WOMEN'S CONTEXTUAL ONLINE SOCIAL IDENTITY FORMATION MODEL: A
CASE STUDY FROM THE SAUDI TWITTERSPHERE

by

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To my daughter, Norah- for a brighter, better future!

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ABSTRACT

Online Social Networks (OSNs) are widely accessible, and they produce a wealth of information on their user's behaviour. Previous research has shown that the user identity experiences a dynamic shift through self-presentation (SP) and self-development (SD). Yet, there is a lack of understanding with respect to how that shift affects the female's identity development and what are the internal and external factors that shape women's online social identity in specific contexts (i.e., Saudi women).

By appropriating the Saudi Twittersphere's texts and its users' behaviours as primary data sources, a multi-phased, mixed-method, and cross-disciplinary methodology was charted. Phases 1 & 4 focused on measuring SP by examining posts from Twitter using content & network analysis, as well as machine learning techniques. Meanwhile, Phases 2 & 3 encompassed SD by examining users' perceptions, expectations, and experiences of OSNs by conducting a survey and subsequent interviews. The results were synthesized using the qualitative meta-analysis (QMA) technique to generate the women's contextual online social identity formation model (WCOSIF), taking into consideration key contextual and cultural factors related to Saudi Arabia.

The ultimate result showed that there are four stages of (WCOSIF) that Saudi women had gone through: exposure, transformation, emergence, and social actualization. The stages had developed through three main identity types: reflective (SP), narrative, and active identity (SD). The reflective identity helped to evolve the social identity and form the exposure to the transformation stage with the help of three main factors: self-discovery, reflection-retention, and identity cultivation. In the meanwhile, the narrative identity helped to evolve the Saudi women's identity from the transformation to the emergence phase through time-interval growth and using the retreat, regroup, and re-engage strategy. Finally, the active identity (SD) helped to evolve the social identity from the emergence to the self-actualization stage via social openness, systemic effects, and collective effervescence.

This research aims to add value to the model-building of OSNs research and enhance the contextual knowledge of technologies and users' behaviour in certain settings. Specifically, the model has many implications that can be used in the Saudi context, with particular regard to Saudi women.

LIST OF ABBREVIATIONS USED

API: Application Programming Interface

ATA: Applied Thematic Analysis

ATT: Attitude

B: Behaviour

CS: Computer Science

FIDM: Feminists Identity Development Model

GM: Global Media

GT: Grounded Theory

IS: Information Systems

KSA: Kingdom of Saudi Arabia

LA: Living Abroad

MENA: Middle East & North Africa

MG: Male Guardianship

MSA: Modern Standard Arabic

NB: Naïve Bayes

NTP: National Transformation Program

OSD: Online Self-Development

OSN(s): Online Social Network(s)

OSP: Online Self-Presentation

PBUH: Peace Be Upon Him

PEOU: Perceived Ease of Use

PU: Perceived Usefulness

QMA: Qualitative Meta-Analysis

RQ(s): Research Question(s)

SA: Saudi Arabia

SD: Self-Development

SDG(s): Sustainable Development Goal(s)

SM: Social Media

SP: Self-Presentation

TAM: Technology Acceptance Model

TRA: Theory of Reasoned Action

TT: Transformative Thinking

U&G/ UGT: Uses & Gratification Theory

WCOSIF: Women's Contextual Online Social Identity Formation

ACKNOWLEDGEMENTS

1 INTRODUCTION

Online social networks (OSNs) have become an integral part of countless people's lives around the world. According to Statista, there are over 2.95 billion social media users worldwide as of 2019, and the number is estimated to grow to 3.43 by 2023 (Clement J. 2020). Facebook, Instagram, Twitter, WhatsApp, and LinkedIn are taking the lead with penetration of ~50% increase on an annual basis (Chaffey, Carter, and Bullock 2020). There is hardly a topic that one cannot find, share, and discuss on those networks. Hot topics range from presidential elections, war coverages, and medical innovations, to fashion, sports, and music, but this list is not an exhaustive one. This early 21st -century phenomenon has impacted numerous people's lives on a massive scale. Moreover, it has enabled the concept of identity to emerge as a focal point in our understanding of the nature, use, impacts, and values of social media (Figure 1-1) (Kietzmann et al. 2011).
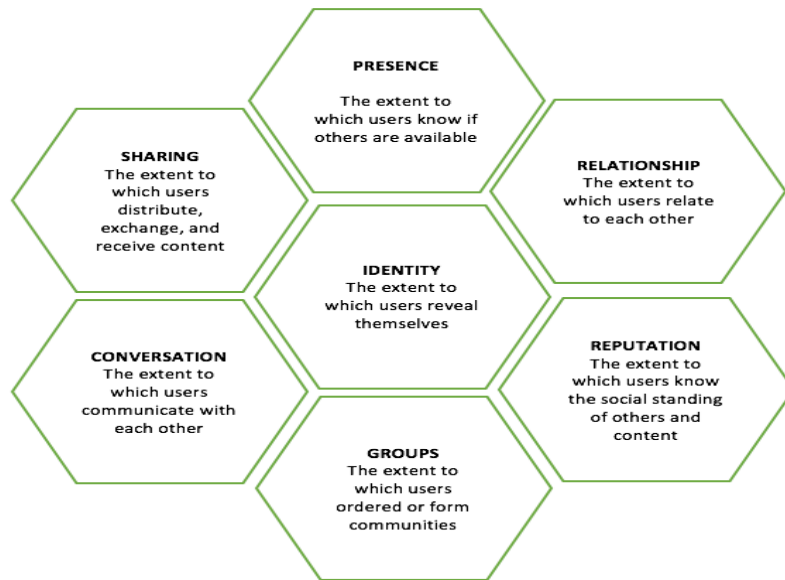
Figure 1-1 Social media functionality block (Kietzmann et al., 2011)

The Oxford dictionary defines the term *identity* as "the characteristics determining who or what a person or thing is". Since those characteristics can hardly be developed in isolation, the term "social identity" is widely used when describing the course of identification. Jenkins (2008) argues that one's identity undergoes a processing period, and it is not something one possesses, but one does. In that regard, he explains that:

'identity is the human capacity – rooted in language – to know

'who's who' (and hence 'what's what'). [Identity is] a multi-

dimensional classification or mapping of the human world and our

place in it, as individuals and as members of collectivities' (Jenkins

2008)[p5].

When looking at the demographic map of humans, where borders separate one nation from another, one can notice that social identity evolves into a national identity, which is defined as "one's identity or sense of belonging to one state or to one nation" (Cameron 1999). The distinction between the two identities is that national identity consists of both a cultural and political identity (Smith 1992)[p9]. Another distinction is that national identity has a broader scope, which means that one national identity may contain multiple sub-social identities (Cameron, 1999).

Consequently, when the concept of globalization emerged, one common feature of most online social networks is that they are places where ideas, opinions, and perceptions mobilize freely (Ahmed et al. 2018a). One advantage of this is the "uniformity of specific concepts, whether economic, political, social, cultural, or religious ones" (Pavaloiu and Vasile 2014). Therefore, national identity in the global context has become fundamental and pervasive (Pavaloiu and Vasile 2014; Smith 1992). Overall, all forms of identity (self, social, and national) have undergone a major transformation that begins with the self (Yang and Bradford Brown 2016).

In recent psychological studies self-development refers to the process that an individual goes through to build a more accepting and positive view of the self (Arnett 2014; Kim Koh and Wang 2012). Specifically, OSNs have provided the necessary space to build the user's confidence, positive self-image, and useful connections to others

(Kietzmann et al. 2011; Orsatti and Riemer 2015; Yang and Bradford Brown 2016). The effect of OSNs on self-development depends mainly on the amount of information one reveals about oneself (Yang and Bradford Brown 2016). In other words, self-presentation is a determinant factor in self-development (Mazur and Li 2016; Yang and Bradford Brown 2016).

In OSNs, self-presentation is expressed via words, texts, and other forms of digital expressions (e.g., emojis). Culture and gender play significant roles in revealing one's self within the accessible online space (Chen 2013; Cheng, Chandramouli, and Subbalakshmi 2011; Kivran-Swaine and Brody 2012). Women have used OSNs to present different sides of their identities and to seek the support of similar-minded users through online communities (Paechter 2013; Waltorp 2015) They have also used these supportive communities to spread awareness and expose challenging problems in their own societies (Guta and Karolak 2015; Losh 2014; Mourtada and Salem 2011; Pompper 2014).

In the Middle East, around 90% of young Arab uses one or more social media site (Radcliffe 2020). In many ways, OSNs have revolutionized the way people form and share online content, as well as how they communicate and interact despite the conservative nature of its citizens. This is especially true for many females since the Arabic Spring of 2010 (Karshenas, Moghadam, and Alami 2014; Moghadam 2014). Saudi women in particular have experienced a dramatic change in their social identity since 2010 (Sreberny 2015). Despite the increasing number of educational achievements

and financial independence, Saudi females lack basic social and communication skills (Alfurayh 2016; Guta and Karolak 2015). Since females' mobility outside their homes and schools is restricted, interactions with others outside those domains are highly unlikely and bound by social rules (Al-Jabri, Sohail, and Ndubisi 2015; Aloufi 2017; Guta and Karolak 2015). When social media in its present easy-to-access and free of charge form was populated, Saudi women became some of the most active users in the Middle East (Guta and Karolak 2015; Mourtada and Salem 2011). As a result, their online social identity formed, and it continues to make a national and global impression (Aloufi 2017; Alrasheed 2012; Alruwaili and Ku 2020).

1.1 Research Focus

The existing literature has paid scant attention to women's identity formation in online social networks, and less so in the Arab region (Aloufi 2017; Alruwaili and Ku 2020). Here, I chose to focus on Saudi Arabia for multiple reasons. First, it has one of the largest women social media uses not only in the Middle East and North Africa (MENA) but also worldwide (Hamidaddin 2020; Saleh 2020; TREND 2020). Second, many efforts have been made in the name of women's empowerment and independence, yet there is an unjustifiable lack of evidence of the role of OSNs in uplifting women's economic and social conditions (Saleh 2020). Third, OSNs brought a series of paradoxes that influenced many changes in the Saudi culture, yet no scientific rationalization has been provided (Alrasheed 2012; Hamidaddin 2020). Fourth, Saudi Arabia has been renowned for its

treatment of women, and that reputation was culturally rejected based on a national sense of loyalty (Aloufi 2017). With the widespread use of OSNs, it has become imperative to exhibit the facts about cultural practices and cultural representation on these channels (Alotaibi 2019; Aloufi 2017). Finally, Saudi Arabia is a traditional country with long-standing political and social ties with the West (Al-Dabbagh 2015; Alruwaili and Ku 2020; Doumato 1991). This relationship has facilitated the wide diffusion of Western technologies and their variant use that the Saudis have modified to be culturally compliant (Williams et al. 2019). As such, this research divulges many of these modifications, especially those done by Saudi women users, in order to nurture a comprehensive understanding of the Arabic and Saudi culture in the international firms targeting this demographic.

1.2 Research Questions

Identity in its broad definitions, characterizations, and applications has been part of an ongoing philosophical and experiential debate for centuries (Jenkins 2008). However, minimal research attention has been directed towards female identity formation on online social networks (Hoffman 2006; Losh 2014; Mourtada and Salem 2011; Skalli 2014; Wajcman 2010) and an even smaller focus has been made on regional cultural differences (i.e., the Saudi context), where the effects of online social networking have become prominent for women in recent years (Aloufi 2017; Alrasheed 2012). This thesis

investigates two functions of online identity: self-presentation and self-development. Therefore, the first fundamental research question that this thesis addresses is:

RQ1: **How do women in challenging situations (i.e., in Saudi Arabia[1]) use self-presentation in online social networks to formulate a social identity in both national and global contexts?**

Although there are presently few studies that have focused on Saudi females' identity development (Alfurayh 2016; Aloufi 2017; Alruwaili and Ku 2020), the focus of this research will be on collective transformative thinking where social identity has emerged (Illeris 2013). Hence, the second research question can be articulated as follows:

RQ2: **What are the factors that affect the Saudi women's identity formation in the online context and how does this process develop?**

Since Saudi women's usage of OSNs have had significant impact on them, a handful of studies have revealed the general themes related to that usage (Al-saggaf 2011; Guta and Karolak 2015). Previous studies used qualitative methods that laid out general themes without having a solid grounded theory that linked the identity constructs to the process modeling in which the constructs should operate and function (Al-Khalaf 2019; Guta and Karolak 2015; Lim 2018). What lacked in those studies was a well-rounded articulation of the effective elements that shaped the identity. On the other hand,

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[1] Please refer to section 2.2 for more details on those situations.

other studies in this regard used quantitative methods based on predefined and tested theoretical models (Al-Jabri et al. 2015; Yang and Bradford Brown 2016). The method used in these studies has obliterated the explanations and the deep understanding of process formation.

In addition, identity formation in OSNs is largely overlooked in technical studies due in part to the lack of an interdisciplinary approach. This thesis uses a multidisciplinary and multi-methods approach to analyze a series of events, which have taken place on social media platforms and have shaped the Saudi females' way of thinking about core issues such as freedom, human rights, mental health, openness, and globalization (Al-Rasheed 2013; Alyami and Matwin 2017). I believe my research is the first study that sheds light on a niche area among three disciplines discussed below (see Figure 1-2).

1.3 An Interdisciplinary Approach

This research study proposes the multidisciplinary concept of Women's Contextual Online Social Identity Formation (WCOSIF). The conceptual map of this research draws from three main disciplines: Information Systems, Women Studies, and Computer Science (Figure 1-2).

Studying OSNs requires an understanding of the use of global technology and the social factors that affect that use (Al-Jabri et al. 2015). Therefore, the Use & Gratification

(U&G) theory that is widely used in the Information Systems field is applied to the study of OSNs usage (Ali-Hassan, Nevo, and Wade 2015). On the other hand, the focus on women, in particular, required that we look into the existing literature of women's identity formation (Losh 2014). Therefore, seeing the evidence of a feminist identity that has developed through OSNs (Berkowski 2017; Lim 2018; Losh 2014), the Feminist Identity Model was incorporated into our research to provide a clear lens through which the results of this study could be related (Erchull et al. 2009).
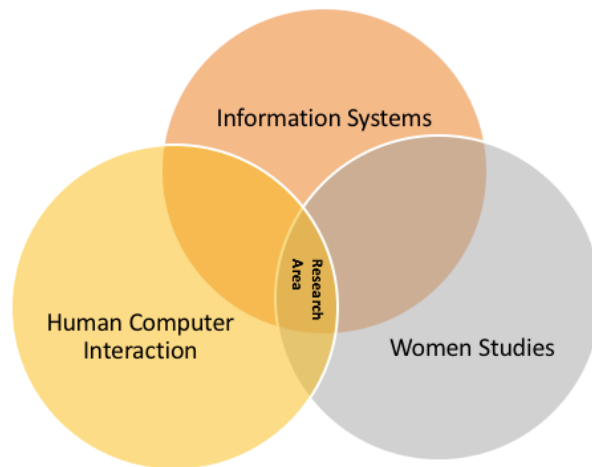
Figure 1-2 The research area

Lastly, the discourse found in social media online posts and discussions has advanced the way researchers view virtual identities (Orsatti and Riemer 2015; Pavaloiu and Vasile 2014), as well as how they detect emotional and sentimental variations (Chrisler et al. 2013) through using programming analysis models within the scope of machine learning studies. Most female issues (e.g., abuse, driving, etc.) made their way

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into Twitter with lightning speed, but with severe repercussions on Saudi women's emotions and peace of mind (Alrasheed 2012; Madini and de Nooy 2014; Mourtada and Salem 2011). Detection of those problems within WCOSIF framework is one of the goals of this research. The intersection between those areas aims to fill the gaps in the literature and is explained in the next chapter.

1.4 A Mixed-Methods Approach

At the beginning of this research, the main goal was to mine Twitter to understand how females in Saudi Arabia are using technology as a tool of empowerment through self-presentation. Consequently, I did an exploratory study on the effects of culture and gender in online social networks (Chapter 4- Phase 1) (Alyami and Matwin 2017). Although the content analysis study provided insightful remarks about Twitter and females in Saudi Arabia, mining Twitter data alone was not satisfactory for the purposes of this research.

