforcement investigators are focusing on the electronic crimes Law especially after the hacking of personal accounts of some famous personalities. Article no. (303) of Egypt’s Penal Code stipulates that the penalty of insulting or harassing using telecommunications equipment, whether via telephone, e-mail or other means of communication on social media amounts to a fine not less than LE 500 i.e. 30\$ and not more than LE 20,000 i.e. 1,200 \$ (Ali, W., 2019).</p>

Nowadays, Egypt heavily invests in a growing entrepreneurship environment with fresh “Silicon Valley” start-ups, the Technology Innovation and Entrepreneurship Center (TIEC) in Smart Village, and a number of other innovation and incubation spaces, contributing to making Cairo a dynamic tech hub for small and medium-sized enterprises (SMEs) and tech start-ups. State-of-the-art technology parks and a large young talent pool of skilled university-educated workers who are multilingual and well trained in ICT and business skills support those venues (MCIT, 2019).

6. Creation of new populace cities that is digitally enabled

Creation of new cities that is digitally enabled boosts an opportunity for building a digital infrastructure as models for experiencing citizens’ digital interactions respectively.

7. Capacity building for an information literate society (Tae Yoo, et al, 2018)

Capacity building through spreading ICT knowledge and developing skills at different levels especially for public sector employees aiming at empowering and transforming societies through improved use of information to offer quality services.

8. Attraction of the 50% informal sector of the economy in Egypt

Digitalization allows the attraction of the informal sector of the economy, which is anticipated by the Egyptian government to be 50% (Egypt Today, 2019) to benefit from digital processes as well as fortify the overall economy of Egypt.

4. Inadequate privacy and security measures over SNS

Privacy and security issues are mutually important in the virtual world as per literature review in chapter 2. This entails robust governing rules; in addition to, conscious of digital users, that knows their rights and responsibilities towards themselves as well as their surrounding environment. SNS platforms are working on increasing security measures as per global concern. Mutually as per focus group measurements, SNS users in Egypt have to realize the urgency to develop their sense of privacy and security respectively to cope with the digital era.

5. Need for policy coordination and integration across entities of GoE

More efforts required for policy coordination across numbers of ministries and agencies that are responsible for the execution of various parts of Egypt Vision strategy 2030 for smooth speedy execution. Further, coordination should be extended between the public and private authorities as well as toward raising community awareness.

## **Summary**

This closure of the thesis has summarized the whole research journey. It has answered the research questions and provided considerations for beneficiaries. As well as, it highlighted research limitations encountered and how the research has overcome them respectively. Then it demonstrated the five contributions to knowledge base as per accumulation of all findings of the four applied data collection methods in Egypt and UK. Next, those five contributions have stimulated the sharing of recommendations for future researches. Last but not the least, experiencing of the current GoE digital initiatives combined with the knowledge gained throughout the years of the research, have inspired the researcher to conclude with a take-home SWOC critique of digitalization of the society of Egypt for concerned stakeholders' awareness and reference.

## Epilogue

The findings of this study provides not only a valuable and practical information about the role of SNS as an ICT application in the digitalization process of nations especially developing ones; but also, delivers a rich knowledge base about the evolution of SNS in Egypt and its impact on changing people's modes of life. Whereas literature proved that interpretivism was the most applicable paradigm for capturing people's behaviors, interests, perceptions and preferences; hence the study applied it to tackle human interactions with SNS. The research pursued a bottom up inductive approach adopting a matching research strategy of grounded theory intertwined with survey over two phases. The employed data research methods were resourcefully selected to test the developed research model for measuring the impact of SNS on the digital transformation readiness of the society of Egypt.

The notion of the model was induced from personal observation of the researcher of how SNS has extensively changed people's ways of living in the milieus. Then, this spur was reinforced with literature review concerning SNS performance and its influence over communities supplemented by global digital models and IT related theoretical concepts. Hence, the reap was the development of SDR model rotating around the relationships between SNS and its three independent featured variables; as well as, the two core dimensional parameters that affect and are affected by SNS resulting in digitalization of a society. The study did not only contribute to knowledge base by this generic SDR proposed model; but also, with four others SNS specific accomplishments in Egypt. Besides, providing couples of future recommendations on the global and local scale for interested academia pursuing the field of human computer interaction.

Results of the study emphasized that countries will not be able to take advantage of what new technologies can bring without competent knowledgeable digitally literate users (citizens). Hence, the key driver towards digitalization is the human capital of a nation supported with solid economy that can guarantee robust scalable telecommunication infrastructure, firm governing regulations, advanced financial processes and stable political regime. Altogether is shaping the digital ecosystem of a society in the online world over time.

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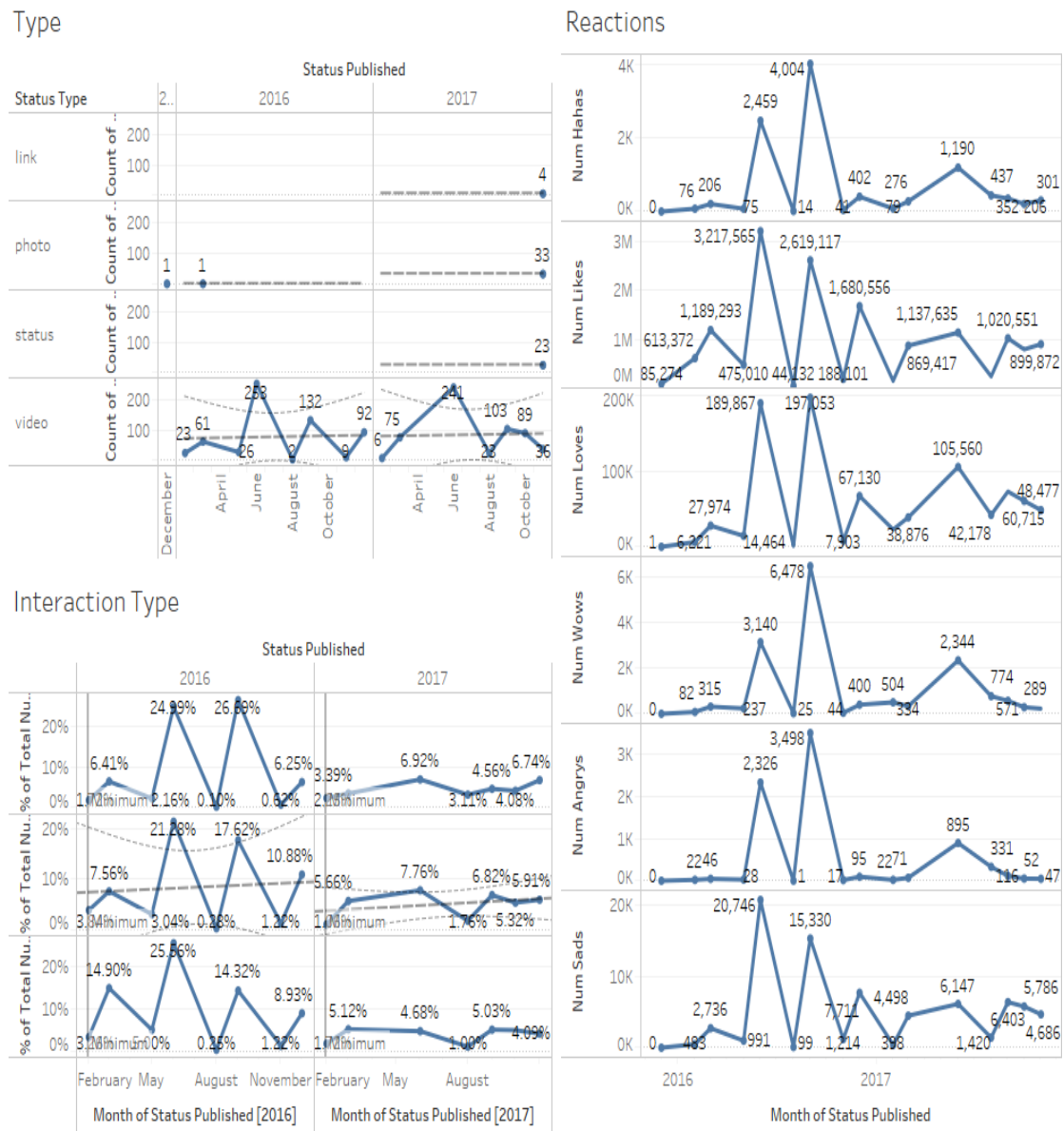


## Appendices

### Appendix A: Observational Tableau Illustration of the Seven Facebook Sites

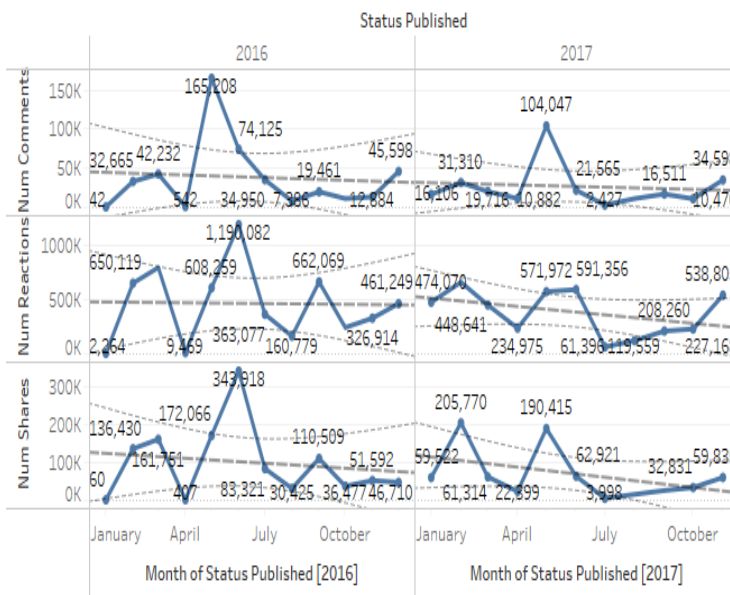
To follow are illustrative graphs for the analysis of observation of the selected seven sites categories in term of volume of types of post (link, photo, status, videos) and types of interactions (reactions, comments, shares) as well as breaking down reactions into (Likes, Loves, Hahas, Wows, Sads, Angrys)