To understand different key stages of WCOSIF, I needed to research the female users' perceptions and attitudes towards OSN use (McKenna, Myers, and Newman 2017). Furthermore, widening the scope and reach of the participants was essential so that the results could include all social levels (Radsch and Khamis 2013). Therefore, an online survey was established (Chapter 5- Phase 2). The quantitative approach and analysis helped shape the research by determining the different factors that affect self-

development and perceptions of identity of the OSNs users (Al-Jabri et al. 2015; Creswell and Creswell 2017). In addition, it set the course of action for a subsequent study (Phase 3).

Phase 3 (Chapter 6) served as the core of this research. It was a qualitative study that provided depth and details of the users' experiences (i.e., a holistic understanding) in the specific setting of OSNs in Saudi Arabia (Charmaz 2014; Kozinets 2015) by building a model of online self-development. Lastly, in the final stage of my research (Chapter 7- Phase 4), I examined the role of emotions and sentimental semantics that are part of self-presentation, and which have been prevalent in the development of Saudi WCOSIF (Tromp and Pechenizkiy 2014). The generated concepts from the last phase of this research study will be further examined for emotional semantics that will reveal disparities between different sentiments among various identity developmental stages within WCOSIF (Kivran-Swaine and Brody 2012).

1.5 Potential Contributions

By using a multidisciplinary and multi-methods approach, I aim to advance the research in computer-mediated human behavioral studies. My research can be applied to a wide variety of fields. Those areas include, but are not limited to: e-learning, e-commerce, tourism, international relations, international media relations, female leadership, female entrepreneurship, anthropology, human factors in cyber safety and security, linguistics, natural language processing methods (especially for Arabic), health,

mental health, and other areas where the user attributes are pertinent to the research. The above-mentioned areas have been considered since I have built my literature library from virtually all of these fields.

Contextually, in Saudi Arabia, women's development is still progressing at a slow pace. My aim is that my research advances that progress in a way that more focus is made on girls and females by the country's government. I anticipate that my research is positioned within national efforts to advance the development of youth and women. In that regard, by the end of this research, I propose a multi-levelled guideline that will contribute to establishing a much-needed Ministry of Youth and Women.

1.6 Summary

Little research has been conducted on female's identity development formation in the context of online social networks. This context plays a paramount role in the formation process, as well as demographics. I propose a holistic, multidisciplinary, and mixed-methods approach to investigate WCOSIF in the Saudi Twitter sphere or context.

The rest of this thesis is ordered as follows: Chapter 2 summarizes the existing literature on key concepts related to WCOSIF. Chapter 3 explains in detail the methodologies proposed for this research study, which include four phases of investigation. Chapters 4-7 lay out each of these phases, where each phase has its own research questions and objectives that expand on the main objectives outlined in this

chapter. Chapter 8 connects the dots by discussing the results, relating them to the literature, along with providing a layout and detailed explanation of the generated WCOSIF model. The research concludes with Chapter 9, containing the most important aspect of this research: reviewing the results' contributions and their boundaries, as well as setting guidelines for future work.

2 BACKGROUND AND RELATED WORK

This study aims to form a theory of women's contextual online identity formation. In order to define the process, the approach of this thesis is multidisciplinary. It draws sources of information from different files, and the literature is derived from three main fields: women's studies, information systems, and computer science. Though sailing through the vast ocean of information provided in each field can be an overwhelming task, I relate to the most relevant concepts of identity, women, and OSNs, and discourse.

The conceptual framework of this study takes a narrative direction. The readability of the provided information will be easier for future examiners of the same subject, and it will also link the information found in the literature to the context of this study (Saudi Arabia). I conclude the chapter with an objective summary that helps to justify the methodological approach described in the next chapter.

2.1 Online Identity

Few studies have actually examined identity construction in social media. Kietzmann et al. (2011) was the first to construct *identity* as the central functional block of social media used to target businesses. Identity in his work refers to what extent users voluntarily reveal information about themselves, including name, gender, location, and career. Those pieces of information are common to almost all social media platforms

because they are required as part of the signing up process. Legal considerations, class actions suites, scandals, and failing market shares have resulted from the misuse of identifying information (Kietzmann et al. 2011), such as the recent Facebook's Cambridge Analytica data scandal (Wayne 2018).

To address the lack of conceptual clarity on social media identity-making in the information system field, Orsatti and Riemer (2015) proposed a multimodal approach that reconceptualises online identity in the IT/work field. Their conceptual framework draws from different disciplines (e.g., philosophy and sociology) to override the essentialist views of identity making. The essentialist view is based on the westernized way of thinking of self-experience, which creates a problem with duality when applied to how people interact with social media (i.e., online self vs. offline self) in other cultures. Whereas, the proposed non-essentialist model incorporates reflective, narrative, and active modes of identity making that can be applied to any context and culture. As a result, the "self" is defined as an experiential notion, which is connected, but not under, the performative notion of identity. In other words, the day-to-day social interactions shape people's identity, self, self-presentation, and self-representation. Table 2-1 shows how those terms are re-conceptualized in accordance with online social media identity.

TABLE 2-1 A re-conceptualization of key terms related to social media identity

(Orsatti & Riemer, 2015)

Concept	Dominant 'essentialist' view	Alternative 'Non-essentialist' view
Identity	Self and identity are often used inter-changeably. They generally denote 'who one is'. Self / identity inheres in the person, it forms the core or essence of who that person is. This is an essential notion of self / identity.	Identity is multiple and always social. Identity captures 'who one is' in various social practices (contexts), and arises from how one lives their life. This is a performative notion of identity.
Self		Self captures how we come to experience a coherent 'me' in the face of the multiplicity of identity; how we experience ourselves as an individual upon reflection. This is an experiential notion of self.
Self-presentation	Captures how people present when with others: authentically in keeping with, or in-authentically disguising their 'real' self / identity.	Self-presentation is just one part of how identity is formed. It is part of identity-making in the reflective mode.
Self-representation	Often synonymous with self-presentation, yet stresses the fact that a pre-existing self is *re*-presented.	Self-representation is not a helpful category, as it is founded upon assumptions of the essentialist view.

Based on previous philosophical findings, this research conceptualizes *identity* via two concepts: self-development and self-presentation. The first concept concerns the reflective experience of OSN (i.e., Phase 2 and 3), while the other examines the presentation of the self through words, semantics, and phono morphology (Phases 1 and 4). The next sections shed light on current research on both concepts and discuss how they are utilized to study the Saudi women's identity development.

2.2 Saudi Females Identity Development

Understanding how Saudi female's identity is shaped throughout the last decades requires an extensive layout of the ways in which Saudi culture operates within and

outside of its borders (Al-saggaf 2011; Alrasheed 2012). Here, I outline the key points related to Saudi women specifically.

The culture in Saudi Arabia is 90% religious and 10% derived from ancient Arabic folklore (Lolashvili 2011). Family ties and relationships to one another are of the utmost importance in the Saudi society. Until recently, women, no matter their age, are not allowed to live alone. A female living alone would be considered an extremely improper practice. The Saudi culture and civic services system require that every woman has to have a male guardian (usually the father, husband, brother or a son). Polygamy is not only culturally accepted, but is also encouraged by the higher authorities in order to "maintain the nation's homogenous pious population" (Alrasheed 2012). Conservative culture present in Saudi Arabia demands that women have to be chaperoned by a male guardian at all times. The interaction with unrelated males or foreigners from different cultures is very limited (e.g., chauffeurs). Gender mixing is not allowed either ("for women only" signs are everywhere from cash registers to restaurants). In conservative families, going outside of one's home unchaperoned, and without a purpose, is highly frowned upon. All Saudi females are required to cover their faces by wearing a veil and the full black garb, *abaya*, has become the national women's symbol of piety (Alrasheed 2012). Even the woman's voice had been considered part of her body and should not be heard by unrelated males or uttered in any provocative way. Women's occupations have been limited to female clients only, such as in schools, hospitals, and few public and private sectors (Moghadam & Senftova, 2005).

The timeline of which some of those extreme practices took place, such as the ban on women driving, and other women-only mobility restrictions, is of the paramount importance. Madawi Alrasheed (2012) is the first Arabic woman that completed an extensive narration of Saudi women's experiences throughout the history of Saudi Arabia. She explained that politics played a controlling role in shaping the identity of the Saudi females (p.131). They were the nation's "National Defense Guards". This is when national identity became interlaced with women's issues. I will explain this further later on.

In the early 1980s, the country was threatened by a group of *Jihadists*[2]. The government succeeded in diminishing the coup, but it responded to its demands in reasserting the country as "the Base of Islam" (Alrasheed 2012; Doumato 1991) . In order to maintain and uphold most of the religious practices, a series of *Fatwas*[3] and municipal rules were issued on all matters related to women's everyday activities (Aloufi 2017; Alrasheed 2012). In other words, "the 1980s can be considered as a decade of the exclusion and control of women" (Alrasheed 2012). With no alternatives at the time, women were forced to seek females-only jobs in females-only institutes (such as schools and universities) (Alrasheed 2012).

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[2] An extremely religious with political aim group

[3] The Supreme Judicial Council of Saudi Arabia, and the Council of Senior Scholars are the most well-regarded Sharia law bodies or organizations. They issue *Fatawa* which are Islamic rulings that are in compliance with Sharia Law. All royal decrees and governmental rules have to be considered by those bodies.

Consequently, during the Gulf War in the early 1990s, the Women's Rights movement in the US put pressure on the Bush government to change its foreign affairs policy with respect to their dealings with the Islamic World (Shannon, 2014). The life of American female soldiers in some cities in Saudi Arabia dominated headlines in the international media (Alrasheed 2012; Shannon 2014). As Saudi Arabia was viewed as a gender apartheid country and a center of conservative Islamic ways, there was more focus on Saudi females than on any other women in the Middle East (Doumato 1991; Shannon 2014). This resulted in the emergence of popular concepts, at the time, such as *westernization* and *foreign conspiracy* by traditionalists and highly conservative Saudi public figures (Alrasheed 2012; Doumato 1991). We will observe later how those terms became highly correlated with issues like women driving in Saudi Arabia (Almahmoud 2015; Alyami and Matwin 2017; Amer 2016).

Aloufi (2017), in her dissertation titled Gender and National Identity in Saudi Arabia, explains that female's identity was also highly controlled in the media, which resulted in international media (mainly western) portraits of Saudi women as submissive, oppressed, and controlled. Very few examples showed successful Saudi women in the media (Alrasheed 2012), which some traditionalists viewed as an offence to the Saudi women's virtue. This is mainly because those women were less covered than culture dictated (ibid).

Since the beginning of the new millennium, a progressive reform has taken place. Choosing 30 women for the King's Council (*Shura*[4]), admitting females to the National Scholarship Program to study abroad, and initiating national identity cards[5] are a few examples of how the authorities have started to allow women to have a more public presence (Aloufi 2017). In an effort to maintain international standing, the Kingdom allowed 4 females to participate for the first time in the 2016 Olympics.

Overall, the past few years, in general, have witnessed a significant reform both politically and socially. The Saudi Vision 2030 called for more female involvement in the public spheres. Allowing women to drive[6], appointing few of them in municipal positions, allowing physical education in public schools[7], and opening stadium doors to women. Those examples are considered as "historic" in terms of women's rights (Reguly 2017).

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[4] The Consultative Assembly of Saudi Arabia, also known as *Majlis Ash-Shura* or Shura Council, is the formal advisory body of the King of Saudi Arabia. Unlike the other two councils, Shura's main purposes is to propose laws and changes to the King (who is also the Prime Minister) and his cabinet.

[5] Before that, every female was listed in the male guardian's family card.

[6] Please refer to Chapter 4 for more details on how some Saudi females' demands made impact socially and politically.

[7] Physical education was not in the girls' public teaching curriculum for decades.

2.2.1 Saudi females and the Internet

At one point or another, media for Saudi females was the only window to the world beyond their homes and the girls/women only schools. When the internet came to the country in 1999, there was little known about how women used it (Al-Saggaf 2006). When Web 0.2 was introduced, a jump in topics generated by women was observed and there was a high use of online forums (Guta and Karolak 2015; Madini and de Nooy 2014).

Forums are an example of online communities. Being an active member of certain communities required some skills that Saudi women were generally not trained for (Alfurayh 2016; Guta and Karolak 2015). Cross-gender communication was imperative in those online communities. Some extremist opinions forbid such interaction online because it is believed to be an extension of the face-to-face mixing between genders in real life, which is viewed as a sin and highly improper (Al-saggaf 2011; Alrasheed 2012). For more moderate-thinking schools, the role of thumb was to be polite and respectful in online communicating between genders (Alyami and Matwin 2017). However, females learned that any indication of agreement with a fellow male community member could be perceived as filtration and lead to unwanted attention (Alrasheed 2012). As a result, most Saudi women saw that it was safe for them (and for the sake of maintaining their honor and piousness) to be limited to posting on topics traditionally perceived as related to women, such as cooking, child rearing, and fashion. Some forums would flash "For women only" or "Men are not allowed" signs, and this is still very common. Any

exception to this conventional rule is banished from the forum by the administrator, or worse yet, ridiculed and undermined (Madini and de Nooy 2014).

2.2.2 Saudi Females in Social Media

Unlike forums, most social media platforms are not controlled by individuals. However, some of the issues discussed above (e.g., self-presentation, reputation) continue to be a source of concern for some Saudi women (Al-Jabri et al. 2015; Aloufi 2017). Even though social media was a key turning point in the history of internet use with respect to Saudi females (Ahmed et al. 2017; Al-Dabbagh 2015; Sreberny 2015), very few studies have been done on Saudi females in isolation, and less so in examining identity construction (Alruwaili and Ku 2020; Guta and Karolak 2015). Below is a summary of those studies organized by the methods used in them.

2.2.2.1 QUALITATIVE STUDIES- THEMATIC ANALYSIS

Al-saggaf (2011) was amongst the first to do an ethnographic study on 15 Saudi female Facebook users. The study was conducted on private university students, aged 19-42, in Saudi Arabia. The researcher reported the females' perception of their experience with Facebook. The thematic analysis resulted in interesting findings: a) Saudi females were keen to maintain ties with family and friends on Facebook, b) privacy concerns were synonymous with self-presentation and self-disclosure, c) joining political groups

made them more comfortable in discussing politics, and d) time management and family responsibilities overshadowed the personal benefits of using Facebook (namely increasing self-confidence). The author suggests expanding the pool of participants to a variety of female socio-demographics and examining how cultural context affects their decision on participating.

Guta & Karolak (2015) examined how Saudi females' identity is expressed in social media. They conducted in-depth interviews with seven Saudi females, aged 20-26 years, residing in Saudi Arabia at the time of the study. The authors found that the voice (a metaphor for content writing) has helped decrease their portrayal as cultural victims under oppressive practices. In addition, the participants expressed different ways in preserving their voice with minimum damage to their real identity. For example, using nicknames, creating more than one account, concealing their images (i.e., portraits or selfies) reveal how those females mixed and matched different aspects of their identities (i.e., the ones that they chose to reveal). For future work, the authors suggested a close examination of the interaction between reformers and traditionalists and how that interaction can affect Saudi female's identity.

Amer (2016) focused her thesis dissertation on an examination of Saudi women's perceptions of social media use. She questioned whether social media could be perceived as a tool of change in an environment that has long been known for restraining freedom of expression. In-depth interviews with six Saudi women aged 23-30 years were analyzed qualitatively using a predefined themes categorization process. The predefined themes

were: 1) independence and rights; 2) driving; 3) self-expression; 4) freedom and opening up; 5) hesitations, limitations, or not being free; 6) culture and tradition; 7) difference in attitudes of younger versus older generations of Saudi Arabians; and 8) gender equality.

Results show that Saudi women see themselves as independent due to "change agents" that contributed to that independence, such as traveling abroad, education, employment, social media, and peer pressure. Social media also emerged as the leading change factor of self-expression as it helped women connect with the world, making them feel that they are no longer ignored, and promoting their self-confidence. Social media was also perceived as a way to open up the Saudi society as part of fostering globalization. The participants further indicated that they needed their male guardian's permission to use social media, and the use had to be in accordance with the societal norms and traditions. Controversial subjects such as sexuality or politics were mostly avoided, but, if necessary, fake identities could be used to participate freely. The participants perceived the younger generation as tech-savvy, open-minded and more likely to adopt westernized ways. Finally, gender quality was positively observed as equal opportunities are now available to both men and women. The author suggested a larger sample size and further examination of the correlation between social media and a cultural revolution when present.

Alruwaily (2020) studied the effects of social media and online communities on Saudi female college students who lived in the USA. She interviewed fourteen females who had been living from 3-9 years abroad and with an age range from 18-40 years old.