#### 1. Celebrity, Mostafa Hosny (Religious Caller) (<https://www.facebook.com/MustafaHosny/>)

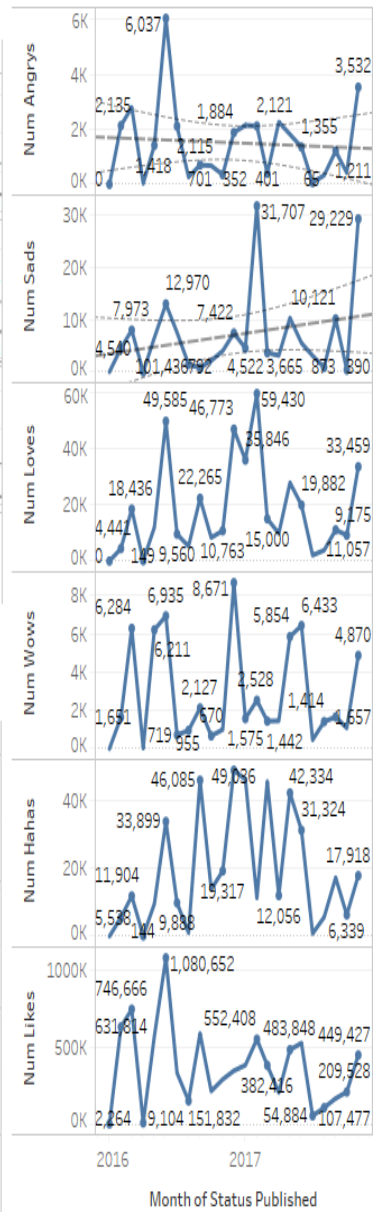


2. Media, MBC (<https://www.facebook.com/MBCMsr/>)

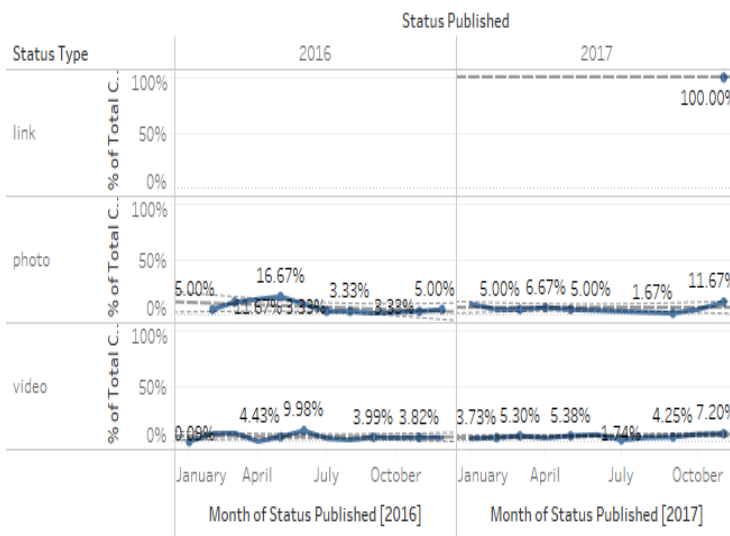
Interaction Type



Reactions



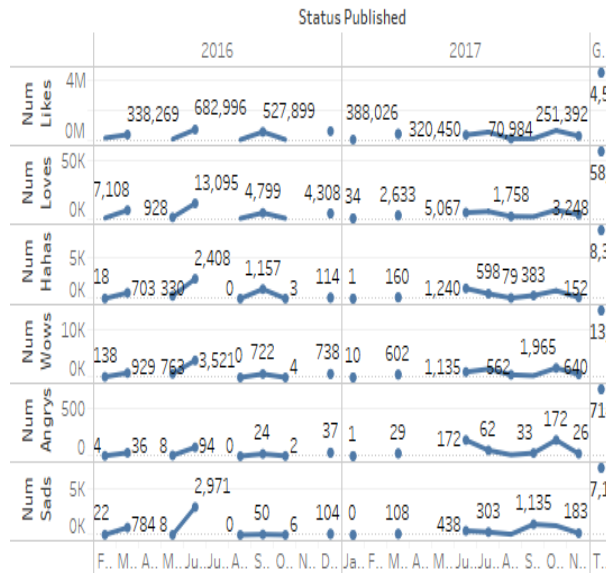
TYPE



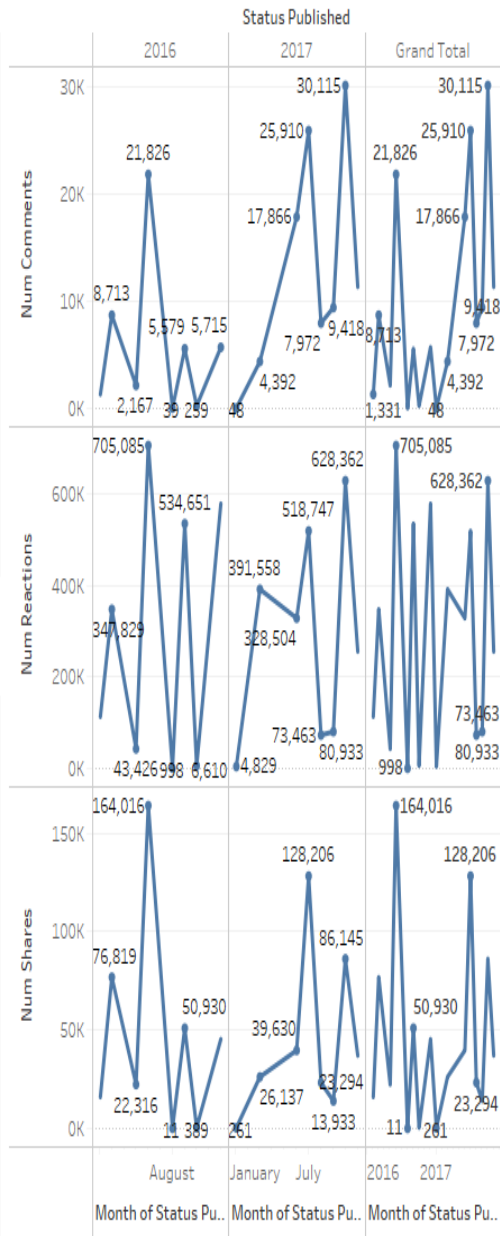


### 3. Community, Daily Medical Information (<https://www.facebook.com/DailyMedicalinfo/>)

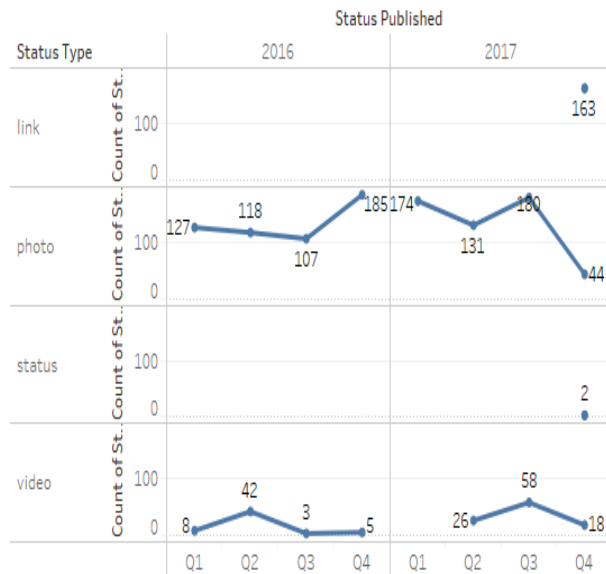
Reactions



Interaction Type

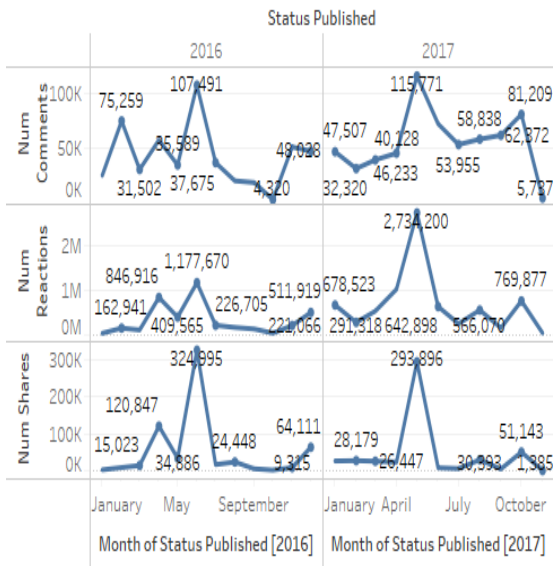


Type

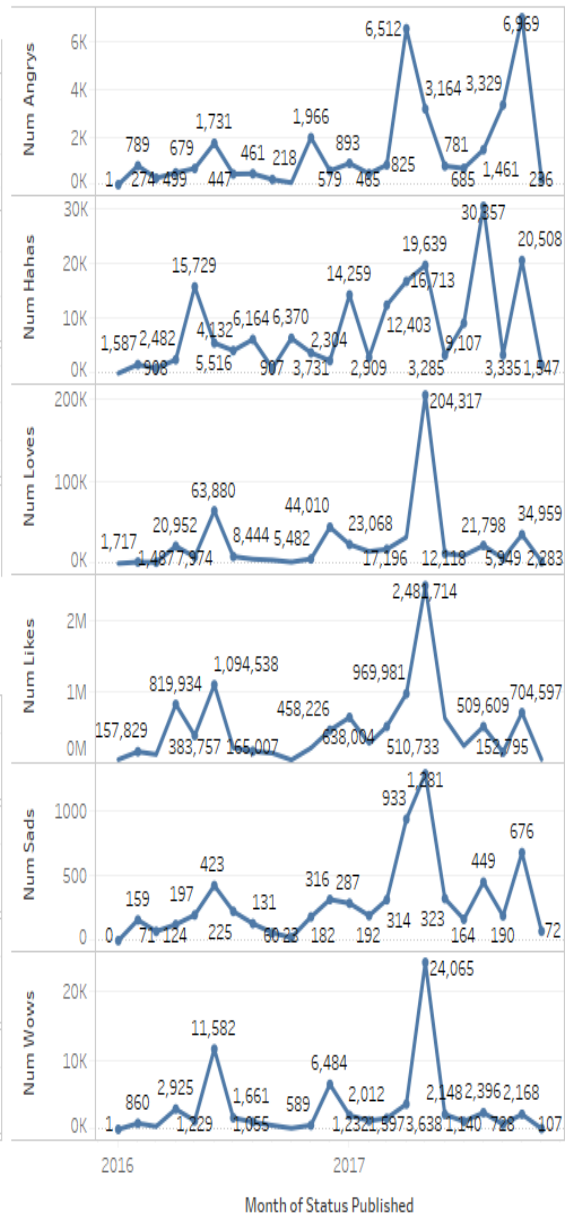


4. Business brands, Vodafone Egypt  
[\(https://www.facebook.com/Vodafone.Egypt/\)](https://www.facebook.com/Vodafone.Egypt/)