They were asked different questions related to their live and perceptions of themselves living abroad. The results showed six major themes that emerged: 1) identity as a Saudi, female, Muslim, and student; 2) identity changes after arriving in the USA; 3) OSNs and the expression of identity; 4) the role of communities in the lives of Saudi female international college students; 5) educational social media; and 6) Saudi female international students.

Living abroad had changed the Saudi female's way of communicating online. For example, they felt more open and more independent in the United States as compared to feeling closed off in Saudi Arabia. In addition, their expression of identity had changed while maintaining cultural roles. Protecting privacy online was paramount no matter where they resided (e.g., they did not post face pictures or revealed too much identifying information). Offline, the protection went further to the point that the presence of a Saudi male classmate would alter the amount of information a Saudi female would share about herself and her family. On the other hand, the participants experienced extensive use of educational OSNs and found them helpful in their studies. The study concludes with a set of recommendations for the US professors who teach Saudi students. They are asked to take into consideration the cultural variation of the students, especially the females, when instructing them.

2.2.2.2 CONTENT ANALYSIS STUDIES

Unlike other participatory studies, Almahmoud (2015) used a content analysis approach in her dissertation to explore how Saudis frame the Women2Drive campaign

that took place on October 26, 2013[8]. She analyzed a number of highly circulated tweets posted by top 5 publicly known Saudi female activists (pro-driving) and 5 publicly known Saudi male clerics (against-driving). Discourse analysis results showed that male clerics framed their tweets in ideologies that were derived from social, political, and religious settings. This intertextuality presented the following frames: foreign conspiracy, westernization with ulterior motives, and harm prevention[9]. Those frames were presented as reasons and ways of building awareness addressing the dangers of driving not only to women, but to the entire nation. Female activists simultaneously framed their campaign with the following concepts: women solidarity, international outreach, and evaluative ratification to both society and government.

It was interesting to observe that despite the extensive attack on foreign cultures, men limited all their posts to Arabic only, while women used different languages extensively (e.g. English and French) to gain international attention momentum. The author observed that "the utilization of foreign languages does not only indicate the international reach of the post, but it also implies the user's projected identity and their self-positioning, particularly their level of education, progressiveness, and open-

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[8] Chapter 4 explored the campaign two years later when another social call resulted in drastic consequences investigating how the Saudi society reacted to the escalations of this call.

[9] Harm Prevention is one of the Sharia principles that has long been applied to different personal, and national circumstance in the Fatwas. It translates as "warding off corruption takes precedence over bringing benefits, which basically means that when deciding on doing something, if the negatives of doing something outweigh the positives, then you should avoid it" Almahmoud (2015, p 25).

mindedness". For future work, the author emphasized the importance of analyzing Twitter posts in sociopolitical events and observing how those events shape the notion of social justice.

Aloutaibi (2017) completed her dissertation on gendered moral panics and the Saudi ban on women driving. Similar to the previous study, she approached the Women2Drive Campaign by analyzing 340 tweets from the 2011 campaign. She defined gendered moral panic as "a fear and concern about perceived threats against traditional societal expectations of gendered roles and behaviors". Moral panic has been derived from the social panic assumption that a social concern can be escalated in mass media. The purpose of the study was to explain the continuous persistence of banning the women as drivers from both traditionalist and non-traditionalist views.

Aloutaibi's thematic analysis resulted in 4 main themes: westernization, mockery, defiance of state, and defiance of gender discrimination. She found that non-supporters (males and females) did not see driving as a discussion-worthy issue in the first place. This elicited a high number of sarcastic tweets, discrimination based on traditional genderized roles (housewives, house chores, etc.), and threats to women's reputation and that of her male guardians and family. Furthermore, traditionalists did not cease to refer to female driving as treason, a betrayal to the nation, and soul-selling to the West, hence

they labelled the driving as a defiance of the state, believing that offenders should be jailed, or dealt with according to Sharia[10].

Also, it was not clear what the role of the male guardian or that of other male family members in women's mobility was (i.e., did they drive their female relatives to schools, work, etc.). She noted that those observations were not present in the discussion, which suggested a genderized moral panic. As Twitter was a tool for women to demand their rights, the author strongly suggested examining the impact of the male guardianship system that controls the females' presence and mobility in the public sphere.

2.2.2.3 MIXED METHODS

Saleh (2014) conducted an early investigation of the role that online social networks (OSN) play in supporting divorced Saudi women[11]. Her thesis dissertation was done in two phases. Phase 1 was a qualitative survey that asked 394 divorced Saudi women to identify potential challenges that they face. The second phase was a quantitative online survey that measured those challenges. There were 248 participants

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[10] It is important to note that there are no Islamic verses both in the Holy Quran or in the Prophet Mohamed's (PBUH) rules that forbid women's mobility. Requests such as in this example are based on jurisprudence in *Fatwas* issued in this regard (see footnote #1) and the harm prevention principal.

[11] Divorce is initiated by the husband only, with no time or place restrictions. Women initialing divorce have to undergo a series of court trials, presenting evidence, and possible return of the dowry (*mahr*) that they received from the husbands before their marriage. This case is called *khol'e* and requires a court order (Alrasheed 2012).

for this phase, and the study was based on snowballing and appropriate sampling techniques.

Saleh's results showed that newly divorced women, with a personal income, and with a higher education, are more likely to be present online to seek support while they experienced the new adjustments in their lives. The most accessed OSN were: Twitter at 63%, followed by Facebook, and YouTube with 45.5% each, and LinkedIn with 18.1%. The majority (89%) accessed these OSNs at least once a day, and 70% spend 1-7 hours per day on them. That high level of interaction with OSNs helped divorced women feel less like social outcasts; helped them push society towards understanding divorced women's feelings and needs; facilitated communication with their former husbands and their kids[12]; helped them find employment opportunities or increased their market (true for those working from home); supported them during emotional downtimes (e.g., depressions, remorse, etc.); and educated them on their legal rights. For future observations, the author suggests further exploring the relationships among wider demographic traits, other controversial and stigmatized issues, and the support women get via OSNs.

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[12] Until this year, unless the divorced woman obtains a court order, the custody of the children is granted to the father by default no matter their age.

2.3 Self-Development

Contrary to common belief, self-development does not stop when a human reaches adulthood, but keeps progressing via other stages (Dunkel and Harbke 2017; Vignoles 2011). Erikson's Stages of Psychosocial Development (1964) explains how people develop their identity via eight stages of life, from birth to the golden age (Dunkel and Harbke 2017; Lerner and Castellino 2002).

Each stage is determined by age and marked by a period of a specific crisis that a person needs to overcome in order to develop a personality virtue. In the first four stages of life (ages 0-18m, 18m-3yrs, 3-5yrs, and 5-13 yrs), the virtues of hope, will, purpose, and competence are developed through the mastery of trust, autonomy, initiative and industry. The next stage, (13- 21yrs) is when the identity forms, which results in fidelity development. Love is developed in the following stage (21-39 yrs) via mastering intimacy over the sense of isolation while care is developed between the ages of 40 and 64 via generativity. Lastly, mastering integrity over despair in the senior years results in achieving wisdom. This increase in personality complexity reflects the process that must be undergone. Failing to achieve the outcome or not overcoming a particular crisis (i.e. the low point of a particular period) would result in a personal struggle with that outcome throughout an entire life (Dunkel and Harbke 2017; Yang and Bradford Brown 2016).

Self-development also has a directive function in which adults reflect on their experiences, personal beliefs and values to direct their future self towards more

rewarding actions that align with their goals in life (Kim Koh and Wang 2012; Thoits 2013; Vignoles 2011). As the individual develops a positive sense of self and identity (Yang and Bradford Brown 2016) that was not achieved in the teenage stages according to the Erickson's theory, he/she finds his/her way later in life (Kim Koh and Wang 2012; Williams and Wittig 1997).

2.3.1 Online Self-Development (OSD)

Self-development is highly impacted by social interactions (Al-Jabri et al. 2015; Ali-Hassan et al. 2015; Lerner and Castellino 2002). In the online sphere, social interaction is not tangible, and it takes a great deal of time to process, understand, react to, and disseminate information (Al-Khalifa 2011; Cheung and Lee 2010; Sandoval-almazán and Valle-cruz 2016; Sousa et al. 2010). In this regard, self-presentation is a key element in OSD constructs (Kim Koh and Wang 2012). Orsatti & Riemer argue that the day-to-day social interactions via SM shape people's identity, self, self-presentation, and self-representation (2012). Carter (2017) defines the process as "the extent to which an individual views the use of an IT as integral to his or her sense of self - as a new form of identity." (Carter 2015). This result of online identity formation is a reflection of our perceptual model of physical existence in the new environment in which the personality develops (i.e., online domain) (Kim Koh and Wang 2012).

Along with social interaction, the process of OSD can be explained through the transformative thinking process since social media have this type of impact on its users

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(Ali-Hassan et al., 2015; (Ali-Hassan et al. 2015; Losh 2014; Naseri and Elliott 2011; Shi, Rui, and Whinston 2014). In the literature on SD, a similar concept called 'transformative learning' was coined by Mezirow (2006) (Illeris 2013). Interestingly, the concept was inspired by the American Feminism Movement in the 1970s, where women experienced development in consciousness as a result of liberating themselves from the oppressive conditions caused by social and individual rules (Illeris 2013). This study takes into consideration the multifaceted nature of an online social identity that leads to women's OSD (Kim Koh and Wang 2012), including the feminist social identity.

2.4 The Feminist Identity Development Model (FIDM)

Theories based on women's and feminist identities revolve around the consequences, issues and challenges for women living in patriarchal societies (Hyde 2002). As Olesen (2011) stated,

"The theme of domination prevails in feminist literature ...but the subject matter is often gender discrimination within a patriarchal society".

In feminist research, the goals are to establish collaborative and nonexploitative relationships, to place the researcher within the study so as to avoid objectification, and to construct research that is transformative. (Denzin and Lincoln 2011). After reviewing the major theories (Denzin and Lincoln 2011; Erchull et al. 2009; Hyde 2002; Wajcman

2010). I found that the FIDM is the most appropriate model for the context of this study since Saudi women are experiencing the same process (Figure 2-1) as (Al-Dabbagh 2015) noted, although my study focuses on the domain of OSNs (Radsch and Khamis 2013).

FIDM was introduced by Downing and Roush (1985) as an explanation of the second wave of feminism that happened around the 1970s (Downing and Roush 1985). The authors developed a conceptual model to explain the stages in which a woman's identity develops so that she can identify herself as a feminist (Erchull et al. 2009; Hyde 2002). The authors assumed that on a basic level a woman is not aware of the social oppression, patriarchal system or the notion of sexism that have been practiced against her. They also presumed that a woman is *passively accepting* the status quo, she sees men as superiors, and accepts whatever is bestowed upon her by society or state until an accident/incident happens. The *revelation* is a call to awaking that makes her question her situation within a masculine system, which can result in hatred towards men. Next, she looks for solutions by *embedding* herself in women's groups to seek support and strength in facing the power of men, society and system. This process leads her towards developing a more coherent sense of her female identity (*synthesis*). She is building personal preferences and choices as she sees fit to reflect her personal needs (not those of men, society, or system). At this stage, women are also more objective in their views of men, and they try to come to terms with players outside their groups. The final stage is the *active commitment* to social change, aiming to end sexism, gender discrimination, and the patriarchal system.

Passive Acceptance	Revelation	Embeddedness-Emanation	Synthesis	Active Commitment
Passive acceptance of traditional sex roles and discrim-nation; belief that traditional roles are advantageous; men are considered superior.	Catalyzed by a series of crises, resulting in open questioning of self and roles and feelings of anger and guilt; dualistic think-ing; men are per-ceived as negative.	Characterized by connectedness with other select women, affirma-tion and strengthening of new identity. Eventually more relativistic thinking and cautious interaction with men.	Development of an authentic and positive feminist identity; sex-role transcendence; "flexible truce" with the world; evaluate men on an individual basis.	Consolidation of feminist identity; commitment to meaningful action, to a nonsexist world. Actions are personalized and rational. Men are consid-ered equal but not the same as women.

Figure 2-1 The Feminist Identity Development Model (FIDM) by Downing & Roush (1985)

Though the model is not inclusive to this study, its stages reflect the process that Saudi women undergo on their quest of SD (Al-Dabbagh 2015; Metcalfe 2011). In addition, the model supports the idea that developmental phases occur consecutively. However, the reality is that one or more stages can be re-lived or re-experienced (Erchull et al. 2009). Ideology and beliefs can also be changeable, depending on the chronological time of one's identity development (Jenkins 2008).

2.4.1 Feminism in Saudi Arabia

The Feminist concept derived from the Feminist Theory, indicates that groups and unions (e.g., Women's Rights Movements) are formed in order to uproot the social and political agenda that work against gender-equality. This is the central point of the theory (Berkowski 2017). In Saudi Arabia, the absence of such civic society unions and groups

made even the most educated and socially active women unable to formulate a feminist movement (Alrasheed 2012). Therefore, the new communication technology platform (i.e., social media) enabled the women to find a free space to formulate pressure groups campaigning for specific social rights (e.g., Women2Drive and Ban of Male Guardianship[13]) and a way to raise international awareness regarding their rights, and to push the government for change (Reguly 2017).

Even in culturally open and socially and economically developed countries, Feminism as a concept is sometimes negatively viewed, as well as it is often dealt with sensitivity and with prejudice (Berkowski 2017). In the Saudi context, the notion is more negatively perceived. Even moderate thinkers opt for Islamic Feminism, where justice and fairness replace equality, since men and women should never be equal according to this concept. Islamic Feminism also promotes the fairness of Islam, and it explains that injustice to women happens because of the tribal and cultural norms, not the religion itself (Alrasheed 2012).

As Aloufi (2017) noted, Saudi women's identity has undergone and will undergo a dramatic change. The revelation and the embeddedness that Saudi women experienced in social media opened the doors wider to speculations about how identity changed from the "National I" to the "Self I". In other words, in a society where all women had to behave,

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[13] The Ban_of Male_Guardianship hashtag has been used for years. It has been one of the most controversial issues in Saudi Arabia since it is not only rooted in politics, but in religious and tribal traditions.

talk, and think as one collective body (Aloufi 2017; Guta and Karolak 2015), it has become imperative to first distinguish the woman's identity, and not the feminist one (as part of a group). For that reason, plus the controversial use of the term feminist in the Saudi context, I opted to use the term women's identity in studying WCOSIF.

Based on previous studies, I have consistently observed that Saudi women take part in what would be categorized as Feminism, even though it is not labeled as such. Alrasheed (2012) studied texts (books, novels, articles) produced by two Saudi female groups: a) Islamists (well-known, highly educated, and prestigious religious activists) and b) Liberals (elite, well-known, highly educated and westernized). She made her observation with the following words: "I found that all categories of women have reached that critical stage whereby a feminist consciousness is slowly but steadily developing" (Alrasheed 2012)[p 37].

Berkowski (2017) and Erchull et al. (2009) noted that the difference between feminist identity and attitude is paramount, especially in culturally challenging contexts. As I established above, identifying oneself as a feminist might have drastic consequences in the Saudi context (Almahmoud 2015; Aloufi 2017; Alrasheed 2012). However, a woman's perception, attitude, and behaviour are the important factors in this context as suggested by all the studies discussed in the previous section.

2.5 The Technology Acceptance Model (TAM)

In the Human-Computer Interaction (HCI) field, TAM has become one of the most widely known and used models utilized to explain any computer-mediated behavioural use (Ahmed et al. 2018a; Ngai, Tao, and Moon 2015). TAM was introduced by Davis (1985) as an expansion of the Theory of Reasoned Action (TRA) used by Ajzen & Fishbien (1980) to explain how a user behaves toward a technology system (e.g., internet, software, etc.) (Davis 1985). The two original measures of TAM are Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) and their effects on *Attitude* towards system use (ATT), Behavioural Intention to use (BI), and actual system use (i.e., *Behaviour*) (see Figure 2-2). Those measures have since been expanded to accommodate different research objectives, such as perceived risk, perceived quality, and perceived self-efficacy (Alyami and Spiteri 2015).
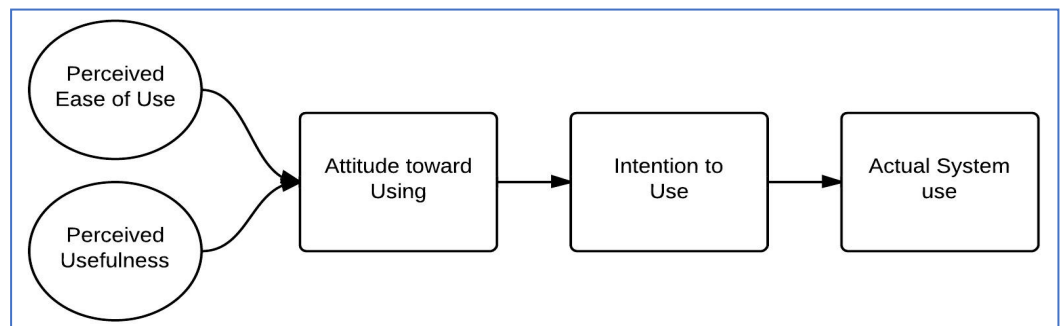
Figure 2-2: The Technology Acceptance Model by Davis (1985)

In social media studies, TAM was extensively used to examine user attributes, such as user perceptions, user experience, user personality, and user intention toward using a tool or a platform (Ngai et al. 2015). In addition, it was used to explain/ analyze information sharing/ diffusion in online social networks (Ahmed et al. 2018a). Knowledge sharing via social media within TAM conceptual framework, in particular, is predominant in different studies in various fields, such as health, management, law, e-commerce, sports, and IS (Wang, Min, and Liu 2014).

Despite the fact that social media is pervasive in people's lives, there is a lack of understanding how each user's perceptions are rooted in and formulated by the user's *identity* (Stanciu 2017). Based on the studies mentioned above, we observed that Saudi females' perceptions of PEOF and PU were prominent. As FIDM does not necessarily distinguish the attitude towards accepting a feminist identity from the actual behaviour, TAM can be interrelated with FIDM to provide a more comprehensive evaluation of WCOSIF.

2.6 The Uses and Gratification Theory (UGT[14])

UGT originated from the Mass Media Communication research, which escalated[15] in the 1970s, and was used mainly for political messages diffusion and marketing

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[14] In some references the acronym is U&G.

strategies development (Ruggiero 2000). Similar to TAM, UGT is also one of the commonly used frameworks to explain user participation in social media research (Ngai et al. 2015). However, unlike TAM, in which the focus is on perception and attitude, UGT focuses on goal satisfaction (Ruggiero 2000). That goal varies depending on research objective, which occurs mainly in the e-commerce field (e.g., marketing, online shopping behaviour, information sharing, etc.) (Ahmed et al. 2018a; Ngai et al. 2015).

Williams and Wittig (1997) were amongst the first to summarize previous research that has used UGT and they came up with 7 common themes that should be considered when studying social media user interaction. Those themes are: social interaction, information seeking, pass time, entertainment, relaxation, communicatory utility, and convenience utility. However, after the researchers conducted 25 in-depth interviews with social media users aged 25-56 years, they found that three new themes had emerged: expression of opinions, information sharing, as well as surveillance of others (ibid).

In the Saudi context, Al-Jabri et al. (2015) used the most relevant factors in studying the effects of social media on Saudi users through the lenses of UGT, including self-presentation, social interaction, freedom of expression, and enjoyment (Figure 2-3). A quantitative (instrumental) survey was populated via social media sites and personal emails (snowballing techniques) and returned 281 valid responses from Saudi Twitter

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[15] Mass Media Communication research was initiated by the US Motion Picture Research Council in the early 1920s (Ruggiero 2000).

Users (35.6% females and 64.4% males). Results suggested a high association between Twitter use and freedom of expression, social interaction, and hedonic purposes (i.e., enjoyment). At first, it seemed that self-presentation was not as strongly connected to Twitter use, but further analysis showed that self-presentation had a significant impact on Saudi females' Twitter use. It implies that Twitter offers Saudi females an opportunity to present themselves despite "the restrictions often faced by Saudi women in terms of in-person self-presentation and identification expression as well as through other tightly controlled media" (Al-Jabri et al. 2015).
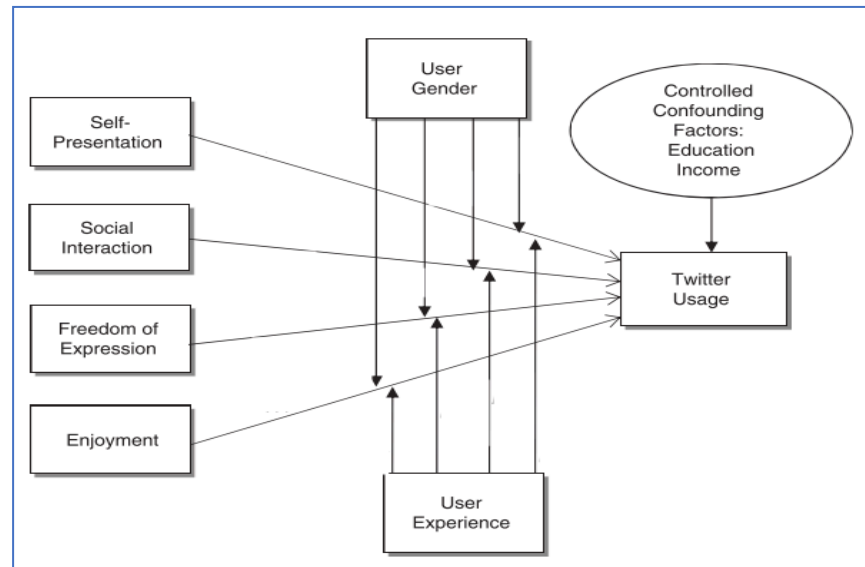
Figure 2-3: An example of UGT utilization in social media research (Al-Jabri et al. 2015)

Overall, applying UGT in studying WCOSIF cannot be ignored since it compliments FIDM and TAM in many ways. Self-presentation, as established in section 2.2.2, is an important part of identity formation, while social interaction is a core stage in FIDM. Enjoyment and Freedom of Expression are both implied in TAM/PU. Social Interaction has been found to be central to both FIDM and UGT. Risks (e.g., surveillance, judgment, emotional distress) control TAM Attitude and limit the gratifying goal of UGT while positively contributing to the Revelation stage in FIDM.

2.7 Cultural Identity and Online Self-Presentation

Smith (1992) in his book "National Identity" questions whether national identity would resist the increasing trends of global interdependence in the third millennium [p 145]. Social media had answered that question by transforming the Internet into a social space where the *self* is presented through words, semantics, photos, videos, etc. (Kietzmann et al. 2011). This self-presentation is one of the determinants of online identity (Kaplan and Haenlein 2010; Orsatti and Riemer 2015).

2.7.1 Self-presentation as a form of online identity

Online self-presentation was under investigation since the dawn of Web 0.2 (Dominick 1999; Ellison, Heino, and Gibbs 2006; Jensen Schau and Gilly 2003). On one hand, the distinction between the online and offline self-presentation was essential in

certain socially-sensitive fields, such as online dating (Ellison et al. 2006), online gaming (Kwon, Chung, and Lee 2011), and online education (Walther, Carr, and Choi 2010). On the other hand, Orsatti & Riemer (2015) argues that that distinction should be discarded because it obscures our understanding of how OSNs shaped people's identity. Their idea is based on the observation that the massive scale of OSNs eradicates the differences between online and offline self-presentation. For the aim and purpose of this research, the contextual application to both observations should be considered (Heivadi 2013; Wolfsfeld, Segev, and Sheafer 2013), where differences in self-presentation are prevalent in cultural studies (Ellison et al. 2006; Guta and Karolak 2015).

Robert V. Kozinets conceptualizes the study of OSNs usage as a contextual and dynamic operation within a given cultural setting (Kozinets 2010). His view is that the interaction with OSNs calls for the differentiation between the moral and behaviour settings online and offline (McKenna et al. 2017). Technologies have become essential in our age, therefore, those settings are adjusted to also reflect the culture, the domain, and the community (Kozinets 2010). Although the focus of Kozinets is on communities that exist purely online and how to conduct an ethnographic study in such setting, his approach can be extended to any study of OSNs (Kaplan and Haenlein 2010). Therefore, this research does not look into self-presentation in OSNs as a component of identity alone, but as an expression of cultural values and perceptions (Ellison et al. 2006).

2.7.1.1 ONLINE SELF-PRESENTATION IN CONTENT ANALYSIS STUDIES

Heivadi (2013) examined how cultural identity is constructed by Iranian social media users. Three aspects of self-presentation were selected to be examined: full name exposure, fake profile advantages, and privacy settings. By conducting a survey of 308 Facebook users, the results showed that online social identity is a reflection of the conservative nature of a particular country (i.e., Iran). Privacy is highly regarded since most users do not expose their full names, their accounts are limited to close friends and family members only, and they have one or more completely pseudo profiles. The study helped shed light on the interdependency of identity in online and offline settings, where culture and social norms are prevalent.

In a similar effort and using a similar content analysis approach, authors Mazur & Li (2016) analyzed 100 posts of young Chinese and American people. Their study aimed to explore different identity constructs through public self-presentation in different contexts. They found that western culture had lessened the effect of collectivism, which is a characteristic of the Chinese culture. Americans were more likely to express their opinion freely, rate their personality, have more self-esteem, and share personal information about themselves and their families. Chinese students seemed more affected by political and economic change, hence, the effect of living conditions on self-presentation on OSNs.

2.7.1.2 ONLINE SELF-PRESENTATION IN QUANTITATIVE STUDIES

In an effort to determine how online self-presentation in OSNs affects self-development in young adults, authors Yang & Bradford Brown (2016) did a survey on 218 college students at the beginning and the end of the first transition year at college. As the student matured, self-presentation on Facebook became less restricted, and the students had more authentic and positive self-expression. Audiences and community support helped the students to develop higher self-esteem. The study sheds important light on the relationship between interpersonal values and online identity development via self-presentation.

In Saudi Arabia, self-presentation on OSNs has been studied by Al-Jabri et al. (2015) as part of their efforts to propose a model of factors that determine the use of Twitter. Their models hypothesized that self-presentation, enjoyment, social interaction, and freedom of expression have a direct impact on Twitter use, while the user's gender and experience have moderating effects. The data was collected via an online survey with 281 Saudi Twitter user respondents. The results showed that the reserved nature of the Saudi society had made self-presentation exert less influence on Twitter use as compared to the other factors. In addition, gender had a stronger influence on self-presentation as females are more likely to express themselves via Twitter. Using a similar method, Chapter 6 of this thesis builds on their study and further explores the relationship between Saudi women's self-presentation and Twitter usage.

2.7.1.3 ONLINE SELF-PRESENTATION IN MACHINE LEARNING STUDIES

In Computer Science studies, self-presentation is examined by applying different programming algorithms (i.e., models) to instantly filter through the massive data available on OSNs and come up with almost instant results (Derczynski et al. 2013; Leetaru et al. 2013; Tromp and Pechenizkiy 2014). The results can be used to measure customer satisfaction (Porter and Donthu 2008), examine political opinions (Adnan, Lansley, and Longley 2013; Kumar 2018; Wojcieszak and Smith 2013), target marketing areas (Page 2012), study consumer behaviour (Chen 2011; Ito, Hoshide, and Toda 2013), detect hate speech (Hardaker and McGlashan 2016; Watanabe, Bouazizi, and Ohtsuki 2018), and expose fraud (Dimitrios and Violettas 2014) based on many uses of text and sentiment analysis (Chatzakou et al. 2017).

Unlike content studies, where the examiner selects a few hundred samples of OSNs posts to manually classify and analyze them, the machine learning models approach is built to analyze a large quantity of data (Agrawal et al. 2014). The models generally work by dissecting the users-generated posts into semantics and words, then they statistically analyze the sentiments based on predetermined lexicons (Cardie 2014). These steps have been applied and extensively developed for the English language compared to other languages (Salameh, Mohammad, and Kiritchenko 2015). For non-Roman alphabetical languages such as Arabic, there is always a shortage of completely developed libraries to generate the classifying models for text and sentiment analysis purposes (Mallek, Belainine, and Sadat 2017; Sadat, Kazemi, and Farzindar 2014). This is due, in part, to

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the different variations of the language itself, such as different dialects, different forms of writing of the same word, and the new way in which the users are expressing the words on OSNs posts (i.e., shortcuts, mixing letters from different languages, replacing letters with numbers, etc.) (El-Fishawy et al. 2014; Mallek et al. 2017).

Most of the mentioned sentiment analysis studies have been done on Twitter, a major OSN, for many reasons: a large quantity of data posted every hour, the easy availability of such data to the researchers, less restrictions on data-collection protocols, and easy access to international opinions in real-time using hashtags (i.e., an open virtual filed for discussion without the limits of geographic locations or the number of participating users) (Chatzakou et al. 2017). This main feature on Twitter has outweighed its not-very-user-friendly other features such as limiting the posts to only 140 characters, and the threats to privacy (Courtney Walton and Rice 2013).

As for Saudi Arabia, it ranked fourth in the world in the number of Twitter users (Alotaibi, Mehmood, and Katib 2019), and 31% of them are females (TREND 2020). Twitter hashtags have been considered a national discussion playground for many interesting topics throughout the Saudi Twittersphere's short history, including prominent discussions related to Saudi women's rights (Alotaibi 2017; Alyami and Matwin 2017; Sreberny 2015). However, the Saudi dialect in which most of the Twitter posts are written (compared to the Modern Standard Arabic MSA) made the researchers inclined to focus their efforts on constantly modifying their algorithm and trying to develop accurate sentiment analysis measures (Alotaibi et al. 2019). A few authors (Al-Twairesh, Al-

Khalifa, and Al-Salman 2016; Alahmary, Al-Dossari, and Emam 2019; Alhumoud, Albuhairi, and Altuwaijri 2015; Alotaibi et al. 2019) did their studies on developing classifiers that are adjustable to the Saudi dialect with good accuracy. Using a similar technique, we build our own model based on Twitter data gathered from different hashtags related to Saudi women. Chapter 7 explains, in detail, how semantics are used as self-presentation forms on Twitter and have helped us in identifying different sentiments related to Saudi women's online identity formation.

2.8 Objectives Summary

The literature is significantly lacking in terms of how women's identity forms in computer-mediated systems, and more so on contextual and demographic settings. This lack was due, in part, to the massive branching of *Identity* (i.e., terminology variations depending on perspectives and disciplines). In addition, social media research (i.e., large body of articles and books) is relatively new and has been primarily focusing on business and information systems. Observing the number of tweets posted everyday all around the world has without a doubt defined our understanding of Big Data (Agrawal et al. 2014; Gillespie 2013). This context provides a great opportunity for the social media researcher to mine this textual data, where content is exchanged on a massive scale, and user behaviour is relatively uninhibited.

This thesis aims to build a more inclusive and holistic understanding of women's contextual online social identity. As the research world is building towards a more

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interdisciplinary understanding of ourselves and the technology around us (Aoun 2017), my research aims to make substantial contributions in different fields that will be discussed later.

3 RESEARCH METHODOLOGY

In Chapter 2, I identified the conceptual framework of online identity formation (see Figure 3-1), explained the contextual setting, and concluded by addressing the gap in studying women's contextual online social identity formation (WCOSIF) in recent OSNs studies.