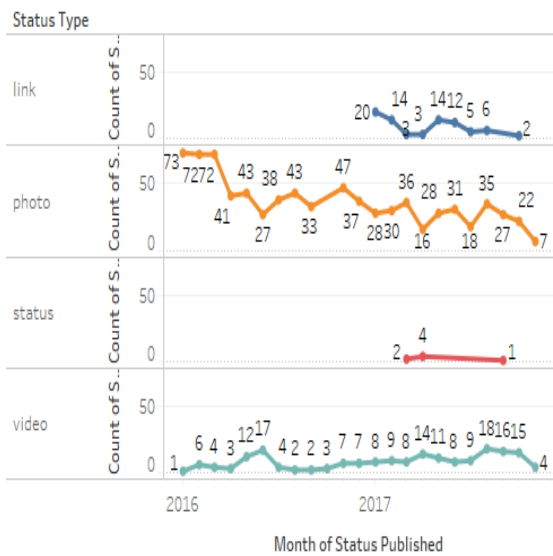
Interaction Type



Reactions

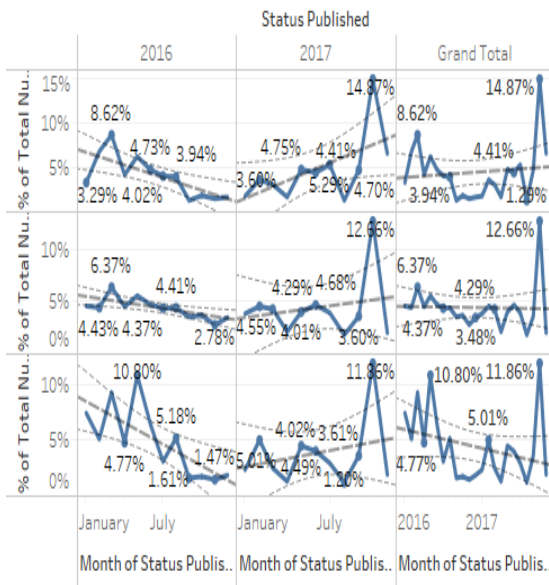


Type

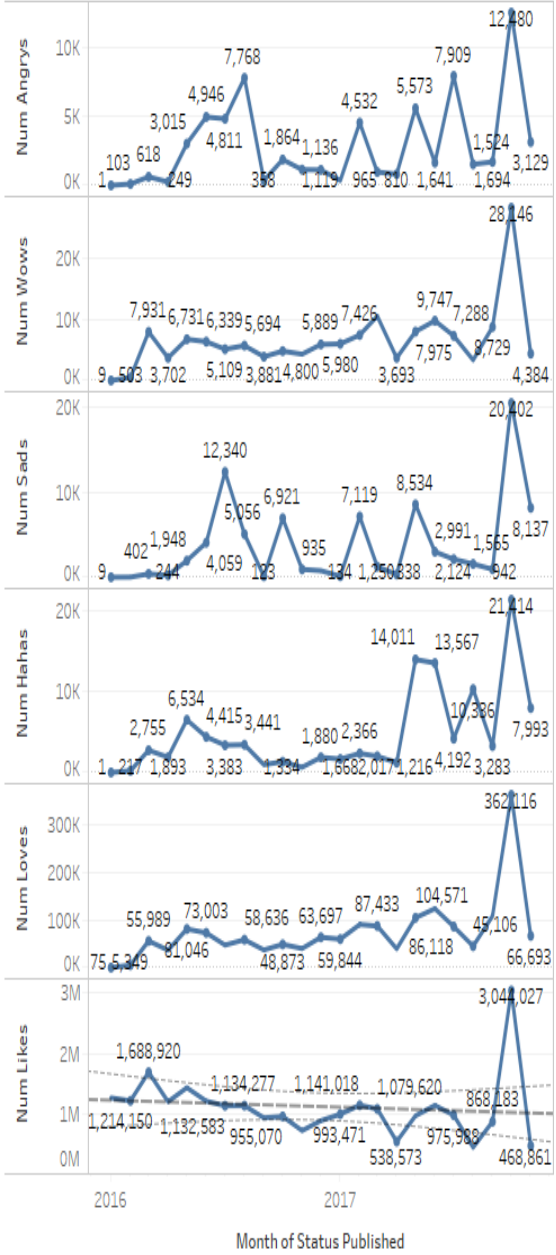


5. Sports, AL Ahly<sup>1</sup> Club (<https://www.facebook.com/Officialahlysc/>)

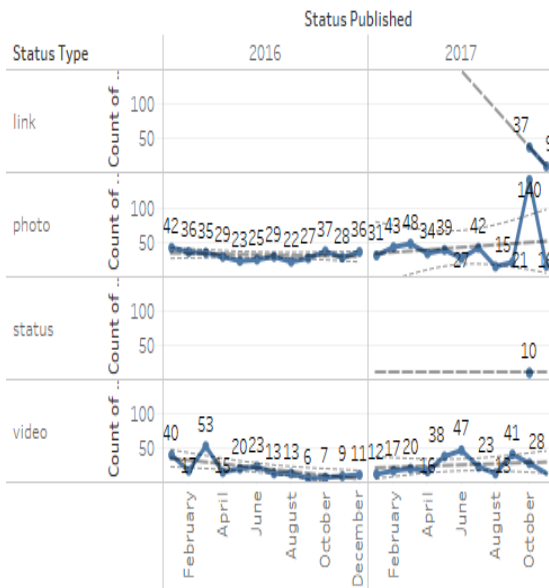
Interaction Type



Reactions



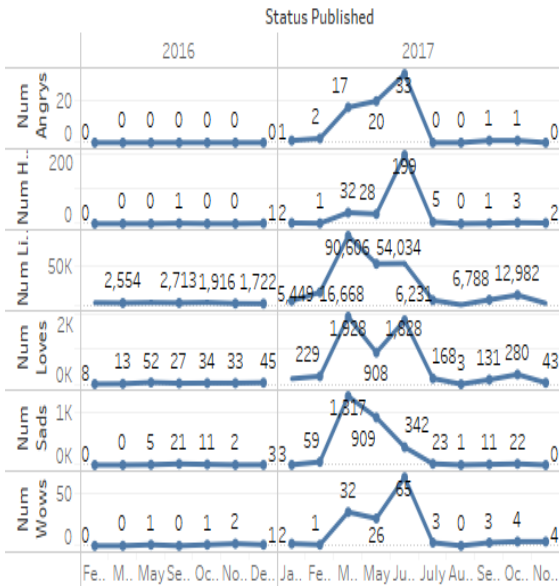
Type



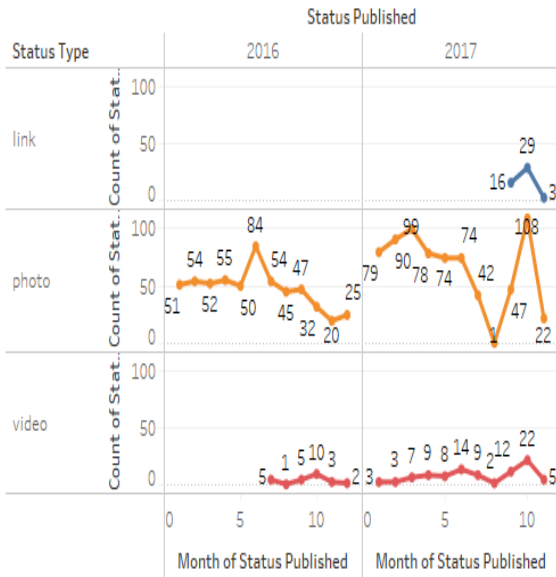
<sup>1</sup> AL Ahly Club, its football team is the 2<sup>nd</sup> in ranking world wide

**6. Places, AFNCI- Association of Friends of the National Cancer Free Initiative**  
[\(https://www.facebook.com/AFNCI.officialpage/\)](https://www.facebook.com/AFNCI.officialpage/)

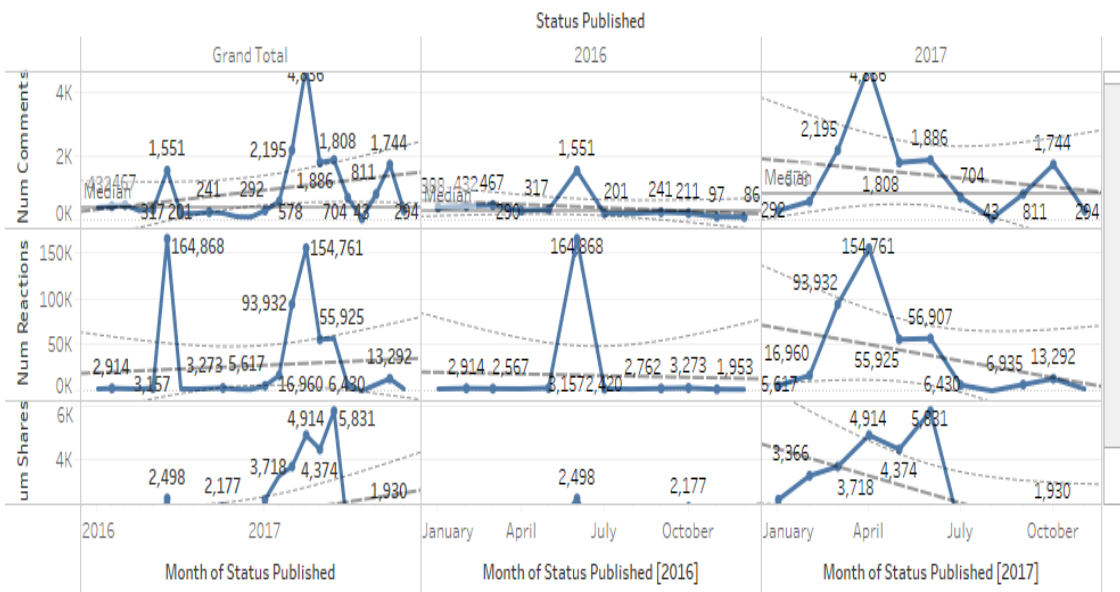
AFNCI Reactions



Type



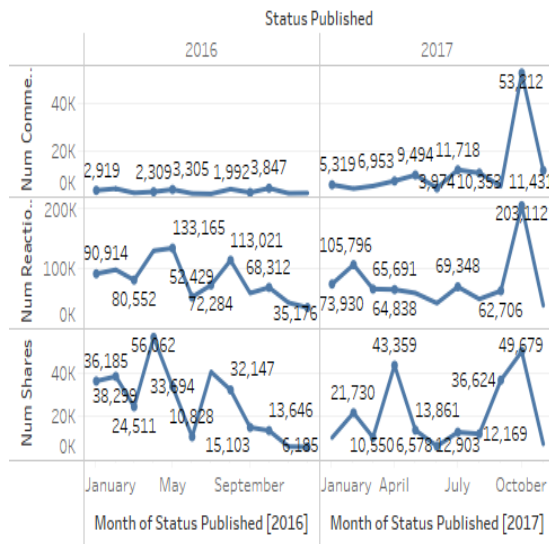
Interaction Type



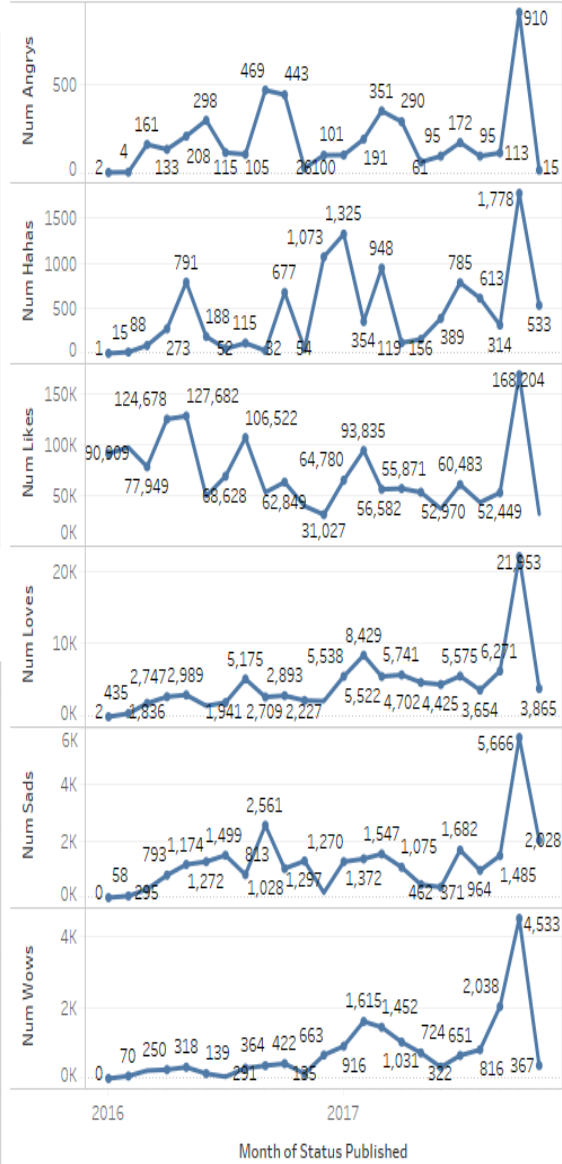
## 7. Special Group Sites, Tagrba (Meaning Experience)

<https://www.facebook.com/Tgrba.News/>

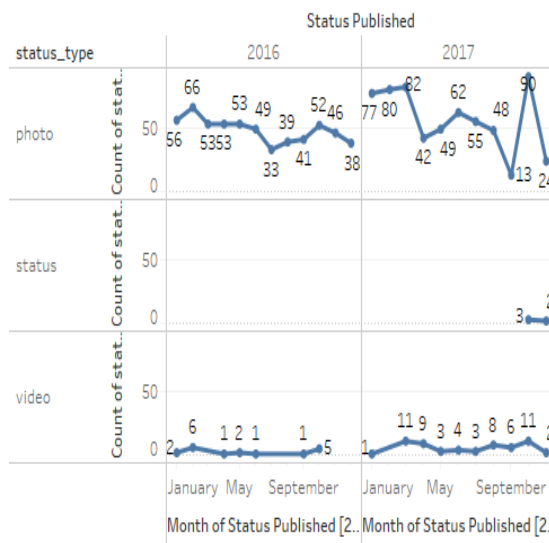
### Interaction Type



### Reactions



### Type



## Appendix B: Survey Template

### Survey about the impact of Social Network sites on Egyptian Society

#### Opening sentence

You are being invited to take part in a survey for an academic research study. Social networks sites (SNS) are websites that function like an online community for Internet users who share common interests. The survey is designed to study the impact of SNS on societies and its implications on the Egyptian's lifestyle and culture.