This research uses mainly an inductive model building approach (Charmaz 2014; Guest, MacQueen, and Namey 2011; Woo, O'Boyle, and Spector 2017), where the concept of identity is focused on two dimensions: self-development and self-presentation (Figure 3-1). Each dimension is measured by two phases of this research (i.e., two different studies), which will be explained in section 3.1 and illustrated in Figure 3-2.
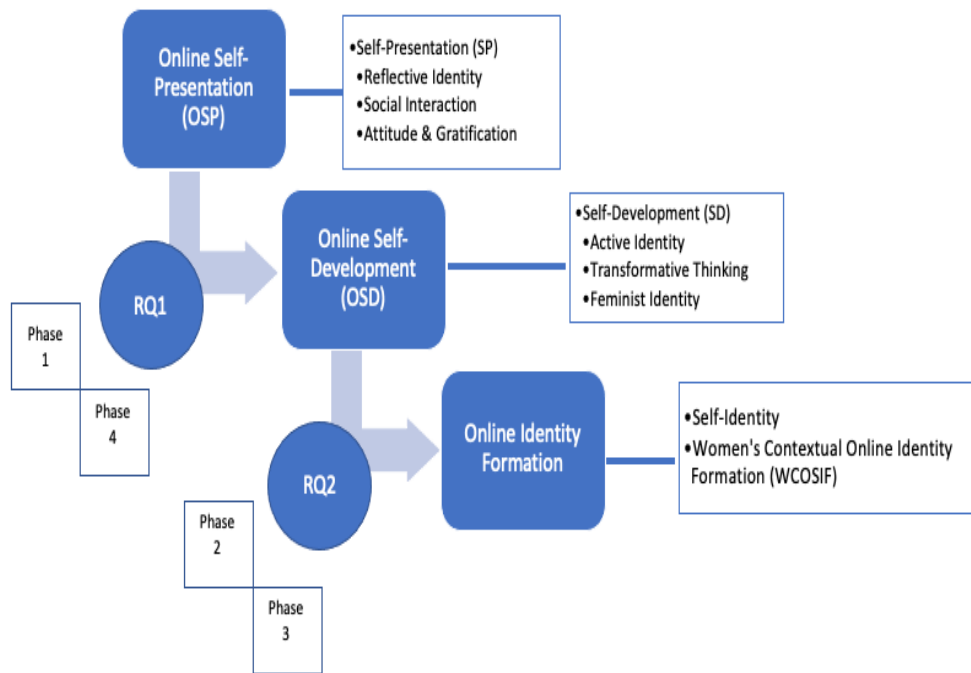
Figure 3-1 The conceptual framework used in this research to study Saudi women's contextual online identity formation

Though some models of OSNs use and women's identity development can be utilized to establish a set of hypotheses (Courtney Walton and Rice 2013; Erchull et al. 2009; Wamba 2018), the phenomena under question (i.e., WCOSIF) is dramatically changing in the context of Saudi Arabia (Alrasheed 2012; Alruwaili and Ku 2020). Recent models have failed to explain the phenomena using deductive methods alone, while pure inductive methods did not capture the necessary quantification of the results that showed valid generalizability (Guest et al. 2011). To add depth and breadth to the

study of the WCOSIF phenomena, a mixed-method approach was opted for (Creswell and Creswell 2017; Johnson and Onwuegbuzie 2004) by initiating four phases of the research and then meta-synthesize the results to form the WCOSIF model building process (Stall-Meadows and Hyle 2010; Timulak 2009).

Figure 3-2 expands on the conceptual framework outlined in Figure 3-1 and illustrates the research design of this thesis, which was adapted from Creswell (2013, pp 209-210). The design also showcases the relationship between the four phases. The In this chapter, I will outline each phase and explain the methods used in each one. Then, I will outline how meta-analysis technique can be utilized to facilitate model building.
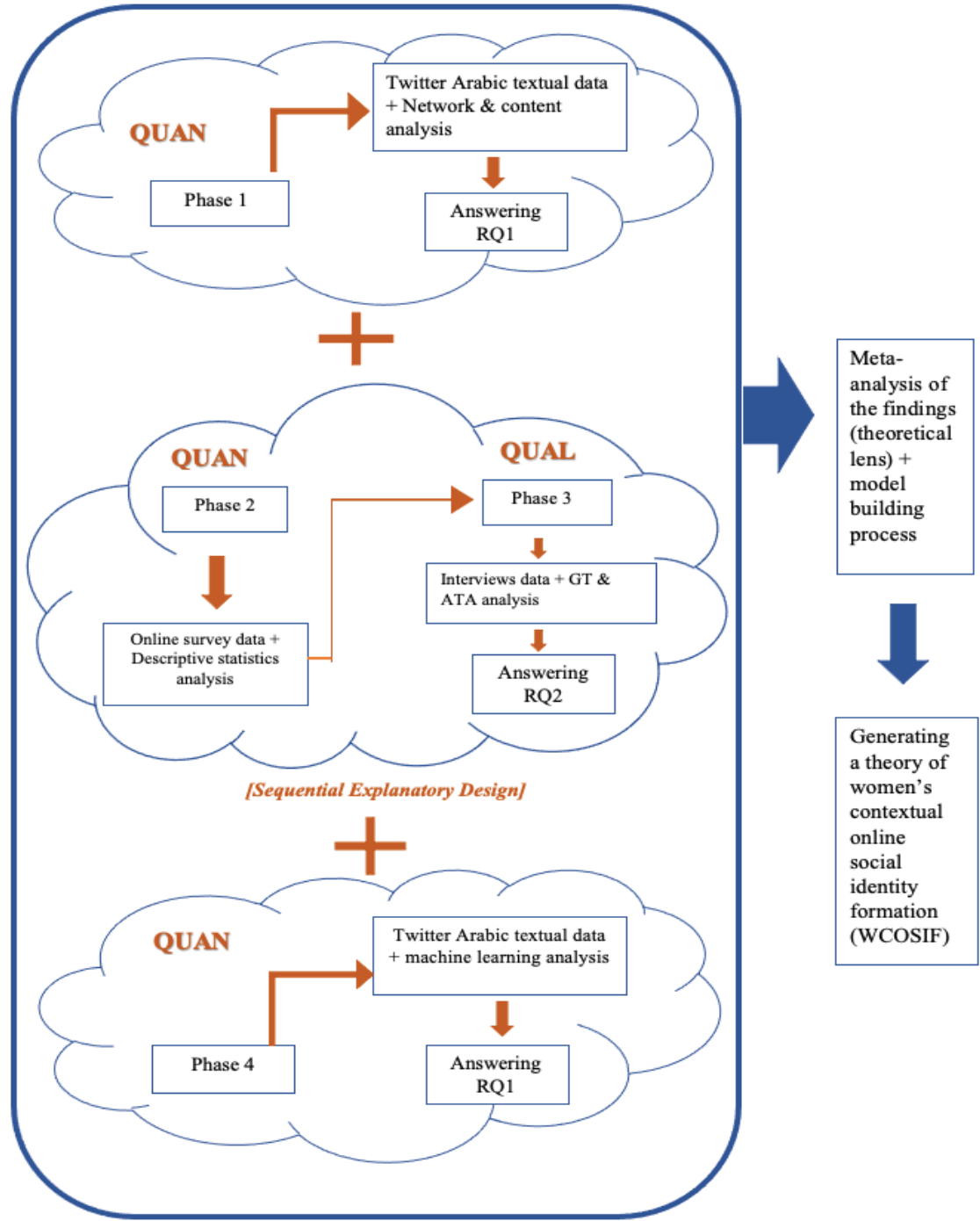
Figure 3-2 Concurrent transformative research design

3.1 Research Design

3.1.1 Phase 1

I discussed in section 2.7 that the *self* is presented through words, semantics, photos, videos, etc. (Kietzmann et al. 2011) as well as the tone, atitude, social interaction and the level of inlunce one gets from that interaction (Schau, H. J., & Gilly 2003) . In order to answer the first research question, the first phase (Chapter 4) aimed to explore the Saudi Twitter sphere to: a) determine how the public opinion is framing women-only discussions; b) examine the state of social interactions in terms of motivation and attitudes towards those discussions; and c) determine key players in those discussions. This phase also helped to identify potential challenges in data collection and analysis, as well as set the course for the rest of this research.

Data were collected in two stages. During the first stage, I collected and analyzed 1419 tweets pertaining to the Women2Drive hashtag. Content and user networks analysis was also done in this phase. Results revealed a male dominance and strong traditional textual framing of the issues. To detect the women's expression of opinion (i.e., self-presentation), the second stage focused on manually categorizing Twitter data (n= 523) to user females (n= 283), user males (212), and unidentified (28). This phase revealed a more compassionate attitude towards a specific case of social injustice for both men and women. Expression of opinion took several directions from praise to sarcasm. In addition, evidence of national identity revelation ranged through different FIDM stages.

3.1.2 Phase 2

Online self-development (OSD) is a key factor to identity formation, as showed in Figure 3-1. So as to answer the second research question, Phases 2 and a subsequent study (i.e., Phase 3) were designed to establish the model of OSD. Consequently, the main purpose of Phase 2 (Chapter 5) was: 1) to give Saudi women a chance to share their perceptions and experiences; 2) to study the role that they play in the dynamics of online communities (as influencers, influenced, or passive recipients of information); and 3) to determine how that role is perceived within national and international interests. In addition, it served as a medium to get contact information for future one-on-one interviews.

A survey consisted of a consent form and a short questionnaire (Appendix 1) that was used for this study. It was designed and distributed electronically in Arabic and English after the final approval of the REB[16]. The targeted sample consisted of Saudi female Twitter users. Despite the low response rate, the ratified sample (n= 165) contributed a wealth of interesting information that showed the chronological effects of Twitter use on participants.

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[16] Research Ethics Board

Between the time of the previous studies (i.e., Al-saggaf, 2011; Guta & Karolak, 2015) and the survey, many female Twitter users have developed a strong sense of identity. Their use of fake profiles has decreased, and the type of information they seek and contribute to online discussions has expanded. Contrary to what was found in other studies, national identity was strongly defined within the global context. Twitter users utilized various languages, such as English and French, for not just seeking support, but for showing their potential, strength, and resilience. Social interactions did not rate high on the participants' agenda since the risks sometimes outweighed the benefits. Nonetheless, their self-presentation was selectively communicated in discussions that mattered to them.

3.1.3 Phase 3

Even though the previous phase unveiled interesting answers, the explanations to those answers were not always clear and, most of the time, showed an opinion polarity. Therefore, in an effort to build a theoretical model of online self-development (OSD) that aimed to answer the second RQ and help generate the model of WCOSIF, this phase (Chapter 6) used a narrative approach by conducting in-depth interviews with 12 Saudi females. The "narrative stories tell of individual *experiences*, and they may shed light on the *identities* of individuals and how they see themselves" (Creswell 2007)[p 71].

A purposeful sampling technique is used (Mason 2010). The selection process has focused on females who can contribute to building the WCOSIF model of this study (e.g.,

Saudi females who experienced a significant change in their lives due to their use of social media). Hence, the screening criteria indicated that the participant should be a Saudi female, 18 years or older, an active social media user (namely Twitter), and has shared enough information in the previous phase that would reveal interesting information about herself and her experiences. Preference was given to those who have been exposed to different cultures (mainly the West). A total of 24 participants matched the description and were contacted through the contact details they provided in the survey (phone number, email, etc.). The recruitment ended up with 12 participants. More details on the participants' demographics are outlined in Chapter 6.

The interview guide (Appendix 3) was developed based on general guidelines found in leading qualitative studies handbooks (Charmaz 2014; Creswell 2007). The guide had 30 questions spread over five conceptual domains that concern OSD (i.e., perception, interaction, change, image, and presentation). The domains were adapted from different studies related to self-development, for instance, (Erchull et al. 2009; Kim Koh and Wang 2012; McLean, Pasupathi, and Pals 2007; Yang and Bradford Brown 2016). The guide was provided to the participants before the interview, but the dialogue was not strictly attuned to it.

Results showed that OSD constructs are best described as a loop of online and offline factors. The factors are encompassed by larger influencers (Charmaz 2014) that are grouped into four main categories: Self-Progress, Social Progress, System & Religion Progress, and Global Progress. Throughout the formation of OSD, its components were

manipulated, influenced, and directed by three main moderators: *OSNs*, *living abroad*, and *transformative thinking*. Testing the generated theory (i.e., OSD theory) against the Feminist Identity Development Model (FIDM), the results showed a positive relationship between the components and the development of the stages in general, except for Stage 4[17]. This may be because the Synthesis stage is skipped in favour of active participation via OSNs (Erchull et al. 2009). The active participation in OSNs will be examined next.

3.1.4 Phase 4

When I examined the results from the previous phases and studies, I found that discussing women's issues has always been laden with relatively strong sentiments. In the final stage of my research (Chapter 7), I closed the loop of identity formation by re-examining online self-presentation. However, this time, with the purpose of discerning the differences between the first and last phase of this research (i.e., study the effects of "time" as a changing factor, which was more than 4 years).

Particularly, in Phase 4, I examined the role of emotions and sentimental semantics that have been prevalent in the development of Saudi WCOSIF. Participants in Phases 2 & 3 have revealed that Twitter to them is either "an emotional tornado" or "a place to ease mental pressure". On Twitter, text is a form of self-expression and self-representation, as established in the previous chapter.

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[17] Please refer to sections 2.4 and 6.2.2 for more details on the FIDM stages.

Since Twitter is the context in which I study the Saudi WCOSIF, emotional and sentiment evaluation of its content and how people are reacting to those sentiments is important. The data (i.e., tweets from hashtags) was collected using tools such as Netlytic[18] and Keyhole[19]. Those hashtags are chosen for many reasons: a) they ignited the attention of many Saudi women towards social rights, health, safety, employment, globalization, feminism, Islamic feminism, and national identity; and b) they reached large numbers of users worldwide[20].

However, challenges continue to persist with Twitter data (i.e., noisy, unstructured, morphology variations, the use of none-text characters, etc.). Those challenges are more prominent with languages such as Arabic, as Chapter 7 elaborates. To mitigate the existing problems, a set of steps were taken. First, a cleaning of the data was done to remove all the hashtags and URLs (Al-Twairesh et al. 2016; Chatzakou et al. 2017). Next, two experiments were conducted. The first experiment was to use an unsupervised learning approach by using unlabelled tweets and run them into a pre-determined lexicon that was built by Alotaibi, Mehmood, & Katib, (2019). The classifier did not produce satisfactory results, so two researchers labelled the data (~750 tweets) manually into three classes (positive, negative, and neutral). The sentiments were labelled further into seven

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[18] A social media analytics tool: https://netlytic.org

[19] A social media tracking online tool: http://keyhole.co

[20] The analytical tools mentioned above provided a statistical measurement in which the user (i.e., the researcher) can verify the popularity, density, and outreach of those hashtags. In addition, the user can set the parameters in those tools to have different choices or to filter in the desired data, as I will explain in sections 4.3 and 7.3.

classes of emotions based on Plutchik's Wheel of Emotions (Tromp and Pechenizkiy 2014). This was done to add a variant to the polarity of sentiment and to contribute more meaningful insights to the results of this phase (Kivran-Swaine and Brody 2012). Using this method of supervised learning in the second experiment, WEKA programming tool was used (Alhumoud et al. 2015; Saad and Ashour 2010). The analysis showed that Naïve Bayes and Random Forests classifiers had the best results with ~97% accuracy when building a model with the 10-cross-folds function.

Furthermore, the results indicated that across all 13 different provinces of Saudi Arabia, Riyadh, Makkah and Hail provinces showed more active participation in women's discussions on Twitter. Unlike the findings in Phase 1, the sentiments of the classified tweets were 58% purely positive in nature. The majority of the 27% negative sentiments were not directed towards women's hatred but rather towards the negative reactions of some users. On an emotional level, trust, joy, and love were the main expressed emotions, while submission and optimism to recent changes were prominent as well. The results indicated a more positive attitude towards women's empowerment in Saudi Arabia than what they have been used to get before, as well as strong independence and self-revelation.

Inclusively, the results of this study confirmed the existing link between self-development and self-presentation through tweets and social media messages (Watanabe et al. 2018). They also helped shed light on social interactions and social pressures that are exercised through OSNs (Ramelb 2016).

3.2 Model Building Using Qualitative Meta- Analysis

The idea of meta-analysis is widely known as a method to conduct systematic review papers (Pigott 2012; Timulak 2009). It is by no mean a summary of the results as it requires that the author delves deeper into the analysis of the targeted studies (Wang et al. 2014). It helps decision making by providing evidence-based strategies to avoid drawing conclusions inadvertently (Pigott 2012). As it follows the norms and conventions of known research methodologies, meta-analysis can be quantitative or qualitative (Denzin and Lincoln 2011).

Quantitative meta-analysis is used for large amount of reviews, and it starts by defining the hypothesis, conceptual framework, and the testing of a theory (Pigott 2012). Since my research is inductive (i.e., qualitative in nature), a qualitative meta-analysis (QMA) is opted for. QMA (also known as meta-synthesis and meta-interpretation) is defined as the bringing together of results of certain themes in a way that the combined results have greater conceptual inferences than their individual parts (Finlayson and Dixon 2008). According to the SAGE Handbook of Qualitative Data Analysis, QMA is growing in use, but has been marred by the narrative technique (Denzin and Lincoln 2011). A growing trend of authors have provided preliminary guidelines based on leading qualitative methods used for designing studies (e.g., meta-ethnography, grounded formal theory, cross-case analysis, and meta-studies) (Finlayson and Dixon 2008; Stall-Meadows and Hyle 2010; Timulak 2009). In the field of social media research, there is a

sizable amount of qualitative studies (Ahmed et al. 2018b; Ngai et al. 2015), yet there is still a necessity for the development of a meta-analysis approach that takes into consideration the differentiation among contexts, societies, and norms (Kozinets 2015).

As illustrated by my research design Figure 3-2, a QMA was selected with a focus on descriptive-interpretive cross-case QMA technique for several reasons: a) it supports the understanding of a new phenomenon; b) it sets the course for aggregating the results across different studies and examines them via a theoretical lens; c) it facilitates the occurrence of a new conceptualization; and d) it clarifies the correlation and development of the phenomena's categories based on that phenomenon (Sardi, Garengo, and Bititci 2019; Stall-Meadows and Hyle 2010; Timulak 2009). The four studies (phases of this research) in combination address the overall research questions specified in the beginning of the dissertation. As such, an accumulated view can facilitate and contribute to the model building of WCOSIF with new knowledge in the domain of OSNs use (Finlayson and Dixon 2008). Chapter 8 (Discussion) will detail the strategy used in this introspective meta-synthesis and how it has linked the different aspects pertaining to Saudi women's online identity (i.e., answering the research questions).

3.3 Summary

Understanding the context in which the identity of an online user is shaped and formed requires applying different disciplines and methods. The literature review has

resulted in the conclusion that a woman's online social identity is formed within a unique context with internal and external factors. The Saudi Twittersphere has been one of those challenging contexts. In order to understand the conceptual relations among different factors that feed WCOSIF, and to generate a grounded theoretical model that takes into consideration those relationships, I planned a multi-phased methodology for my research. Each Phase will be presented in a chapter along with its objective and detailed methods, results, and discussion.

PHASE 1: CULTURE AND GENDER IN OSNS IN SAUDI ARABIA- A CASE STUDY

3.4 Study Overview

In late 2014 and 2015 (during the time that I undertook this research), many political and social changes have taken place in Saudi Arabia. Generally, the changes in social norms are as strong a force as politics (Moghadam 2014), and OSNs are used to propagate this change (Batrawy 2014). In order to answer the first research question of this research[21] (i.e., to study the Saudi women's online identity formation through self-presentation in online social networks (OSNs), I set the course of this research by exploring the social aspects and change over time in a case that related exclusively to women in a specified context: the ban on car driving for women in Saudi Arabia.

Saudi Arabia was the only country, in the last decade, where women were not permitted to drive (Chaudhry 2014), thus this important issue had received a substantial amount of global attention. Although no written law forbade women from driving (Alotaibi 2017; Chaudhry 2014), the government officials stated that the women driving issue was a social concern, which meant that the general population had to accept it first

(TheEconomist 2012). The issue seemed to be rooted in: a) the conservative Saudi culture that forbade women travelling long distances without a male guardian (Alfurayh 2016)(stemming from religious roots); b) the fear of tarnishing women's reputation due to potential threats, such as verbal or physical abuse (Guta and Karolak 2015; Madini and de Nooy 2014)(social pressure roots); c) the absence of female police or law officers, and training of officials (Alrasheed 2012)(logistic roots). In the Saudi strongly male-dominated culture, there is a lack of substantial evidence concerning how women are reacting to this issue (Almahmoud 2015; Doumato 1991).

3.5 Study Objectives

Saudi Arabia has a significant share of the vast use of social media worldwide (Dahdal 2012). Twitter, in particular, is free news media and a social interaction channel that is widely used and very popular among both men and women in Saudi Arabia (Al-Jabri et al. 2015). In Twitter, users are free to voice their opinions without the restrictions of formal news media or blogs, or the biased effects of using online surveys. Twitter is an open platform for exploring and studying social interaction and behaviour in the online sphere.

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[21] The first research question is: How do women in challenging situations use self-presentation in online social networks to formulate a social identity in both national and global contexts?

Therefore, this preliminary study used tweets to investigate the way Saudi women's issues are presented on OSNs discussions by identifying the tone, key players, and social reaction. It specifically examined the effects of gender differences on those discussions. To do so, I focused on two popular discussions at the time (i.e., trends): the Women to Drive movement and the case of Loujain Alhathloul. The approach answered the study questions by running two steps of data collection and analysis. This process is explained in the following sections.

3.6 Data Collection & Analysis

3.6.1 First Step

3.6.1.1 DATA COLLECTION

The hashtags #Women2Drive (both in English and Arabic) were used to collect tweets during the period of March 18-April 15, 2015. This specific timeframe was chosen for 2 reasons: a) the Saudi government had experienced significant changes at the royal level, which seemed to be a good opportunity for voicing civic demands (Saudi Women Web Blog 2015[22]) and b) the movement was regrouping for voicing their demands, and the activists hoped for less social and system opposition (Pitetti 2014). I obtained a total number of 1419 tweets in both Arabic and English. The collection was made through Twitter search API using R programming language.

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[22] Saudi Women's Web Blog (2015):http://saudiwoman.me/2011/06/29/saudi-women-drivingmovement/

3.6.1.2 ANALYSIS AND RESULTS

The data was analyzed using Netlytic, an online social networking analysis tool (Netlytic 2015). The English tweets were automatically cleaned. However, I had to do a cleaning process with Arabic tweets by removing stop words, irrelevant terms that were associated with ads, and general terms (e.g., Saudi Arabia). Then, I generated a word count (Figure 4-1). This step was important to determine the frequently used terms. The number of unique words was 19355. Here, I used the top 50 terms and tracked them.

Figure 0-1 A word-cloud of top 50 most frequently used words in #women2drive in both languages (Netlytic, 2015)

The biggest words in the cloud belonged to a famous tweet that was frequently retweeted and mentioned (in about 24% of the tweets). The tweet was posted by the user

@ksa12300, the username of a group of conservative and religious Saudi users who identified themselves as such. The tweet itself said:

"In the reign of King Salman, tongues talking about

#Women2Drive and the Promotion of Virtue[23] were silenced, and

#CEDAW[24] is infanticide and its promoters were expelled. The era of

correction and firmness has begun".

Another dominating tweet that was also frequently circulated contained a link to a YouTube video that referred to a famous Saudi clergyman who gave a reason as to why women are banned from driving, which was: "*not to go to her lover*". This particular tweet received some opposing comments, as it was considered "*a defame of Saudi girls' virtue*" and "*accusation of character*".

In addition, further analysis showed that there were some hashtags that appeared to be connected to women and driving, for example:

- #women_feminism and #nyflc2015 (New York feminist leadership conference) that appears in the English tweet "#NYFLC2015: Here's a cartoon for attendees to read and share on Sunday morning #Feminism #SaudiArabia".

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[23] In reference to the Committee for the Promotion of Virtue and the Prevention of Vice (or the so-called religious police in Saudi Arabia)

[24] The Convention on the Elimination of all forms of Discrimination Against Women issued by the UN

- #BanOfMaleGuardianshipLaw (in Arabic) appeared in reference to another issue that was specific to Saudi women: "every female has to have a legal male guardian regardless of her age".

The sample also showed the key players of this particular discussion. The users are identified by a set of characters preceded by the sign @. These users were either mentioned frequently because of their tweets, got retweeted, or the user was influential. To determine which of these is the case (Chaudhry 2014), I did a network analysis (Netlytic 2015). The left picture in Figure 4-2 illustrates the original network of the users. I filtered the network by keeping only the 5 largest clusters of users (right picture). An influential user is in the center of each cluster. The more followers there are, who retweeted, replied to, or mentioned the centered user, the larger the cluster.

The largest cluster is the green network (labeled as #1), which is centered on the user @ksa12300 with 199K followers. This group refuses to support women driving and has contributed the dominant tweet mentioned previously. Similarly, the user @mo7mad_ils3od has 14k followers and is a member of the Saudi royal family. He is conservative, an active social media user, and supports the idea of women not driving. The purple cluster on the left side of Figure 4-2 (labeled #2) represents his network. He contributed this message in Arabic:

"As if all women's issues have shrunk away leaving only #Women2Drive and #BanOfMaleGuardianshipLaw. They [libertines] are only interested in corruption".

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The turquoise network close to the upper right corner (labeled #3) belongs to a female user[25] @111rose222 who has 4,815 followers. She is an active user whose tweets are humorous and witty. However, when I looked up her account, I could not find a strong sign of support or opposition related to women driving. Her post was a photo of an Arabic actress leaning on her car in a suggestive way, with the following comment: "*All participate. Should women learn about all simple problems relating to cars? (laugh*[26])".
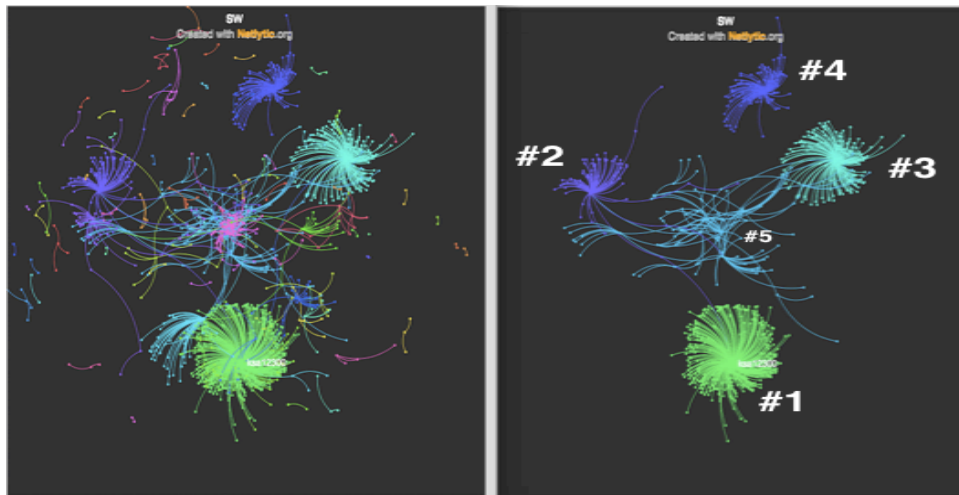
Figure 0-2 Social networks and key users in #women2drive (Netlytic 2015)

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[25] The users' gender was identified based on their names, profile pictures, or their indication of their own gender. Otherwise, the user would be considered "neutral".

[26] Using the commonly known Emoji (small digital images expressing emotions or objects)

In the top middle figure, there is a network that is located slightly farther from the others (labeled #4). It belongs to @HsnFrhanAlmalki, a user who has posted the YouTube video (mentioned above) with the comment "*I never heard of such a reason before*". He has 174k followers and identifies himself as "a social activist specialized in Islamic law and history, and a critic of extremism".

In the middle of the graph there is a scattered cluster (labeled #5) in which a number of female users (e.g., @Ms_riri, @X_Saudi) promote supportive and pleading messages in Arabic, such as "*Since 1990 Saudi women are demanding their rights, but they are getting ignored*", "*We demand justice from our king. It has been 20 years*", and "*King Salman, please issue a regulation, even if limited. Everyone is taking advantage of us: chauffeurs, male drivers, landlords, taxis ... Please do something*".

Overall, the analysis in this phase helped us formulate a general picture of the social perceptions relating to issues concerning Saudi women. It was shown that men (who were identified mainly by their user names), in this case, dominated the discussion on these issues. They approached the discussion cautiously, yet with great determination, using religion and cultural reasons. It was interesting to see that they also used nationalism and loyalty when discussing an issue such as driving. The global perspective was present, and the men used the CEDAW as a westernized symbol. It was also interesting to see that those who marginalized women's issues were dominating the other parties in the middle. The intermediate players were moderators. They were mostly women, who approached their problems for more realistic and practical reasons. They

addressed the authorities directly by stating their daily problems and providing ample solutions. To test this theory of gender differences, a second step was taken.

3.6.2 Second Step

3.6.2.1 BACKGROUND

On November 29, 2014, a young Saudi woman called Loujain drove her own car to the Saudi /UAE border after obtaining a UAE driving license and waited for nine hours to be admitted to Saudi Arabia. During her wait, she posted pictures and updates emphasizing how she was treated by the officers. After 24 hours, a Saudi female reporter, arrived from the UAE to cover the story and CNN picked up the trending thread on Twitter. Both women were arrested (Burrowes and Tahira 2015). During the arrest, the hashtag "#Loujain_Alhathloul_Appears_In_Terrorism_Court" was populated.

The development, in this case, was interesting to study. Loujain being arrested was an expected conclusion on a social level (Ahmari 2013). However, turning the case into an act of terrorism was not expected by the general public. Here, I asked the questions: to what extent do the opinions of men and women differ and what is the role of the present strong sentiment on shifting the public opinion in this case?

3.6.2.2 <u>Sample collection</u>

I used Topsy[27] (2015) to access tweets that were from 25 December 2014 - 4 January 2015 by using the above-mentioned hashtag. Tweets that were ads or unrelated to the issue were ignored leaving us with a total number of 523 tweets. I asked two colleagues (a female and a male who were fluent in Arabic and understood the Saudi dialect) to help categorize the content. That allowed us to decrease the discrepancies in understating the meaning of each tweet and to avoid any form of bias (Chrisler et al. 2013).

We coded each tweet according to: 1) the identity of the user (i.e., female (F)/ male (M)/ news source (NS)/or not available (NA)) based on a combination of identifiers (name, profile picture, self-reference, etc.), and 2) the content of the tweets (i.e., support/ humour and sarcasm/ providing reasons/ news/ shock/ asked for confirmation/, and opposition). The categories were not predefined and were created as more content was read. Each tweet was classified into one or more category.

3.6.2.3 <u>Analysis and results</u>

The total number of females and males was close (283 and 212 respectively) with 27 cases that could not be genderized (N/A) and only one news source (NS) (Table 4-1).

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[27] Topsy for Twitter Search and Analytics (2015): http://topsy.com/

Count of	F (N=283)		M (N= 212)		N/A (N=27)		Total (N=522)	
	n	%	n	%	n	%	n	%
Support	194	68.6%	120	56.6%	14	51.9%	328	62.8%
Reasons	157	55.5%	137	64.6%	12	44.4%	306	58.6%
Humour	111	39.2%	63	29.7%	10	37%	184	35.2%
Shock	69	24.4%	27	12.7%	7	25.9%	103	19.7%
Opposition	26	9.2%	42	19.8%	4	14.8%	72	13.8%
Reporting News	20	7.1%	38	17.9%	5	18.5%	64	12.3%
Confusion	35	12.4%	12	5.7%	3	11.1%	50	9.6%

Surprisingly, a wide gap did not exist between males and females who provided supportive messages. Around 68.6% of females were supportive of Lougain, of which 60% gave explanations (e.g., "*In 2015, when a female drives her car to facilitate her mobility, it is considered a crime. A very advanced level of misery*"), 37.1% of them used humor and sarcasm (e.g., "*After some years, the world will produce a comedy movie called 'Kingdom of Saudi Arabia*"), 23.2% were shocked (e.g., "*People, I can't believe it, did she cross the border with a car or a tank? Please tell me*"), 1.5% needed confirmation as well (e.g., "*why this silence from her family? Only Alya [Loujain's sister] talked. To where have her father and fiancé disappeared?*").

On the other hand, around 56.6% males were supportive, of which 69% gave reasons (e.g., "*Loujain, your crime is being a free woman*"), 40% were humorous or sarcastic (e.g., "*If they caught her riding a mule, they would arrest her and charge her for being alone with an unrelated male*"), 10% shocked (e.g., "*This is extremism!*"), and 3.3% provided news (e.g., "*She was referred to the 'Specialized Criminal Court4' because it was not the judge's specialty in the original court*").

Unlike with supportive tweets, there was a significant difference between male and female condemning messages. Around 9.2% females explicitly condemned Loujain and opposed driving for women, where 69% gave explanations that were critical in tone (e.g., "*The veil ban in France was accepted, why not the ban on driving?*" and "*We are annoyed with her stories. She wants to make history out of nothing*"), and 30.8% used humor as a way of degrading Loujain's social status and belittling her.

Males expressed more opposition (19.8%), of which 59.5% gave explanations (e.g., "Loujain is mostly despised by the majority of the citizens, and [the Ministry of] Interior has condemning evidence, she [Loujain] imprisoned herself") and 19% were humorous or sarcastic (e.g., "A woman in a car is as equal as an explosive in the car, both are a crime [smile]").

Note that there are around 22% females and 23.6% males who did not express explicit support or opposition. Their tweets were mostly either asking for a definition of terrorism or circulating reasons for her arrest (e.g., "*Charges are: 1) incitement to Saudi Arabia, 2) discredited the nation and its employees, and 3) "did not wear a hijab" and*

"achieved goals in a way that contradicts traditions and social conventions" [quoted from a legal text accompanying a picture).

3.7 Discussion & Conclusion

The main goal of this study was to mine Twitter to understand how females in Saudi Arabia are using technology as a tool of empowerment through self-presentation. In other words, this study examined the strategies that Saudi women used in challenging situations to formulate a social identity in both national and global contexts (i.e., RQ1). By examining the ban on women driving as a case study, the results showed that there are indeed active Saudi women who are social media savvy. Moreover, these women used a practical and informational approach as compared to men.