1. What is your gender?

Male       Female

2. What is your age?

Below 18       18-29  30-39  40-49  50-59  60+

3. What is your relationship status?

Single  Engaged       Married       Widowed

4. What is your geographic distribution?

Greater Cairo       Giza       Alexandria       Upper Egypt       Lower  
Egypt       Sinai

5. What is your academic background?

No School       Primary Education       Secondary Education       Higher Education  
(Undergraduate)  Higher Education (Postgraduate)

6. What is your occupation?

Unemployed       Part time employment       Full time employment       Studying       Retired

7. What are the most common used devices in accessing social sites? (You can choose more than one)

Smartphone       Tablet       Laptop       PC

8. What is the most common used browser?

Google Chrome       Mozilla/Firefox       safari       Internet Explorer        
Others

### Questions related to the usage of Social Networks Sites (9-20)

9. Provide your view of how much you think you are using the following sites?

	Not at all	Rarely	Sporadically	Frequently	All the time
Facebook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You Tube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instagram	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LinkedIn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pinterest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (can add 3 )					

10. Tick all of the following that apply as reasons for starting using social sites:

To find information  
friends

To know latest News

To make new

To keep in touch with family and friends  
contacts

To play games

To make professional and business

Others (plz specify) \_\_\_\_\_

11. How long have you been using Social sites?

Less than a month

1-6 months

7 -12 months

1-3 years

3+years

12. How many times do you access Social sites?

Several times a day

Once a day

once a week

once a month

Less often

13. On average, how much time do you spend daily on social sites?

Less than an Hour

1-3 hours per day

3-6 hours per day

6-9 hours per day

more than 9 hours per day

14. At what time of the day you use social sites?

Morning

Afternoon

Evenings

15. From where you access social sites the most?

At home

At work

At university

All above

16. What do you mostly use these sites for? (you may select more than one answer)

	Not at all	Rarely	Sporadically	Frequently	All the time
Finding Information & News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Networking and social activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For professional use and business contacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning purposes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entertainment (playing games/ listen to music/etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To share experience and opinions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support for public issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others: -----					

17. How many contacts/friends do you have on social sites? (ref: <https://www.surveymonkey.com/r/LMWLMLS>)  
 Fewer than 50    51- 100    101-200    201-300    300+

18. What information you include on your social sites profile? (ref: <https://www.surveymonkey.com/r/LMWLMLS>)

Email	Town/City	Pictures	Interests
Real name	Status	Videos	Religion
Hobbies	Mobile	Date of Birth	Others

19. Who do you speak to the most through using social sites?

	Not at all	Rarely	Sporadically	Frequently	All the time
Close friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Co-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People that live far away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strangers/ People you do not know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others -----					



20. Social sites usage affect .....

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Social sites have positive impact on social relationship and society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social sites have an impact on success of business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social sites form a great channel of communication between government/ regulatory bodies and people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social sites have facilitated political activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Questions related to attitude towards social networks sites (21- 29)

21. What is the most type of post you make on social sites?

	Not at all	Rarely	Sporadically	Frequently	All the time
Photo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Link	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please indicate the most interaction type you perform on social sites

	Not at all	Rarely	Sporadically	Frequently	All the time
Likes Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hahas Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wows Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loves Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sads Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Angrys Reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Please indicate the most profile related activities you perform

	Not at all	Rarely	Sporadically	Frequently	All the time
Status update	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal photos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal Videos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Please indicate the type of comments or discussions you most probably will respond to

	Not at all	Rarely	Sporadically	Frequently	All the time
Social issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educational and learning issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technological issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. What are the following reasons that make you like a certain social site?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Nature of Topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of Acquaintances/friends of You	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level of Interaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of the page technical design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. What are the following reasons that make you dislike a certain social site?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Nature of Topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of Acquaintances/friends of You	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level of Interaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of the page technical design					
Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. Which of the following tools consume most of the time you spent online?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Social Networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
email	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multimedia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Portals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New/Information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. If you have stopped using for a period of time, how long was this period?

Never       1-3 days       1 week       1 month    1-6 months    7-12 months    12+ months

29. Why have you stopped using sites?

	Not at all	Rarely	Sporadically	Frequently	All the time
Lost interested in content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Busy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Privacy issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste of Time					

	Not at all	Rarely	Sporadically	Frequently	All the time
Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Questions related to level of satisfaction towards social networks sites (30- 40)**

30. Please rate Social sites that you are using based on the following attributes:

Attributes	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I perceive it as an useful tool in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perceive it as an easy to use tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perceive it as relevant to my needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust it will not use my personal information for any other purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that the privacy of my personal information is protected	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would continue to use it regardless of its privacy policy if it helps me stay in touch with friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would continue to use it regardless of its privacy policy if it is popular	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. Would you say that you are concerned about the privacy of the following information you submit on social sites?

	Strongly Disagree	disagree	Neutral	Agree	Strongly Agree
Personal history	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gossip between friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intimate secrets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lifestyle related (e.g. photos, blogs, video, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional / work related information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Religious / political beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

32. Would you say you are satisfied from using social sites?

Strongly Disagree       Disagree       Neutral       Agree       strongly agree

33. Please indicate your level of satisfaction with the following attributes of social sites

Attributes	Very dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Very satisfied
I'm satisfied with the layout feel and look	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm satisfied with topics of discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm satisfied of people's online behaviors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm satisfied of privacy measures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm satisfied with network connectivity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm satisfied that it facilities my life and fulfill my needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have become a happier person	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have become a more sociable informed person	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

34. I would continue using social sites in the future

Strongly Disagree       Disagree       Neutral       strongly agree       Agree

35. I would recommend using social sites to a friend/colleague/ relative

Strongly Disagree       Disagree       Neutral       strongly agree       Agree

36. Now after using Social sites, do you think of it as something you need or you can live without?

Definitely Don't Need       Probably Don't Need       Neutral       Probably Need       Definitely Need

37. Do you have any suggestions for improving the use of social sites?

TYPE
------

38. Choose ONE of the following to describe your usage type of social sites.....

Classification Name	Social Butterflies	Explorers	Achievers	Escapists	Pragmatics
Definition	Highly sociable people	People always looking for novelty	Leaders, Social, intellectual or professional people	People longing for sociability	People with minimal usage, necessity usage
You					

Source: TNS Global (2015). The ASMIS Social Media MENA Report In Arab Social Media Influencers Summit.

39. How does online networking affect social life of Egyptians? (taken from survey <https://www.surveymonkey.com/r/LMWLMLS>)

- Does not have an effect on face to face communication
- Somewhat has an effect on face to face communication
- Replaces most face to face communication

40. How likely those social sites have changed the Egyptian culture and way of doing things?

- Very unlikely    Somewhat unlikely    Neutral    Somewhat likely    Very likely

\*\*END\*\*

## Appendix C: Factor Analysis for Constructs of the suggested Model

### Factor Analysis for Perceived Usefulness (PU)

#### Exploratory factor analysis (EFA) for Perceived Usefulness (PU) construct

	Component						
	1	2	3	4	5	6	7
Per Use Type 1	.246	-.137	<b>.549</b>	.164	.340	.074	-.010
Per Use Type 2	.329	-.013	.354	.135	<b>.640</b>	.064	.030
Per Use Type 3	.114	-.062	.050	-.065	<b>.781</b>	.101	.018
Per Use Type 4	.267	.010	.271	.004	<b>.649</b>	-.003	.026
Per Inter Type 1	.262	-.001	<b>.733</b>	-.003	.031	.129	.031
Per Inter Type 2	<b>.694</b>	.032	.497	-.026	-.078	-.049	.128
Per Inter Type 3	<b>.817</b>	.012	.168	.090	.135	-.024	.189
Per Inter Type 4	<b>.572</b>	.026	<b>.549</b>	-.044	.069	.124	.141
Per Inter Type 5	<b>.778</b>	-.164	-.005	.050	.367	.045	.173
Per Inter Type 6	<b>.825</b>	-.174	.045	.071	.275	.106	.080
Per Inter Type 7	.004	.100	<b>.650</b>	-.025	.178	.151	.251
Per Inter Type 8	-.048	.010	<b>.670</b>	.047	.490	.097	.075
Per Quit 1	-.099	<b>.811</b>	-.120	.062	.080	.055	-.109
Per Quit 2	.054	<b>.766</b>	.025	-.212	-.054	.103	.127
Per Quit 3	-.155	<b>.851</b>	.071	-.021	-.140	-.036	-.024
Per Quit 4	.197	.392	-.210	<b>.503</b>	.214	-.004	-.256
Per Quit 5	.008	<b>.784</b>	.054	.086	-.080	-.203	-.167
Per Quit 6	-.202	<b>.502</b>	.118	.311	.278	-.081	.383
Per Use Attribute 1	-.004	-.186	.034	.369	.182	<b>.780</b>	.031
Per Use Attribute 2	-.001	.025	.136	.017	.064	<b>.891</b>	-.112
Per Use Attribute 3	.133	.041	.240	.200	-.030	<b>.770</b>	.209
Per Use Attribute 4	.062	-.055	.057	<b>.901</b>	-.066	.201	-.017
Per Use Attribute 5	.024	-.019	.066	<b>.913</b>	.013	.211	.005
Per Use Attribute 6	.255	-.044	.184	-.168	.117	.095	<b>.840</b>
Per Use Attribute 7	.310	-.115	.116	.047	-.053	-.012	<b>.823</b>

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for Perceived Usefulness (PU) construct resulted in elimination of Question (22 – d: Please indicate the most interaction type you perform on social sites [Loves Reaction]). Confirmatory factor analysis resulted in 7 dimensions of PU construct.

**Confirmatory factor analysis (CFA) for Perceived Usefulness (PU) construct**

	Component						
	Quit	Inter Type	Use & Inter Type	Use Att. A	Use Type	Use Att. B	Use Att. C
Per Use Type 1	-.134	.249	<b>.541</b>	.160	.346	.081	.008
Per Use Type 2	-.011	.330	.342	.134	<b>.648</b>	.068	.043
Per Use Type 3	-.062	.107	.027	-.060	<b>.800</b>	.097	.029
Per Use Type 4	.015	.297	.306	-.004	<b>.615</b>	.001	.006
Per Inter Type 1	.003	.279	<b>.759</b>	-.012	.004	.139	.028
Per Inter Type 2	.035	<b>.686</b>	.488	-.031	-.079	-.039	.149
Per Inter Type 3	.018	<b>.817</b>	.168	.084	.126	-.015	.201
Per Inter Type 5	-.159	<b>.786</b>	.002	.044	.351	.050	.175
Per Inter Type 6	-.168	<b>.841</b>	.062	.062	.251	.114	.081
Per Inter Type 7	.102	.008	<b>.658</b>	-.028	.168	.157	.250
Per Inter Type 8	.011	-.045	<b>.667</b>	.047	.493	.100	.081
SNS Quit 1	<b>.808</b>	-.114	-.143	.065	.099	.053	-.102
SNS Quit 3	<b>.769</b>	.063	.046	-.218	-.075	.106	.113
SNS Quit 4	<b>.851</b>	-.162	.065	-.022	-.133	-.034	-.022
SNS Quit 5	.393	.209	-.199	<b>.500</b>	.203	-.003	-.267
SNS Quit 6	<b>.784</b>	.007	.054	.084	-.080	-.200	-.167
SNS Quit 7	<b>.504</b>	-.195	.129	.313	.268	-.083	.363
Per Use Attribute 1	-.185	.001	.037	.366	.179	<b>.781</b>	.027
Per Use Attribute 2	.023	-.005	.132	.015	.064	<b>.892</b>	-.112
Per Use Attribute 3	.041	.119	.223	.200	-.021	<b>.773</b>	.219
Per Use Attribute 4	-.053	.071	.064	<b>.898</b>	-.072	.204	-.022
Per Use Attribute 5	-.019	.021	.055	<b>.915</b>	.022	.211	.006
Per Use Attribute 6	-.041	.235	.159	-.162	.132	.095	<b>.855</b>
Per Use Attribute 7	-.109	.307	.114	.048	-.057	-.008	<b>.826</b>

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.



### Factor Analysis for Perceived Ease of USE (PEU)

#### Exploratory factor analysis for Perceived Ease of Use (PEU) construct

	Factor					
	1	2	3	4	5	6
Per Use Type 1	.090	.494	.067	.358	.327	.241
Per Use Type 2	.179	.180	.064	<b>.708</b>	.175	.253
Per Use Type 3	.158	.106	.116	<b>.804</b>	-.044	-.040
Per Use Type 4	.186	.328	.011	<b>.602</b>	.084	.167
Per Inter Type 1	-.033	-.021	<b>.825</b>	.169	.184	.053
Per Inter Type 2	.020	.177	<b>.854</b>	-.021	-.088	.001
Per Inter Type 3	.090	.185	<b>.760</b>	.049	.189	.069
Per Inter Type 5	.074	.054	.145	.050	<b>.904</b>	.019
Per Inter Type 6	.070	.013	.088	.078	<b>.920</b>	.069
Per Inter Type 7	.071	.082	.085	.089	-.030	<b>.900</b>
Per Inter Type 8	.081	.006	.020	.143	.130	<b>.883</b>
Per Inter Type 1	.223	<b>.739</b>	.137	.063	.045	.016
Per Use Attribute 1	<b>.656</b>	.448	-.012	-.030	.008	.181
Per Use Attribute 2	<b>.815</b>	.150	.024	.049	.113	.145
Per Use Attribute 3	<b>.661</b>	.415	.050	.054	.085	.096
Per Use Attribute 4	<b>.789</b>	.028	-.041	.314	.015	-.001
Per Use Attribute 5	<b>.795</b>	.024	.087	.238	.020	-.084
Per Use Attribute 6	.132	<b>.733</b>	.121	.120	-.045	.043
Per Use Attribute 7	.102	<b>.702</b>	.088	.317	.029	-.045

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for Perceived Ease of Use (PEU) construct resulted in elimination of Question (21 – a: What is the most type of post you make on social sites? [Photo]). Confirmatory factor analysis resulted in 6 dimensions of PEU construct.

### Confirmatory Factor Analysis for Perceived Ease Of Use (PEU) Construct

	Factor					
	Use Att. A	Use Att. B	Inter Type A	Use Type	Inter Type B	Inter Type C
Per Use Type 2	.210	.118	.090	<b>.696</b>	.144	.247
Per Use Type 3	.131	.133	.100	<b>.817</b>	-.023	-.030
Per Use Type 4	.200	.309	.019	<b>.604</b>	.081	.175
Per Inter Type 1	-.040	-.023	<b>.823</b>	.173	.184	.050
Per Inter Type 2	.028	.163	<b>.859</b>	-.018	-.095	-.004
Per Inter Type 3	.101	.166	<b>.766</b>	.050	.182	.066
Per Inter Type 5	.071	.063	.140	.055	<b>.916</b>	.031
Per Inter Type 6	.072	.012	.088	.080	<b>.926</b>	.079
Per Inter Type 7	.075	.078	.082	.093	-.025	<b>.905</b>
Per Inter Type 8	.080	.008	.013	.148	.138	<b>.889</b>
Per Inter Type 1	.258	<b>.721</b>	.147	.064	.045	.030
Per Use Attribute 1	<b>.697</b>	.382	.012	-.028	-.016	.174
Per Use Attribute 2	<b>.826</b>	.107	.032	.062	.104	.136
Per Use Attribute 3	<b>.695</b>	.357	.070	.059	.067	.090
Per Use Attribute 4	<b>.771</b>	.017	-.052	.328	.021	-.010
Per Use Attribute 5	<b>.768</b>	.029	.068	.258	.035	-.090
Per Use Attribute 6	.134	<b>.774</b>	.101	.130	-.012	.066
Per Use Attribute 7	.103	<b>.740</b>	.072	.327	.060	-.020

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### Factor Analysis for Privacy Concern (PC)

#### Exploratory factor analysis for Privacy Concerns (PC) Variable

	Component						
	1	2	3	4	5	6	7
PC Act 1	-.028	.116	.161	<b>.731</b>	.085	-.083	.146
PC Act 2	-.080	-.126	.005	<b>.856</b>	.163	.180	-.043
PC Act 3	.085	-.059	-.172	<b>.894</b>	.135	.069	-.051
PC Act 4	.060	.384	-.358	.375	.479	.036	-.207
Per Quit 1	<b>.796</b>	.131	.133	-.101	-.136	.004	.097
Per Quit 2	<b>.764</b>	-.199	-.027	-.048	.155	.045	-.197
Per Quit 3	<b>.886</b>	-.055	.010	.022	-.055	.027	-.031
Per Quit 4	.272	<b>.538</b>	-.141	.148	-.262	.006	.383
Per Quit 5	<b>.773</b>	.074	.099	.120	-.160	-.161	.069
Per Quit 6	.471	.478	-.065	-.065	.302	-.030	.082
Per Use Attribute 1	-.156	.130	.023	-.045	-.025	<b>.829</b>	.334
Per Use Attribute 2	.052	.050	.006	.005	-.128	<b>.886</b>	-.022
Per Use Attribute 3	-.019	.101	-.018	.238	.221	<b>.785</b>	.195
Per Use Attribute 4	-.030	.105	-.088	-.017	-.004	.167	<b>.926</b>
Per Use Attribute 5	.000	.114	-.056	.043	.019	.205	<b>.924</b>
Per Use Attribute 6	-.058	-.027	-.020	.276	<b>.822</b>	.065	-.219
Per Use Attribute 7	-.133	.017	.045	.160	<b>.804</b>	-.032	.130
PC 1 Info	-.097	<b>.656</b>	.361	-.032	-.365	.110	.029
PC 2 Info	-.048	.295	.486	.060	-.561	-.012	-.185
PC 3 Info	.143	.218	<b>.841</b>	.016	-.022	-.053	-.001
PC 4 Info	.013	.126	<b>.894</b>	-.020	-.094	-.023	-.141
PC 5 Info	.169	<b>.512</b>	<b>.593</b>	-.013	.160	.330	-.015
PC 6 Info	.022	<b>.794</b>	.314	.029	.186	.096	.070
PC 7 Info	-.156	<b>.797</b>	.231	-.104	-.095	.114	.133

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for Privacy Concerns (PC) construct resulted in elimination of 4 Questions:

(23 – d: Please indicate the most profile related activities you perform [Other]),

(29 – f: Why have you stopped using sites? [Other]),

(31 – b: Would you say that you are concerned about the privacy of the following information you submit on social sites? [Financial information]) and;

(31 – e: Would you say that you are concerned about the privacy of the following information you submit on social sites? [Lifestyle related (e.g. photos, blogs, video, etc.)].

Therefore, Confirmatory factor analysis resulted in 6 dimensions of PC construct.

**Confirmatory factor analysis for Privacy Concerns (PC) construct**

	Factor					
	Info	SNS Quit	Use Att. A	Use Att. B	Use Att. C	Use Att. D
Profile Act 1	.084	.019	.113	<b>.759</b>	.084	.111
Profile Act 2	-.126	.025	.115	<b>.839</b>	.060	.135
Profile Act 3	.016	-.052	-.033	<b>.833</b>	.115	.074
SNS Quit 1	.095	<b>.781</b>	.002	-.059	.072	-.066
SNS Quit 2	.028	<b>.627</b>	.166	.055	-.152	.064
SNS Quit 3	.036	<b>.807</b>	-.008	-.022	-.002	-.095
SNS Quit 4	.199	<b>.540</b>	-.140	.027	.463	-.152
SNS Quit 5	.107	<b>.768</b>	-.141	.004	.001	-.045
Per Use Attribute 1	.086	-.093	<b>.811</b>	-.021	.231	.070
Per Use Attribute 2	.092	.075	<b>.849</b>	.031	-.083	-.009
Per Use Attribute 3	.119	-.009	<b>.759</b>	.213	.166	.041
Per Use Attribute 4	-.036	-.023	.200	.125	<b>.855</b>	.081
Per Use Attribute 5	-.047	-.085	.137	.150	<b>.864</b>	.099
Per Use Attribute 6	-.134	-.078	.088	.185	-.050	<b>.886</b>
Per Use Attribute 7	-.020	-.087	.002	.146	.173	<b>.893</b>
PC Info 1	<b>.748</b>	.045	.123	-.081	.022	-.088
PC Info 3	<b>.698</b>	.180	.099	.015	-.160	-.001
PC Info 4	<b>.773</b>	.104	.004	.051	-.168	.035
PC Info 6	<b>.748</b>	.040	.079	.019	.106	-.045
PC Info 7	<b>.778</b>	-.007	.007	-.017	.178	-.077

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

## People

### Exploratory factor analysis for People Behavioral Participation (PBP) construct

	Component					
	1	2	3	4	5	6
PBP SNS1	.216	.319	.216	.464	.227	-.446
PBP SNS2	.035	-.062	<b>.815</b>	.098	.007	-.015
PBP SNS3	-.071	-.092	.407	<b>.644</b>	-.116	.283
PBP SNS4	.163	.014	<b>.822</b>	-.163	.132	-.060
PBP SNS5	<b>.515</b>	-.156	.342	.478	.246	-.100
PBP SNS6	-.170	.242	<b>.566</b>	.311	-.241	.148
PBP SNS7	-.009	-.067	-.006	.080	<b>.758</b>	.168
PBP SNS8	.122	.052	.040	.077	.222	<b>.866</b>
Per Use Type 1	<b>.868</b>	.108	.047	.039	.067	.035
Per Use Type 2	<b>.768</b>	.331	.125	-.149	.189	-.014
Per Use Type 3	.211	<b>.539</b>	.055	.031	.386	-.052
Per Use Type 4	.164	<b>.887</b>	-.025	.126	-.037	.013
Profile Act 1	.293	<b>.836</b>	.007	.022	-.244	.015
Profile Act 2	<b>.810</b>	.261	-.039	.247	-.092	.044
Profile Act 3	<b>.624</b>	.305	-.100	.368	-.342	.070
Profile Act 4	.249	.236	-.231	<b>.711</b>	.145	-.054

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Loading rule: Choose loading number greater than 0.5 on one factor

Exploratory factor analysis for Behavioral Participation construct resulted in elimination of Question (9 – a: Provide your view of how much you think you are using the following sites? [Facebook]). Confirmatory factor analysis resulted in 5 dimensions of Behavioral Participation construct.

**Confirmatory factor analysis for People Behavioral Participation (PBP)  
construct**

	Factor				
	Use Type & Profile Act	Use Type & Profile Act B	PBP SNS A	PBP SNS B	PBP SNS C
PBP SNS2	.050	-.053	<b>.755</b>	.316	-.002
PBP SNS3	.078	-.089	.179	<b>.799</b>	.108
PBP SNS4	.109	.031	<b>.856</b>	.028	.051
PBP SNS5	<b>.657</b>	-.178	.281	.320	.175
PBP SNS6	-.114	.255	.403	<b>.586</b>	-.093
PBP SNS7	.042	-.123	.044	-.089	<b>.723</b>
PBP SNS8	.025	.126	-.040	.206	<b>.687</b>
Per Use Type 1	<b>.834</b>	.161	.104	-.128	.074
Per Use Type 2	<b>.688</b>	.371	.233	-.292	.137
Per Use Type 3	.234	<b>.502</b>	.104	-.099	.291
Per Use Type 4	.166	<b>.882</b>	-.064	.092	.009
Profile Act 1	.245	<b>.868</b>	-.020	.041	-.169
Profile Act 2	<b>.817</b>	.308	-.062	.071	-.021
Profile Act 3	<b>.659</b>	.358	-.195	.268	-.196
Profile Act 4	<b>.557</b>	.180	-.366	.437	.161

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### Exploratory factor analysis for People User Experience (PUE) construct

	Component		
	1	2	3
SNS AUD 1	<b>.842</b>	.180	-.062
SNS AUD 2	<b>.787</b>	.127	-.256
SNS AUD 3	<b>.596</b>	.175	.355
SNS AUD 4	<b>.667</b>	.018	.395
SNS AUD 5	.147	-.019	<b>.695</b>
SNS AUD 6	-.172	.129	<b>.550</b>
Profile Act 1	.082	<b>.632</b>	.349
Profile Act 2	.285	<b>.831</b>	-.015
Profile Act 3	.037	<b>.916</b>	.031
Profile Act 4	.166	.398	.474

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for User Experience construct resulted in elimination of Question

(23 – d: Please indicate the most profile related activities you perform [Other]).