The results also showed that leading Saudi Twitter male users dominate social opinion, and they are against women driving, as I explained in section 4.3.1.2 and showed by Figure 4.2. The main reasons for this opposition are: a) not to promote western values, b) it is a form of forbidden liberty, 3) it is a form of disobedience with respect to the ruler, 4) leads to sins and social unrest, 5) it is important to preserve women's honor, modesty and virtue, and 6) it is imperative to keep the socio- religious rule of men as guardians of women (Alotaibi 2017; Alrasheed 2012). Comparing those reasons to the reasons given in Loujain's case, it might be concluded that male support might rely on impulsive ideas and the sense of protectiveness or justice in extreme cases.

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This support is lessened and is more bound by social conventions on a broader spectrum (Alfurayh 2016).

Even though Twitter represents the online community in its social sense (Gruzd, Wellman, and Takhteyev 2011), the people who interact with it may have different perceptions, which may sometimes lead to fake identities (Heivadi 2013). It has become clear that women, or men who advocate for women, might have to use non-gendered self-identifications that can allow them more freedom and protection from possible social unpleasantness online (Madini and de Nooy 2014).

Furthermore, the analysis revealed a significant portion of women who are against driving. Those women help to propagate the opposing tweets for the same reasons as the men (mentioned above). In addition, these women believe that they (themselves) are being "treated like princesses and queens" (Williams and Wittig 1997). This shift from women vs. men to society vs. society and women vs. women[28] was clear in Loujain's case. However, one might observe that change is in fact happening in slow motion as events have progressed and the focus has now shifted to what is called the Saudi Vision 2030 (Government of Saudi Arabia 2016). The effects of Saudi Vision 2030 are examined in later studies in this research.

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[28] The hashtag #WomenAgainstWomenDriving was populated during different times, even after the ban was lifted in September 2017.

4 PHASE 2: SAUDI WOMEN' VIRTUAL PRESENCE IN ONLINE SOCIAL NETWORKS

4.1 Objectives

In the previous chapter, I noted how Saudi women's online social identity was beginning to form through self-presentation and social interaction. In the time following the first phase of this study (~ two years), a number of changes have occurred, including: lifting the ban on women driving, creation of ladies' driving schools, admitting women to sport events and stadiums, introducing physical education classes to public schools, continuing scholarship programs and admitting more females into study abroad programs, introducing e-government and working towards more public services to engage with people on OSNs, among many other dramatic changes to the otherwise sedate life of the Saudi citizens. As a reflection of those changes, the Saudi Twitter-sphere had been booming with changes (Almahmoud 2015; Dimitrios and Violettas 2014; Formations 2015). Furthermore, the categorization of Islamist vs. Liberal has since been expanded so that people have either adopted new labels or have been labelled (either positively or negatively) (Alrasheed 2012).

Since the "woman" is at the centre of these transformations, this fact raises the following questions: how have these changes affected Saudi women's self-development?

Therefore, this phase, in part, aims to answer the second research question, which is: What are the factors that affect Saudi women's identity formation in the online context and how does this process develop? Consequently, I aim to determine how do these women perceive and mitigate their own ideology, personal preferences, social interaction, national issues, and international interests? (Al-saggaf 2011; Doumato 1991; Guta and Karolak 2015).

4.2 Methods

4.2.1 Study Design

To capture the changes impacting Saudi women's self-development in a broader spectrum, a survey method was used. This method helped by: a) expanding the breadth of my research sample; b) revealing comprehensive responses by providing open-ended questions; and c) limiting the interview selection, for the next phase, to those who have offered informative responses and were willing to be interviewed.

A multi-sectional survey was designed, which consisted of a consent form and a questionnaire. The survey was created and distributed electronically using Opinio in Arabic and English. The questionnaire items were constructed, tweaked, and formulated based on the following elements: a) some items found in former quantitative studies (Al-Jabri et al. 2015; Saleh 2014; Venkatesh and Bala 2008); b) themes from qualitative studies (Al-saggaf 2011; Alotaibi 2017); and c) conceptual theories related to identity

(Downing and Roush 1985; Kietzmann et al. 2011; Orsatti and Riemer 2015), as well as international media attention attraction (Doumato 1991; Shannon 2014).

4.2.2 Recruitment

The survey was distributed in a number of ways, including postings on social media, email reach out, snowballing, and blanket invitations. The survey ran from December 2017 to February 2018. The total response was 603, of which 235 completed the survey. The ratified sample size was made up of females who completed the survey, were Saudi or currently lived in Saudi Arabia for over seven years, 18 years and older[29], and had one or more Twitter accounts. A total of 165 responses made up the sample and satisfied the research criteria. Table 5-1 shows the demographic distributions among the participants.

The majority of the participants were Saudis (97.6%), of which 63% of them lived in Saudi Arabia at the time of the survey. About one-third of those who were living abroad were students at different educational levels. In addition, the majority were under 40 years old, married and with at least one child, with an average monthly family income of 27.5k SAR. Finally, most of the participants were highly educated and employed[30].

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[29] According to the REB regulations in terms of participatory age.

[30] It must be discerned that a respondent might identify herself as employed and student at the same time. For example, most academics are on work/study leave.

Overall, the respondents' variable socioeconomic status helped in the interpretation of the

results, as it will be discussed later.

TABLE 4-1 The demographic distribution (N=165) of the study sample

Attribute	Category	Frequency	Percentage
Nationality	Saudi	161	97.6%
	Palestinian	1	0.6%
	Yemeni	3	1.8%
Place of Residence	Live in SA	104	63%
	Live outside of SA	61	37%
Age	18-23	24	15%
	24-29	47	28%
	30-34	47	28%
	35-40	30	18%
	40-44	8	5%
	45-49	6	4%
	50-54	1	1%
	55-59	2	1%
Income (in SAR)	Less than 5k	10	6%
	5-10k	45	27%
	11k -16k	52	32%
	17k- 22k	32	19%
	23k -28k	9	6%
	29k or higher	17	10%
Marital Status	Single	49	30%
	Married	106	64%
	Divorced	6	4%
	Widowed	2	1%
	Other	2	1%
Occupation	Student	44	26.6%
	Business owner	4	2.7%
	Public Sector	47	32%
	Private Sector	22	6.5%
	Unemployed	26	17.8%

Attribute	Category	Frequency	Percentage
	Volunteer	2	1.4%
	Other	20	13%
Education Level	Bachelor's degree	78	48%
	High school or less	19	12%
	Master's degree	51	31%
	Ph.D. degree	13	7%
	Other	4	3%

4.3 Analysis and Discussion

The data were analysed using IBM SPSS Statistics Software, version 2.4. The questionnaire was analysed using central tendency measures and the open-ended questions were noted for comprehensibility reasons. The following sections synthesise the results, which are also linked and compared to the appropriate literature.

4.3.1 Social Media Use Across Platforms

The questionnaire began with a general question on what social media platforms the participants use and how frequently they used these platforms. The majority of Saudi females are avid users of one or more platform. Instagram, Snap Chat, YouTube and Twitter are the most popular ones, with the majority indicating using them several times per day. Reasons for use vary from one platform to another. For example, YouTube was used to seek medical and educational content; Instagram was utilized for shopping catalogues; Google plus for schoolwork; Snap Chat for following celebrities; Facebook

for fun; and Twitter for expressing opinions and getting news updates. Those results complimented the content that has been discussed in the literature (Al-Jabri et al. 2015; Al-saggaf 2011).

4.3.2 Privacy and Identity Revelation on Twitter

The majority of participants (n=153) have one or more Twitter public accounts where aspects of their identity are usually revealed. The aspects that were under question include: gender, real first and last name, marital status, nationality, profession, age, and place of residence. This finding was interesting because it contradicts the information that has been previously found in the literature about this topic (Al-saggaf 2011; Amer 2016; Madini and de Nooy 2014), where it was noted that Saudi women opt for private accounts to shield their identity online. In that regard, 28% of the respondents have a second private account, which becomes handy when the participants enter controversial discussions in order to "to stay out of trouble and other's judgment" as one participant explained.

4.3.3 Primary Use of Twitter

The participants were asked how they would describe their general use of Twitter across their accounts. The majority ranked "Reading others' content or just browsing" as their most frequently done activity on Twitter, while "Replying to others or forwarding

Messages" ranked second. Generating content seemed to be the least frequent activity on Twitter.

Participants with public account setting are 17% more likely to generate content and 40% more likely to interact with others than those who have private accounts. By linking the previous answers to this one, the responses showed that those with a public account are "Social Figures", such as university lecturers or writers, who keep their followers updated on different matters. Furthermore, the amount of time spent on Twitter does not seem to have a significant impact on content generation, suggesting that Twitter is "a source of information and is used for keeping up with the world" as indicated by some participants.

4.3.4 Perceptions of Twitter Functionalities

Opinion expression was one of the key factors in using Twitter (Al-Jabri et al. 2015; Williams and Wittig 1997). Therefore, the questionnaire included 20 statements related to five major functionalities that Twitter can provide as a way of expression and self-presentation to women (Kietzmann et al. 2011). On a scale ranging from *strongly agree* to *strongly disagree*, the participants noted their perceptions. Table 5-2 shows the descriptive statistics across items.

TABLE 4-2 Twitter use functionality dimensions with their descriptive statistics across participants (N=165)

Items	Max.	Mean	SD	Var.
Acceptance/ Usefulness				
Twitter enjoyment	6	3.89	0.975	0.951
Twitter for empowerment	5	3.25	1.248	1.557
Usefulness in daily life	5	2.47	1.29	1.665
Searching for work	5	3.26	1.254	1.572
Transformative learning				
Way of changing thinking	5	3.15	1.221	1.491
Self-Presentation				
Twitter accounts reflects real identity	5	3.65	1.267	1.606
Freedom of personal expression	5	3.05	1.248	1.559
Need to use fake names	5	2.23	1.291	1.666
Topics to avoid writing about	5	3.81	1.233	1.519
Awareness of followers	5	2.91	1.214	1.473
Social Support				
Freedom of use to all	5	3.27	1.25	1.563
Public discussions regarding freedom of women's issues	5	2.64	1.174	1.379
Knowledge of Saudi women's status in society	5	2.97	1.323	1.749
Discussions regarding personal participation in women's issues	5	2.73	1.175	1.38
Women's support of other women	5	2.79	1.464	2.144
Government's participation	5	3.8	1.1	1.21
Government's focus on women	5	2.73	1.499	2.246
Reputation in Global News				
Awareness of Saudi women's issues discussion in GN	5	3.5	1.286	1.654
Fair representation of Saudi women in GN	5	1.9	1.045	1.093
Saudi culture is known to GN	5	2.49	1.267	1.605
Saudi culture is respected in GN	5	2.16	1.174	1.377

4.3.4.1 ACCEPTANCE AND USEFULNESS

The majority of participants enjoyed using Twitter, and 46.7% of them agreed that Twitter empowered them in some ways, including the ability to expose harassment as well as to increase their mental awareness and acceptance of other's differences. Around 25.5% disagreed with the statement mainly because "I do not tweet freely about my thoughts and ideologies". 26.1% chose "neutral", while majority of them were between the ages 24-34 and explained that "Twitter does not differ from real life for me. I express my opinions either way". Freedom of expression was used as a metaphor for empowerment in this context.

This result can be linked to the previous one found in section 5.3.1., indicating that this age group might have found other newer platforms (e.g., Snap Chat). A more plausible reason is that younger women tend to endorse concepts such as empowerment and self-efficacy, which they embrace as indicated by the shifting trend on views on gender (Erchull et al. 2009). Therefore, Twitter for this age group was not a tool for empowerment. By contrast, women 35 and older found Twitter to be a great help to empower them in their work life, in connecting them and learning from experts, and a space to ease mental and emotional pressures on a daily basis.

4.3.4.2 T**RANSFORMATIVE LEARNING**

Younger age group's (18-29) responses to the statement "Using Twitter has changed my way of thinking with respect to some topics" were split among the scales. They believed that their values and principles would not change merely because of social media, and they were confident in them. In contrast, the older age group, specifically those who fell into the 30-49 category, gave a strong indication of their agreement with the above statement. They provided extensive examples, such as: storing profile identification, encouraging them to participate more in political discussions and controversial issues, in abhorring discrimination towards other nationalities, and in enhancing self-confidence and self-esteem. The transformation happened as a result of the influence they absorbed from 1) following intellectual leaders in their field; 2) following prominent thinkers in the country; 3) reading debates on current issues; and 4) identifying interesting reading materials to expand their horizons.

This difference between age groups might be due to the level of education, where Bachelor and Master's degree holders were more inclined to experience transformational mental change. This is, in part, due to the level of information seeking and interaction with others and through Twitter during their studies (AlOshan 2013). In addition, the majority of the age group (30-34) lived abroad at the time of the study, where further analysis showed that women who resided outside of Saudi Arabia were slightly more likely to experience transformed thinking, matching the findings in studies done by Aloufi (2017) and Alrasheed (2012).

4.3.4.3 SELF-PRESENTATION

Over 64% agreed that their accounts reflect who they truly are and complement the results in section 3.2. The majority (65%) did not feel the need to use fake names to express their opinion. For them, it was a case of establishing oneself on the public sphere. These results also contradict what has been previously found, namely that using a fake name is necessary in culturally sensitive contexts (Heivadi 2013). However, those who did use a pseudo account, they did so to erase the stress of judgment, and to avert unwanted attention from followers, especially from people who knew them in real life. Those reasons compliment what has been found in the literature on this topic (Guta and Karolak 2015).

In response to the statement "My followers' opinion on my content matters to me", the majority of those who disagreed or chose *neutral* saw Twitter as their "own personal space" and few participants indicated that "I honestly don't care" and "I tweet to express my opinion, not to seek people's agreement". This attitude might be perceived as defiance against traditional social interaction (Alotaibi 2017). In contrast, those who agreed with the statement stated reasons such as "I want to be a good role model" and "find solace and support". Those reasons suggest a positive social interaction, which is paramount to social gratification (Al-Jabri et al. 2015; Chen and Ross 2011).

Furthermore, 70.3% agreed or strongly agreed that they avoid writing about certain topics on Twitter. It was interesting to see that the statement "There are topics I avoid

writing about on Twitter" elicited the most responses from the participants (~44%). Around 78% of those who provided explanations mentioned politics as their main undesired topic. Politics were usually paired with religion, racism, sports, human rights, and other minor topics. Few have identified women's rights and writing about their personal lives as avoidable topics as well (see Figure 5-1[31]). This result complements the findings in Amer (2016) and contradicts what was found by Al-Saggaf (2011). The rule of thumb is finding trustworthy people in relatively less public groups.
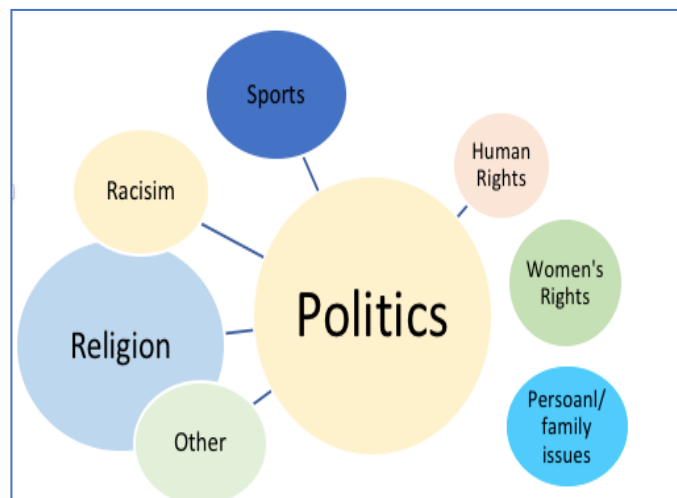
Figure 4-1 A visual presentation of the most avoided topics on Twitter by Saudi Females (N=165)

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[31] The circle size indicates its volume. The bigger the circle, the more participants were avoiding the topic.

4.3.4.4 SOCIAL SUPPORT

Almost half the participants agreed that "All people should use and participate on Twitter". The majority of the respondents indicated that everyone had the right to participate on Twitter, and all of them emphasized the importance of age limit and content value[32]. This result suggests that participants are perceiving the ease of use of Twitter as a potential social risk (Williams and Wittig 1997). In contrast, about 48.5% disagreed or strongly disagreed with the statement "All topics related to Saudi women should be discussed on Twitter". Some explanations provided were related to the sensitivity of Saudi women's issues since such discussion involves religious and political debates that not everyone is equipped to participate. Another interesting reason was to uphold the national image as many participants emphasized the importance of keeping the Saudi issues within Saudi boundaries online or otherwise. Despite what Alotaibi observed, there is a strong resistance to such attention as it will become clear in the following section.