Confirmatory factor analysis resulted in 4 dimensions of User Experience construct.

### Confirmatory factor analysis for people User Experience (PUE) construct

	Factor			
	Profile Act	SNS AUD A	SNS AUD B	SNS AUD C
SNS AUD 1	.143	<b>.863</b>	.127	-.009
SNS AUD 2	.082	<b>.873</b>	-.024	.032
SNS AUD 3	.240	.311	<b>.632</b>	-.326
SNS AUD 4	.049	.409	<b>.561</b>	.050
SNS AUD 5	.023	-.102	<b>.779</b>	.179
SNS AUD 6	.051	.052	.062	<b>.933</b>
Profile Act 1	<b>.655</b>	.018	.359	.319
Profile Act 2	<b>.830</b>	.293	.050	.035
Profile Act 3	<b>.910</b>	.008	-.010	-.114

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

## Culture

Exploratory factor analysis for Culture construct resulted in 5 dimensions without elimination of any question.

### Exploratory factor analysis for Culture construct

	Factors				
	PerInterA	PerInterB	PBP SNS A	PBP SNS B	PBP SNS C
PBP SNS1	.152	<b>.697</b>	.319	.019	-.094
PBP SNS2	.070	.030	<b>.809</b>	-.027	.114
PBP SNS3	-.001	.154	.273	<b>.804</b>	-.177
PBP SNS4	-.138	.127	<b>.749</b>	.079	.149
PBP SNS5	-.122	<b>.572</b>	.276	.404	.165
PBP SNS6	.018	-.010	<b>.616</b>	.331	-.152
PBP SNS7	.029	.102	.149	-.017	<b>.820</b>
PBP SNS8	.097	-.207	-.055	<b>.623</b>	.461
Per Inter Type 1	.412	<b>.643</b>	.037	-.147	.045
Per Inter Type 2	<b>.724</b>	.373	.024	-.038	.298
Per Inter Type 3	<b>.820</b>	.131	-.108	.070	.098
Per Inter Type 4	<b>.573</b>	.474	-.106	-.080	.317
Per Inter Type 5	<b>.802</b>	.034	.194	-.042	-.144
Per Inter Type 6	<b>.817</b>	.151	-.102	.070	-.091
Per Inter Type 7	.106	<b>.790</b>	-.064	.136	.202
Per Inter Type 8	.242	<b>.718</b>	-.046	-.068	-.105

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.



**Environmental Contexts: Socio Economic**

**Exploratory factor analysis for Socio-economic (SE) construct**

	Component					
	1	2	3	4	5	6
PBP SNS1	<b>.708</b>	.067	.121	.124	.288	-.242
PBP SNS 2	.308	<b>.637</b>	.304	.056	-.093	.012
PBP SNS 3	-.029	.018	<b>.657</b>	.047	.401	.248
PBP SNS 4	.165	<b>.608</b>	.276	-.137	.233	-.034
PBP SNS 5	.209	.072	.192	.073	<b>.803</b>	.000
PBP SNS 6	.145	.068	<b>.730</b>	-.014	.057	-.094
PBP SNS 7	-.213	.440	-.192	.003	<b>.532</b>	.014
PBP SNS 8	.041	.096	.025	.039	.047	<b>.909</b>
SNS Use 1	.412	.393	.347	.232	.014	.030
SNS Use 2	<b>.552</b>	-.029	.137	.167	.592	.213
SNS Use 3	.147	.162	<b>.815</b>	.079	-.056	.000
SNS Use 4	.065	<b>.557</b>	.247	.396	.131	.227
SNS Use 5	.189	<b>.617</b>	-.154	.076	.279	.391
SNS Use 6	<b>.743</b>	.039	.239	.046	.059	.287
SNS Use 7	<b>.827</b>	.203	-.012	.077	-.041	-.006
SNS Impact 1	.359	-.508	.140	.282	.233	.117
SNS Impact 2	.124	.148	.036	<b>.729</b>	.006	.052
SNS Impact 3	-.012	-.208	-.079	<b>.702</b>	-.044	.105
SNS Impact 4	.164	.073	.138	<b>.770</b>	.211	-.142

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for Socio-economic construct resulted in elimination of 2 Questions: (16 – a: What do you mostly use these sites for? [Finding Information & News]) and (20 – a: [Social sites have positive impact on social relationship and society]).

Confirmatory factor analysis resulted in 6 dimensions of Socio-economic construct.

**Confirmatory factor analysis for Socio-economic (SE) construct**

	Factor					
	PBP & SNS Use A	PBP & SNS Use B	PBP & SNS Use C	SNS Impact	PBP SNS A	PBP SNS B
PBP SNS1	<b>.712</b>	.062	.128	.136	.308	-.236
PBP SNS 2	.291	<b>.657</b>	.314	.043	-.139	-.039
PBP SNS 3	-.036	.040	<b>.636</b>	.047	.442	.266
PBP SNS 4	.152	<b>.653</b>	.277	-.150	.164	-.094
PBP SNS 5	.221	.102	.176	.082	<b>.813</b>	.004
PBP SNS 6	.147	.110	<b>.743</b>	-.001	.040	-.102
PBP SNS 7	-.231	.444	-.217	-.029	<b>.515</b>	-.016
PBP SNS 8	.055	.132	.014	.044	.067	<b>.920</b>
SNS Use 2	<b>.543</b>	.053	.117	.169	.601	.207
SNS Use 3	.135	.144	<b>.817</b>	.079	-.017	.015
SNS Use 4	.009	<b>.632</b>	.218	.356	.106	.164
SNS Use 5	.165	<b>.735</b>	-.169	.052	.188	.302
SNS Use 6	<b>.738</b>	.143	.243	.058	.033	.258
SNS Use 7	<b>.831</b>	.166	-.001	.087	-.016	.003
SNS Impact 2	.114	.172	.036	<b>.728</b>	.008	.044
SNS Impact 3	.016	-.210	-.064	<b>.731</b>	-.030	.139
SNS Impact 4	.146	.133	.132	<b>.769</b>	.199	-.163

Rotation converged in 9 iterations.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### **Environmental Contexts: Political**

Exploratory factor analysis for Political construct resulted in 4 dimensions without elimination of any question.

#### **Exploratory factor analysis for Political construct**

	Factor			
	SNS Use A	SNS Impact	SNS Use B	SNS Use C
SNS Use 1	<b>.580</b>	.104	.131	.210
SNS Use 2	.188	.019	<b>.642</b>	-.552
SNS Use 3	.055	.265	<b>.738</b>	.190
SNS Use 4	.274	.013	.221	<b>.832</b>
SNS Use 5	<b>.714</b>	-.077	.360	.030
SNS Use 6	<b>.664</b>	.060	.284	.100
SNS Use 7	.190	<b>.701</b>	.001	.101
SNS Impact 1	.065	<b>.768</b>	.074	-.194
SNS Impact 2	-.006	<b>.773</b>	.229	.107
SNS Impact 3	.226	.062	<b>.688</b>	.089
SNS Impact 4	<b>.757</b>	.278	-.242	-.098

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### Environmental Contexts: Government

Exploratory factor analysis for Government construct resulted in 4 dimensions without elimination of any question.

#### Exploratory factor analysis for Government construct

	Factor			
	SNS Use A	SNS Impact	SNS Use B	SNS Use C
SNS Use 1	<b>.580</b>	.104	.131	.210
SNS Use 2	.188	.019	<b>.642</b>	-.552
SNS Use 3	.055	.265	<b>.738</b>	.190
SNS Use 4	.274	.013	.221	<b>.832</b>
SNS Use 5	<b>.714</b>	-.077	.360	.030
SNS Use 6	<b>.664</b>	.060	.284	.100
SNS Use 7	.190	<b>.701</b>	.001	.101
SNS Impact 1	.065	<b>.768</b>	.074	-.194
SNS Impact 2	-.006	<b>.773</b>	.229	.107
SNS Impact 3	.226	.062	<b>.688</b>	.089
SNS Impact 4	<b>.757</b>	.278	-.242	-.098

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

## Environmental Contexts: ICT

### Exploratory factor analysis for ICT construct

	Factor				
	1	2	3	4	5
ICT AUD 1	.146	<b>.836</b>	.027	.048	.004
ICT AUD 2	.104	<b>.771</b>	.103	.128	-.046
ICT AUD 3	-.094	<b>.624</b>	-.245	-.325	-.076
ICT AUD 4	.096	<b>.530</b>	-.479	-.046	.412
ICT AUD 5	.116	.141	-.053	-.752	.294
ICT AUD 6	-.018	-.086	.151	-.102	<b>.814</b>
ICT SSL 1	.172	.310	.349	.466	.336
ICT SSL 2	<b>.871</b>	.052	.005	-.090	.048
ICT SSL 3	<b>.783</b>	.162	-.108	.184	.115
ICT SSL 4	<b>.731</b>	.132	.173	.309	.218
ICT Like 5	.609	.207	-.046	.548	.179
ICT SSDL 1	.108	-.067	<b>.852</b>	.076	.278
ICT SSDL 2	<b>.838</b>	-.013	.178	-.073	-.097
ICT SSDL3	<b>.827</b>	.069	.111	-.084	-.156
ICT SSDL 4	.577	.170	.597	.098	-.219
ICT SSDL 5	<b>.602</b>	-.102	.423	.013	.132

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for ICT construct resulted in elimination of 4 Questions:

(19e: Who do you speak to the most through using social sites? [Strangers/ People you do not know]),

(25a: What are the following reasons that make you like a certain social site? [Nature of Topic]),

(25e: What are the following reasons that make you like a certain social site? [Quality of the page technical design]) and

(26d: What are the following reasons that make you dislike a certain social site? [Level of Interaction]). Confirmatory factor analysis resulted in 3 dimensions of ICT construct.

**Confirmatory factor analysis for ICT construct**

	Factor		
	SSL&DL	AUD	MISCL
ICT AUD 1	.157	<b>.818</b>	.076
ICT AUD 2	.146	<b>.738</b>	.150
ICT AUD 3	-.116	<b>.587</b>	-.411
ICT AUD 4	.029	<b>.709</b>	-.111
ICT AUD 6	-.091	.134	<b>.671</b>
ICT SSL 2	<b>.861</b>	.055	-.050
ICT SSL 3	<b>.792</b>	.205	-.036
ICT SSL 4	<b>.731</b>	.143	.276
ICT SSDL 1	.190	-.161	<b>.785</b>
ICT SSDL 2	<b>.868</b>	-.013	.098
ICT SSDL 3	<b>.843</b>	.046	-.018
ICT SSDL 5	<b>.588</b>	-.113	.465

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Society Digital Readiness (SDR)**

**Exploratory factor analysis for Society Digital Readiness (SDR) construct**

	Component							
	1	2	3	4	5	6	7	8
Dig Tool 1	.052	.105	<b>.646</b>	.096	.124	.043	-.117	.007
Dig Tool 2	.053	.012	.100	-.069	.144	-.048	<b>.806</b>	.140
Dig Tool 3	-.094	.100	-.055	.233	.154	<b>.810</b>	-.007	-.040
Dig Tool 4	.011	.129	.174	-.042	.069	<b>.790</b>	.065	.123
Dig Tool 5	.382	.086	.016	.026	-.081	.206	<b>.570</b>	-.072
Dig Tool 6	.036	.108	.046	.053	-.022	.072	.099	<b>.848</b>
Per Use Attribute 1	.079	.060	<b>.713</b>	.237	.048	.033	.203	.089
Per Use Attribute 2	.107	.110	<b>.806</b>	-.076	-.050	.033	.124	-.127
Per Use Attribute 3	.154	.195	<b>.710</b>	.126	.067	-.004	-.051	.201
Per Use Attribute 4	-.030	.147	.180	<b>.843</b>	.055	.058	.000	.067
Per Use Attribute 5	-.055	.142	.127	<b>.891</b>	.030	.108	-.034	.059
Per Use Attribute 6	-.159	.183	.133	-.068	<b>.860</b>	.077	.092	-.060
Per Use Attribute 7	-.054	.114	.038	.160	<b>.878</b>	.141	.005	.040
PC Info 1	<b>.721</b>	-.047	.106	.006	-.092	.132	.173	-.063
PC Info 2	<b>.691</b>	-.004	.076	-.153	-.192	.013	.222	-.032
PC Info 3	<b>.776</b>	-.034	.029	-.061	-.009	-.013	-.161	-.122
PC Info 4	<b>.799</b>	.109	-.030	-.099	-.005	-.009	.030	-.107
PC Info 5	<b>.769</b>	.020	.175	-.076	.066	.028	-.087	.101
PC Info 6	<b>.738</b>	.005	.055	.120	.005	-.162	.044	.213
PC Info 7	<b>.679</b>	-.010	.028	.165	-.082	-.155	.214	.192
LoS Attribute 1	-.057	.419	.406	-.303	-.085	.217	.114	-.121
LoS Attribute 2	-.006	<b>.627</b>	.275	-.010	.141	.011	.203	-.082
LoS Attribute 3	.012	<b>.641</b>	-.103	.374	.030	.036	.179	-.266
LoS Attribute 4	-.089	.594	-.002	.562	.006	.032	-.069	-.136
LoS Attribute 5 Q33 –	.083	<b>.573</b>	.032	.041	-.043	.102	.183	.124
LoS Attribute 6 Q33 –	.054	<b>.611</b>	.329	-.004	.124	.122	-.281	.112
LoS Attribute 7 Q33 –	-.033	<b>.701</b>	.107	.312	.241	.001	-.144	.083
LoS Attribute 8 Q33 –	.003	<b>.671</b>	.192	.047	.119	.072	-.179	.337

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Exploratory factor analysis for SDR construct resulted in elimination of 2 Questions: (33 a: Please indicate your level of satisfaction with the following attributes of social sites [I'm satisfied with the layout feel and look]) and

(33 d: Please indicate your level of satisfaction with the following attributes of social sites [I'm satisfied of privacy measures]). Confirmatory factor analysis resulted in 8 dimensions of SDR construct.

**Confirmatory factor analysis for Society Digital Readiness (SDR) construct**

	Factor							
	PC Info	LoS	PerUse A	PerUse B	PerUse C	Dig Tool A	DigTool B	DigTool C
Dig Tool 1	.045	.108	<b>.657</b>	.078	.126	.052	-.112	.019
Dig Tool 2	.052	.002	.102	-.084	.145	-.037	<b>.811</b>	.160
Dig Tool 3	-.094	.089	-.058	.227	.161	<b>.811</b>	-.005	-.029
Dig Tool 4	.007	.146	.178	-.040	.058	<b>.787</b>	.077	.097
Dig Tool 5	.378	.094	.007	.031	-.084	.197	<b>.580</b>	-.095
Dig Tool 6	.044	.105	.047	.071	-.010	.066	.101	<b>.877</b>
Per Use Attribute 1	.070	.094	<b>.712</b>	.244	.033	.031	.215	.052
Per Use Attribute 2	.098	.119	<b>.817</b>	-.105	-.058	.044	.147	-.140
Per Use Attribute 3	.142	.216	<b>.720</b>	.119	.053	.005	-.052	.177
Per Use Attribute 4	-.030	.167	.156	<b>.875</b>	.058	.050	-.020	.043
Per Use Attribute 5	-.058	.154	.118	<b>.894</b>	.031	.112	-.051	.043
Per Use Attribute 6	-.157	.178	.134	-.079	<b>.862</b>	.081	.091	-.051
Per Use Attribute 7	-.048	.119	.029	.170	<b>.880</b>	.138	-.001	.044
PC Info 1	<b>.719</b>	-.031	.101	.019	-.102	.128	.179	-.082
PC Info 2	<b>.692</b>	-.017	.069	-.149	-.182	.012	.230	-.005
PC Info 3	<b>.772</b>	-.040	.048	-.079	-.013	.002	-.168	-.106
PC Info 4	<b>.800</b>	.083	-.027	-.119	.008	-.001	.038	-.071
PC Info 5	<b>.768</b>	.035	.178	-.079	.054	.030	-.072	.083
PC Info 6	<b>.743</b>	.031	.041	.163	-.002	-.182	.041	.174
PC Info 7	<b>.684</b>	-.009	.016	.196	-.076	-.169	.209	.180
LoS Attribute 2	.002	<b>.622</b>	.224	.063	.166	-.032	.195	-.109
LoS Attribute 3	-.003	<b>.656</b>	-.101	.329	.011	.059	.181	-.302
LoS Attribute 5	.059	<b>.588</b>	.073	-.020	-.082	.146	.174	.086
LoS Attribute 6	.042	<b>.616</b>	.345	-.042	.110	.145	-.274	.106
LoS Attribute 7	-.042	<b>.734</b>	.098	.300	.221	.008	-.140	.039
LoS Attribute 8	.002	<b>.711</b>	.174	.051	.102	.065	-.153	.289

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.



**Appendix D: Reliability Analysis Cronbach's Alpha Values for All Constructs**

<b>Constructs</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Cronbach's Alpha</b>
Perceived Usefulness (PU)	2.79	1.20	0.815
Perceived Ease of Use (PEU)	2.92	1.14	0.834
Privacy Concerns (PC)	3.07	1.14	0.736
People Behavioral Participation (PBP)	2.58	1.16	0.782
People User Experience (PUE)	2.37	1.03	0.755
Culture	2.81	1.16	0.780
Socio-economical (SE)	3.06	1.18	0.813
Political	3.25	1.17	0.728
Government	3.25	1.17	0.728
Information and Communication Technology Infrastructure (ICT)	3.03	1.08	0.815
Society Digital Readiness (SDR)	3.23	1.08	0.810

## Appendix E: Correlations Validity for Constructs

Constructs	Correlations Range
Perceived Usefulness (PU)	0.511 – 0.528
Perceived Ease of Use (PEU)	0.505 – 0.534
Privacy Concerns (PC)	0.614 – 0.635
People: Behavioural Participation	0.531 – 0.550
People: User Experience	0.524 – 0.555
Culture	0.509 – 0.523
Environmental Context: Socio-economical	0.510 – 0.534
Environmental Context: <i>Political</i>	<i>0.421 – 0.475</i>
Environmental Context: <i>Government</i>	<i>0.421 – 0.475</i>
Environmental Context: Information and Communication Technology Infrastructure (ICT)	0.536 – 0.571
Society Digital Readiness (SDR)	0.567 – 0.600

## Appendix F: Focus Group Questions

Questions	Corresponding Digital Theme
<b>Opening Question</b>	
1. In your opinion, nowadays how people have changed in their communication using social networks & how long do you think people need to fully understand it?	DC -Literacy
2. Based on your understanding of various SNS, list your favorite social networks for communicating with people within various time intervals & Why?	DC - Communication
3. How SNS satisfies your interests in participating in various aspects of life e.g. social, political, economic or regulatory/governmental?	DC- Access
4. How do you evaluate generally people's online behavior & How far users consider others' feelings, opinions, etc.. in using SNSs?	DC - Etiquette
5. How far is the online user community aware of rules, policies, restrictions and whether there is evidence of respect for privacy, security and lawfulness?	DC - Law
6. There are economic activities over social networks, so how online users develop the knowledge and protection ways to buy and sell through SNS in a digital world?	DC – Commerce
7. What are the different methods do you generally apply to protect the information that you publish on social sites (your page or public ones)?	DC -Security
8. How online users think about protecting the rights of others and to defend their own digital rights?	DC - Rights and responsibilities
9. How online users consider the risks on their wellness/ health (both physical and psychological) when using social networks?	DC – wellness and health
<b>Wrapping Question</b>	
10. How do you visualize the role of SNS will further play in Egyptian society within the short and long term? Note: (As per survey, 51% of respondents admit that SNS has replaced face to face communication)	

## **Appendix G: Consent form and Participant Information sheet**

### **Focus Group & Interviews Consent form**

**Title of Project: The Impact of Social Network Sites on Societies of the MENA  
Region: Egypt as a Case Study**

**Name of Researcher: Hepa Sayed**

1. I confirm that I have read and understand the information sheet dated 1<sup>st</sup> April for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
3. I agree that this form that bears my name and signature may be seen by a designated auditor.
4. I agree that my non-identifiable research data may be stored in National Archives and be used anonymously by others for future research. I am assured that the confidentiality of my data will be upheld through the removal of any personal identifiers.
5. I understand that my focus group may be taped and subsequently transcribed.
6. I agree to take part in the above study.

Name of Participant	Date	Signature
Researcher	Date	Signature

1 copy for participant; 1 copy for researcher;

## Focus Group Participant Information Sheet

### **Focus Group about the Impact of Social Network Sites on Egyptian Society**

You are being invited to take part in a focus group for an academic research study. Therefore, we appreciate your willingness to participate.

#### **Purpose of Focus Group**

Social networks sites (SNS) are websites that function like an online community for Internet users who share common interests. The research is designed to study the impact of social networks on societies and its implications on the Egyptian's lifestyle and culture. Focus group is one of the qualitative research methods to collect data to measure Social networks' current impact on various perspectives of our lives and what's to predict further. Thus, we need you to share your inputs, opinions and views honestly and openly with us.

#### **Focus Group Ground Rules:**

##### **1. WE WANT YOU TO DO THE TALKING.**

We need to hear your views and opinions; so each one will be given an equal chance to talk and I may call on you to listen to your ideas.

##### **2. THERE ARE NO RIGHT OR WRONG ANSWERS**

There is no right or wrong answer. We want to hear a wide range of ideas as much as possible, so simply state your point of view.

##### **3. WHAT IS SAID IN THIS ROOM STAYS HERE**

We want you all to share your views with ease and comfort so what is said stays in the group.

##### **4. WE WILL BE TAPE RECORDING THE GROUP BUT MAINTAINING ANONYMITY**

We do not identify names of participants, as the focus group will be completely anonymous; however, I need to voice record the session for sake of keeping track of every word for text transcription. Accordingly, we will be calling participants by numbers instead of real names to maintain anonymity.

#### **Logistics**

The focus group session will last between 30-45 minutes. In the beginning, each participant has to complete a consent form and a demographic sheet. We will ask 8-10 questions for all participants, one at a time to allow each one to articulate and share his/her opinion respectively, once 1<sup>st</sup> question is fully discussed by all participants, I will wrap up discussion then will move on with the 2<sup>nd</sup> and so on.

**Focus Group Demographic Information Sheet**

1. What is your gender?

Male  Female

2. What is your age?

Below 18  18-29  30-39  40-49  50-59  
 60+

3. What is your relationship status?

Single  Engaged  Married  Widowed

4. What is your geographic distribution?

Greater Cairo  Giza  Alexandria  Upper Egypt  Delta  
 Sinai

5. What is your educational background?

No School  Primary Education  Secondary Education  Higher Education  
(Undergraduate)  Higher Education (Postgraduate)

6. What is your occupation?

Unemployed  Part time employment  Full time employment  Studying  
 Retired

7. What are the most common used devices in accessing social sites? (You can choose more than one)

Smartphone  Tablet  Laptop  PC

8. What is the most common used browser?

Google Chrome  Mozilla/Firefox  safari  Internet Explorer  
 Others

9. How long have you been using Social sites?

Less than a month  1-6 months  7 -12 months  1-3 years  3-5 years  5-7  
years  
 7+ years

10. Tick all of the following that apply as reasons for using social sites:

To find information  To keep in touch with family and friends  To make  
new friends  To know latest News  To make professional and business  
contacts  To play games  Others (plz specify) \_\_\_\_\_

\*END\*

## Appendix H : Interview Questionnaire (version A)

Facebook Site Name: .....

### *Common Questions*

1. When was the page created?

\_\_\_\_\_

2. a. What is the aim for establishing the page?

\_\_\_\_\_

- b. What are the unique features offered?

\_\_\_\_\_

3. What is the total number of members/fans of the page?

\_\_\_\_\_

4. What are the average numbers of messages, posts, likes per day?

a. Messages	
b. Posts	
c. Likes	

### *Topic Questions*

5. List three (3) main services you have applied to boost your site reach? REF: <https://www.digitalvidya.com/blog/social-media-interview-questions-answers/>

S 1: -----

S 2:-----

S 3:-----

6. Identify the three (3) most popular activities of the page's members and their participation measure

Activity	Participation measure
A1:	
A2:	
A3:	

7. What is the process that you apply for monitoring and evaluating members' reactivity toward the site's activities? & why?

\_\_\_\_\_

8. What is the mechanism by which members can provide feedback on the page?

\_\_\_\_\_

9. What changes have you made to improve interaction with members since the creation of the page?

---

10. Rate the impact of the following SNS's features on usage pattern of the site:

SNS features	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SNS is an useful tool in our life	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
SNS is an easy to use tool	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
SNS is relevant to our nowadays needs	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
I feel that the privacy of my personal information is protected	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

11. Rank 1 to 4 the following measurable criteria for tracking your members' participation over the past three (3) consecutive months (as applicable);

1 = the mostly used activity      4= the least used activity

Volume/Activity	Page Views	Online Chat	Insert Comments	Share Posts
Number of members Mo1				
Number of members Mo2				
Number of members Mo3				

- Note: provide numerical documentation for the past 3 consecutive months as applicable

12. What portion of your members spends the following online usage time respectively? Input should sum up to 100 points.

Percentage %	Usage time
	Less than an Hour
	1-3 hours per day
	3-6 hours per day
	6-9 hours per day
	more than 9 hours per day
<b>100</b>	

Ref: <https://techcrunch.com/2018/06/22/your-time-on-facebook/>



13. Provide your opinion whether the site performs the following types of information flow;

Nature of interaction	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The site provides information flow	O 1	O 2	O 3	O 4	O 5
The site supports one-way interaction (users just upload content)	O 1	O 2	O 3	O 4	O 5
The site supports two-way interaction (users received interaction from others)	O 1	O 2	O 3	O 4	O 5
The site supports a commercial transaction	O 1	O 2	O 3	O 4	O 5

14. How much do you agree that the following issues trigger high level of site interaction;

Topic/Issues of Concern	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is an interest in socio-economic issues	O 1	O 2	O 3	O 4	O 5
There is an interest in Educational issues	O 1	O 2	O 3	O 4	O 5
There is an interest in governmental/regulatory issues	O 1	O 2	O 3	O 4	O 5
There is an interest in technological issues	O 1	O 2	O 3	O 4	O 5
There is an interest in political issues	O 1	O 2	O 3	O 4	O 5

15. Please evaluate the following factors in terms of their importance for digital readiness of online community from 1-10; (note: number can be repeated)

1= lowest importance to 10= highest importance

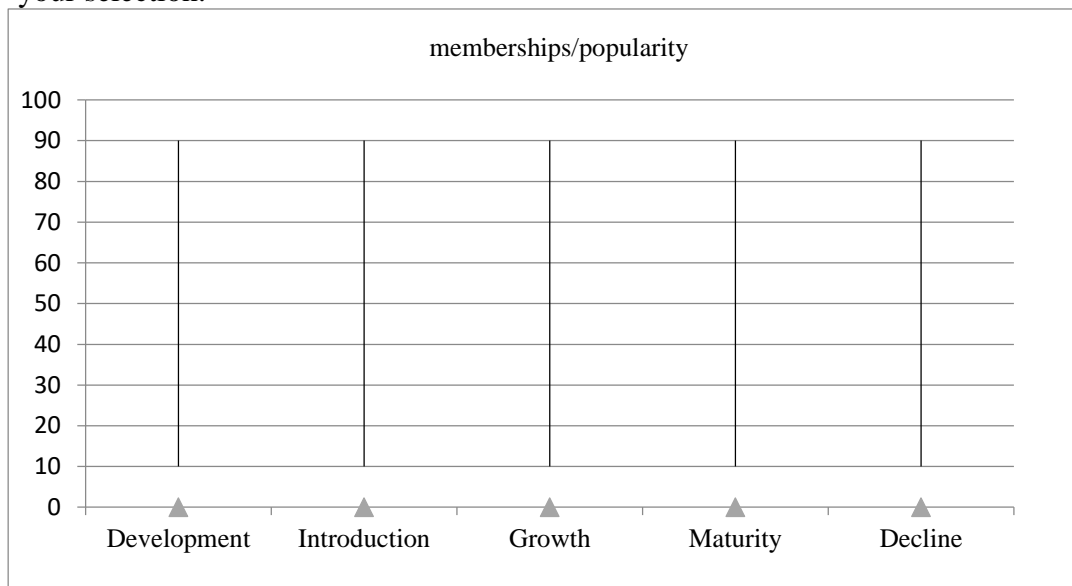
Rank	Challenges
	Culture
	<ul style="list-style-type: none"> <li>• Cultural Values &amp; Beliefs</li> <li>• People Behavioral Participation</li> <li>• User Experience Impact</li> </ul>
	Environmental Contexts
	<ul style="list-style-type: none"> <li>• Socio-economical</li> <li>• Political</li> <li>• Governmental</li> <li>• Technology infrastructure &amp; adoption</li> </ul>

16. Choose what you can see are considered the main existing or/and future challenges for the transformation to a digital society? (note: number can be repeated)

1= lowest importance to 10= highest importance

Rank	Factors
	• Technical infrastructure
	• Technological adoption
	• Cultural norms
	• Socio-economic conditions
	• Governmental initiatives
	• Other _____

17. Indicate a mark on the graph to show the maturity stage of your page. Elaborate on your selection.



**Concluding Questions**

18. Are there any other thoughts to share?

---

19. Request documentation as applicable

---

## Appendix I : Interview Questionnaire (version B)

Date.....  
 Interviewee Name .....  
 Interviewee Affiliation .....

### Intro Questions

1. In your opinion, how can you describe SNS for the Egyptian society?  
 \_\_\_\_\_

2. What is the perceived impact of SNS on the Egyptian societies?  
 \_\_\_\_\_

3. Identify the three (3) most popular activities of SNS's members and their participation measure.

Activity	Participation measure
A1:	
A2:	
A3:	

4. What is the process commonly applied for monitoring and evaluating members' reactivity toward SNS's activities?  
 \_\_\_\_\_

### Topic Questions

5. Rate the impact of the following SNS's features on usage pattern by online society:

SNS features	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SNS is an useful tool in our life	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
SNS is an easy to use tool	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
SNS is relevant to our nowadays needs	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
I feel that the privacy of my personal information is protected	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

6. What portion of SNS members spends the following online usage time respectively?  
 Input should sum up to 100 points.

Percentage %	Usage time
	Less than an Hour
	1-3 hours per day
	3-6 hours per day
	6-9 hours per day
	more than 9 hours per day
<b>100</b>	

Ref: <https://techcrunch.com/2018/06/22/your-time-on-facebook/>

7. Provide your opinion whether SNS performs the following types of information flow;

Nature of interaction	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The site provides information flow	O 1	O 2	O 3	O 4	O 5
The site supports one-way interaction (users just upload content)	O 1	O 2	O 3	O 4	O 5
The site supports two-way interaction (users received interaction from others)	O 1	O 2	O 3	O 4	O 5
The site supports a commercial transaction	O 1	O 2	O 3	O 4	O 5

8. How much do you agree that the following issues trigger high level of SNS interaction among society;

Topic/Issues of Concern	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is an interest in socio-economic issues	O 1	O 2	O 3	O 4	O 5
There is an interest in Educational issues	O 1	O 2	O 3	O 4	O 5
There is an interest in governmental/regulatory issues	O 1	O 2	O 3	O 4	O 5
There is an interest in technological issues	O 1	O 2	O 3	O 4	O 5
There is an interest in political issues	O 1	O 2	O 3	O 4	O 5

9. Please evaluate the following factors in terms of their importance for digital readiness of an online community from 1-10; (note: number can be repeated)

1= lowest importance to 10= highest importance

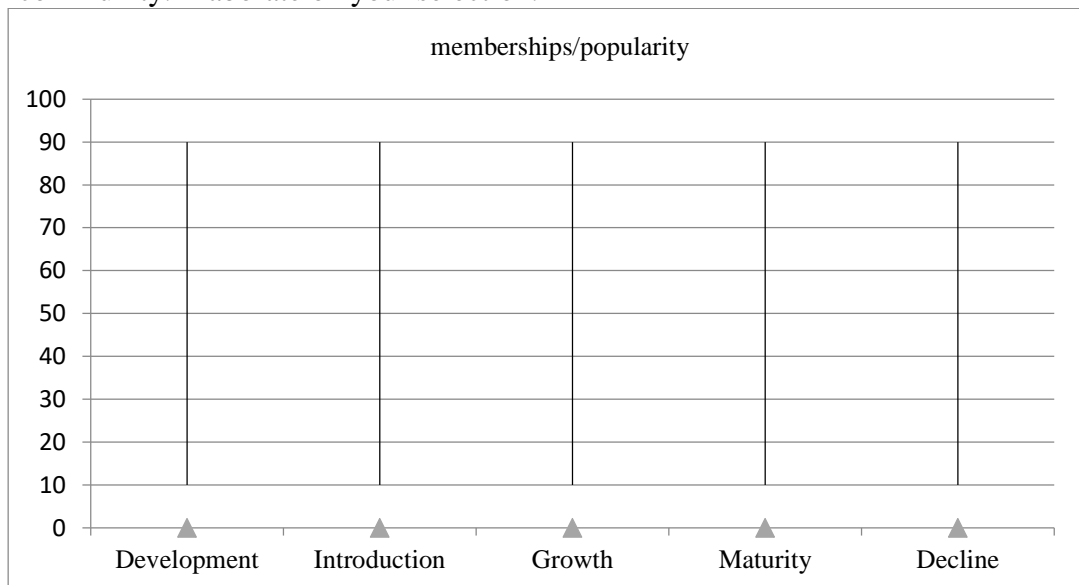
Rank	Challenges
	Culture
	<ul style="list-style-type: none"> <li>• Cultural Values &amp; Beliefs</li> </ul>
	<ul style="list-style-type: none"> <li>• People Behavioral Participation</li> </ul>
	<ul style="list-style-type: none"> <li>• User Experience Impact</li> </ul>
	Environmental Contexts
	<ul style="list-style-type: none"> <li>• Socio-economical</li> </ul>
	<ul style="list-style-type: none"> <li>• Political</li> </ul>
	<ul style="list-style-type: none"> <li>• Governmental</li> </ul>
	<ul style="list-style-type: none"> <li>• Technology infrastructure &amp; adoption</li> </ul>

10. Choose what you can see is/are considered the main existing or/and future challenges for the transformation to a digital society? (note: number can be repeated)

1= lowest importance to 10= highest importance

Rank	Factors
	• Technical infrastructure
	• Technological adoption
	• Cultural norms
	• Socio-economic conditions
	• Governmental initiatives
	• Other _____

11. Indicate a mark on the graph to show the maturity stage of Egyptian SNS online community. Elaborate on your selection.



**Concluding Questions**

12. In your opinion, how SNS will develop in Egypt within the coming years?

---

13. How can you forecast the pattern behavior of Egyptian online community within the coming years based on SNS usage?

---

14. Any further thoughts to share?

---

\*END\*