In terms of government's involvement on social media, almost 70% of women indicated that they were *satisfied* with the governmental agencies' interaction, presence, and engagement on Twitter. They praised the way that the e-government educated people and answered their concerns. Those results complement what Alrasheed (2012) predicted

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[32] Please note that open-ended questions were provided for clarity only and the answers were grouped exclusively to explain the agreement/ disagreement with the statements.

as a shift in the government to increase its interaction with people and the utilization of services in the past few years. In addition, around 7% were *not satisfied*, saying the presence was not enough while 20% chose *neutral* because they had no reason to look those channels up.

4.3.5 Reputation in Global News

The majority (69.1%) of participants were aware that Saudi women's issues are discussed in the global news where women driving was mentioned as the main example, followed by *hijab* (dress code), and empowerment. By contrast, the majority (~65%) disagreed with the statement "Saudi females are represented correctly and fairly in the international news". Most explanations centered on the perception that the international news media portrays Saudi women as oppressed, powerless, mindless, and shopaholics. The majority also disagreed with the notion of respected culture and internal affairs. The results suggested a high sense of national identity and care about social reputation in the global context (Pavaloiu and Vasile 2014).

In a follow up question, the participants were asked to indicate what international news media they usually watched on TV or followed on social media platforms (Table 5-3). A significant number of participants (~42%) stated that "I'm not interested in international news media", which was interesting given the strong indication of awareness stated in the previous sections. Further analysis shows that the majority of those (~90%) were women 40 years or younger. They justified their choice by

referencing Twitter as their news source and believing that global news is not trustworthy because of subjectivity, discrimination, and political views. Further analysis showed that females who lived abroad and those with higher education levels were more likely to watch and follow international news.

TABLE 4-3 Popular global news channels and percentages of views or followers across Saudi females (N=165)

News Source	Views/Follow		News Source	Views/Follow	
	(n)	(%)		(n)	(%)
CNN	47	28.5%	Wall Street Journal	7	4.2%
BBC	53	32.1%	Reuters	8	4.8%
New York Times	18	10.9%	Huffington Post	6	3.6%
The Independent	7	4.2%	Do not follow any	69	41.8
Others: CBC, Fox News, CNBC, Aljazeera, Al-Arabiya, Saudi News, Sabaq, and Twitter				30	18.2%

4.3.6 Saudi Female Influencers

To determine whether prominent Saudi women's social figures on Twitter influence its followers, the participants were asked to name a few Saudi female influencers on Twitter. About 42% (n= 53) of them, stated either they do not follow any or do not know of any influencers. Some participants had a perception that the term "Twitter influencers" referred to women's rights activists who were seen as challenging

the status quo in the Twitter Saudi sphere, which was daunting to some women (Alotaibi 2017; Alyami and Matwin 2017).

On the other hand, participants who provided names (57.5%) mentioned more than 115 influencers. Those names ranged in frequency from 1-17 times, and their interests varied from poetry to political activism. They are considered socially influential because of: a) their media activity; b) their high education level; and c) their knowledge of different countries and cultures, which led them to make a prominent mark on social media sites.

4.3.7 Twitter Discussions and Conversations

The questionnaire ended by asking about the most important Twitter discussions that concern Saudi women and have made an impact on them. About 59% of the participants provided around 17 discussion topics, ranging in frequency from 1-70 (see Figure 5-2). Women driving and male guardianship were by far the most frequently mentioned topics. Finding job opportunities ranked second, while *hijab* (dress code) and freedom ranked third. Other mentioned issues (in order of frequency) were: women's rights, social issues, empowerment, allowing females and children into soccer stadiums, underpayment, ladies in the Shura Council, neutralization, family education, corruption, and initiating a stipend for housewives.

On the other hand, some participants stressed the point of how certain discussions are a disadvantage to women's development as they are all about depicting the negative picture. Others believed that the changes that took place in Saudi Arabia were not caused by requests or discussions on social networks, but rather the official authority's desire to advance the Kingdom.

Those views (and those of the previous section) indicated how females are split in their opinions regarding their own issues (Alrasheed 2012; Guta and Karolak 2015). The chronological order of the events set the course for changes that might not be observed or expected during the time that each change occurs, but rather when the permanent effect takes place (Alotaibi 2017; Jenkins 2008).

Figure 4-2 The most sought-after women-related topics as illustrated by Saudi females (N=165)

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4.4 Conclusion

The purpose of this study was to understand the effects of using OSNs in general and Twitter in particular on Saudi females' online self-development. It examined how OSNs have changed the Saudi women's way of thinking and their self-perception, what role they play in the dynamics of online communities (as influencers, influenced, or passive recipients of information), and how that role is perceived within the national and international contexts. Twitter, in particular, served as an excellent example of an open online discussion platform and an open field for opinion mining.

I believe that the survey used in this study was the first that focused solely on Saudi women. It was designed to give the participants as much space to explain their choices, opinions, and experiences. In an answer to RQ2, the results, from this phase, suggested that the women are shifting towards a greater acceptance of themselves and their positions on Twitter (as a metaphor to societal presence) (Aloufi 2017). The responses also revealed a wide range of perceptions that reflect a wide variety of Saudi ideologies, orientations, and cultural diversity. Moreover, the results complemented previous research on many key points related to WCOSIF, such as freedom of expression, self-presentation, identity revelation, empowerment, and transformative thinking. However, the results also showed less interest in social interaction, global media attention, and political interests compared to what was found in the literature (Al-saggaf 2011; Guta and Karolak 2015). Participants also showed evidence of reduced passive acceptance (Erchull

et al. 2009) when working on a rational and realistic female identity presence in the Twitter sphere.

5 PHASE 3: SAUDI WOMEN'S ONLINE SELF-DEVELOPMENT VIA OSNs

5.1 Study Objectives

Online social networks (OSNs) are forms of new media, which have changed the world in the last decade (Ahmed et al. 2018a; Kietzmann et al. 2011; Kumar 2018). This trend in technology has compelled us to adapt both on an intellectual and behavioural level (Ahmed et al. 2018b; Archambault and Grudin 2012; Kumar 2018). One adaptation mechanism is an 'identity shift' (Kumar 2018), which refers to the intentional and unintentional variances in our perception of our online and offline identities, and has positive or negative consequences (Brooks 2015; Chrisler et al. 2013; Schmalz, Colistra, and Evans 2015). Self-development is the central phenomenon in the alteration of one's identity stemming from the social exposure experienced via OSNs (Ren and Kraut 2014; Schmalz et al. 2015; Yang and Bradford Brown 2016). Carter (2017) defines the process of online self-development (OSD) as "the extent to which an individual views the use of an IT as integral to his or her sense of self - as a new form of identity." (Carter 2015)[p.1]. This result of online identity formation is a reflection of our perceptual model of physical existence in the new environment in which the personality develops (i.e., in the online domain) (Kim Koh and Wang 2012).

In Saudi Arabia, women in the last few years have unobtrusively developed an online feminist identity (Al-Dabbagh 2015; Aloufi 2017; Alrasheed 2012) wherein such an adaptation in real life is frowned upon and difficult to achieve due to regulations, systems, and social restrictions, as well as the negative global misrepresentation of the term itself (Alrasheed 2012; Berkowski 2017; Williams and Wittig 1997).

As I have stated in Chapter 2, minimal research attention has been directed towards investigating the constructs of online self-development (OSD) and the processes that women have gone through in challenging contexts (Bahri, Carminati, and Ferrari 2018; Orsatti and Riemer 2015; Yang and Bradford Brown 2016). In order to answer the second research question[33], the previous Phase outlined Saudi women's perceptions on SD. However, in this phase, I focus on online self-development as part of the identity formation process (Orsatti and Riemer 2015; Schmalz et al. 2015; Yang and Bradford Brown 2016).

In particular, I aim to answer the following questions: a) What are the factors that construct females' online self-development (OSD)?; b) How do these constructs form OSD?; c) In what way do self, social, and national identities relate to and impact OSD? Though Saudi women are the main subject of this study, OSD concerns all users of all ages (Lerner and Castellino 2002; Orsatti and Riemer 2015). Since OSD is a result of the

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[33] RQ2: What are the factors that affect Saudi women's identity formation in the online context and how does this process develop?

interaction and interrelation between neurocognitive growth, OSD constructs hold true across different cultures and social domains (Kim Koh and Wang 2012; Lerner and Castellino 2002).

5.2 Methodology

5.2.1 Procedure

As I explained in Chapter 3, to understand the OSD process in the Saudi context, a qualitative method was selected to allow for a thorough exploration of the phenomenon and to generate as many details involved in the process of OSD (Creswell 2007; Fleck 2015; Guest et al. 2011). This exploratory study develops a grounded theory on the basis of the discourse that resulted from a semi-structured interview with the participants (Charmaz 2014; Eaves 2001). Interviews provide an excellent source of rich and new knowledge about social and personal aspects of life via relatively focused yet open ended questions (Hackfort, Schinke, and Strauss 2019). In addition, participants feel comfortable to share, their opinions, observations, and experiences (Charmaz 2014). Furthermore, the content analysis methods used in Phase 1 and 4, enabled us to capture and explain the context-related process of women's online social identity formation via OSNs (i.e., the purpose of this thesis) (McKenna et al. 2017).

The interview guide (Appendix 3), that took into consideration the environment in which OSD is taking place (i.e., OSNs in general and Twitter in particular), was

developed based on general guidelines found in leading handbooks on qualitative studies (Charmaz 2014; Creswell 2007). The guide had 30 questions spread over five conceptual domains that concern OSD (i.e., perception, interaction, change, image, and presentation). The domains were adapted from different studies related to self-development, for instance, (Erchull et al. 2009; Kim Koh and Wang 2012; McLean, Pasupathi, and Pals 2007; Yang and Bradford Brown 2016). The guide was provided to the participants before the interview, but the dialogue was not strictly attuned to it.

5.2.2 Recruitment

In the previous study, (i.e., the second phase of WCOSIF, Chapter 5), we constructed a survey to explore the Saudi women's level of interaction with OSNs. A total of 165 responses were analyzed quantitively. For this study, a purposeful sampling technique was used to select participants from among the survey respondents (Mason, 2010).

After obtaining the REB approval, the selection process had focused on females who could contribute to building the theory process of this study (e.g., Saudi females who experienced a significant change in their lives due to their use of social media). Hence, I set the following screening criteria: the participant needed to be a Saudi female; 18 years or older; an active social media user (namely Twitter); had shared enough information in the previous phase that would reveal interesting facts about her experiences, and had gave consent to participate in a follow-up interview. Preference had been given to those who have been exposed to different cultures (mainly the West). A total of 24 participants

matched the description and were contacted by the contact details they provided in the survey (phone number, email, etc.). The recruitment ended up with 12 participants (see Table 6-1). More details on the participants' demographics are found in the following section. It is important to note that the sample was a convenient one using a snowball technique that followed the pervious study. Therefore, the recruitment process resulted in somewhat biased outcomes (i.e., highly educated women). This is one of the limitations of this study (and consequently this research). Chapter 8 (Discussion) will address this issue in further details.

The interview time lasted 45-90 minutes. They had been done in Arabic and/or English. I, the lead researcher (a Saudi and native Arabic speaker), transcribed and translated each interview for content. The recorded interviews, the transcripts, and the data files in general were stored electronically in an encrypted folder on Dropbox[34]. Each data source was anonymised and no identifying information was linked to the actual participants in any way. For clarification purposes, the participants were referred to as P1, P2, etc. in this study.

5.3 Analysis

NVivo 12 for Mac was utilized to support the qualitative analysis. Since the aim is to build a theory, the grounded theory approach was followed in the interpretation of the

data (Charmaz 2014). In addition, the Applied Thematic Analysis (ATA) was used mostly to quantify the results. Both techniques give insightful explanation to the link between the generated theory-building themes and the FIDM model (Creswell 2007; Hannon and Hannon 2017).

The analysis started by reviewing every document and linking it to the demographic information of each participant (Guest et al. 2011). Using a structural approach, I used three levels of coding: open coding to establish the initial codes; axial coding to establish categories; selective coding to discern relevant categories (Appendix 4); and theoretical coding to formulate connections between the categories (Charmaz 2014). The last level of coding was achieved by determining the timeframe in which those categories occurred and whether relevant factors were considered influential or moderators (Charmaz 2014). As a result, five major categories and 19 sub-categories of OSD were identified. The last step was to review FIDM stages and their links to each category and the main sub-categories (i.e., constructs) (Guest et al. 2011). This step helped determine the way categories operated within (and resulted in) identity shifts (Creswell 2007).

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[34] Dropbox is an online file hosting service.

Self Progress
- Being Aware
- Being Cautious
- Being Critical
- Being Initiative
- Being Resilient
- Being Responsible
- Being Selective
- Being Supportive

Moderators
- Living Abroad
- Social Media Influence
- Transformative Thinking

Global Progress
- National Image
- Women's Empowerment Globally

Social Progress
- Social Empowerment
- Social Traits
- Social Pressure

System & Religion Progress
- Male Guardianship
- Religious Influence
- System Influence

Figure 5-1 Categories of the generated theory of online self-development (OSD)

model

5.4 Results

5.4.1 Participants' Demographics

The participants are mature women who come from different socioeconomic and cultural backgrounds[35]. At the time of the study, seven participants were living abroad, while five were residing in SA. I met personally with five participants, while conducting distance interviews with the rest over applications such as Skype or FaceTime. Most of the participants were married, and half of them were with one or more children.

Females who lived abroad were accompanied by a male guardian as per roles dictated by their scholarship terms. Three of the participants held academic jobs in SA, another three were unemployed, while the rest were continuing their higher education at various levels. It is important to note that Saudi women put a great deal of value on education, hence 54% of the highly educated students are females as of 2018 (moe.gov.sa, 2019). The maturity of the participants added more value to the data since they were born before the internet and prior to SM becoming such an enormous influence in the world (Charmaz 2014; Creswell and Creswell 2017).

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[35] It is important to note that even though the Saudi society in general supposedly has one ethnic group and one faith, variations in individual places of living, religious practices, and geographical locations can affect one's socio-demographic standing.

TABLE 5-1 Participant's demographics

Name	Age	Edu.	M. Status	Children	Income (SAR)
P1	30-35	Master	Married	3-4	11-16k
P2	30-35	Master	Married	0	11-16k
P3	30-35	PhD	Married	0	5-10k
P4	36-41	Master	Married	3-4	23-28k
P5	30-35	Master	Married	1-2	29k<
P6	24-29	Master	Single	0	11-16k
P7	24-29	Bachelor	Single	0	5-10k
P8	30-35	Master	Married	1-2	23-28k
P9	30-35	Master	Single	0	23-28k
P10	24-29	Bachelor	Married	0	5-10k
P11	24-29	Bachelor	Married	0	5-10k
P12	24-29	Bachelor	Married	1-2	11-16k

5.5 Findings

Five main categories have emerged from the data with regards to OSDs: Self-Progress, Social Progress, Religion & System Progress, Global Progress, and Moderators. Each main category is the result of the interrelated connection between many sub-categories. To determine the effect of each sub-category on the larger one, I used the "code intensity" quantitative technique (Guest et al. 2011). It measures the number of occurrences of that particular sub-category, where the more frequently it appears, the more strength it has on the overall category (theme). In addition, quotes and excerpts from the participants (referred to as P1, P2, etc. for anonymity reasons), was included to

support the findings. The next sections will explain in detail the different categories and the effect of each sub-category.

5.5.1 Self-Progress

Self-Progress refers to the perceptions, factors and actions that shaped each participant's personality in one way or another (Vignoles 2011). The data generated eight major sub-constructs of OSD, including: being resilient, being aware, being responsible, being critical, being supportive, being a leader in initiatives, being cautious, and being selective. Table 6-2 presents them along with their presence (i.e., their coding intensity in percent).

TABLE 5-2 Effects (%) of the self-progress constructs on women's OSD

Construct	Effect
Being Resilient	33.95%
Being Aware	17.63%
Being Responsible	15.26%
Being Critical	13.42%
Being Cautious & Selective	12.64%
Being Supportive	12%
Being a Leader in Initiatives	7.11%
Total	100%

5.5.1.1 BEING RESILIENT

Participants showed that without being able to withstand or recover quickly from difficult conditions, and trying hard to be strong, tough, adaptable, and flexible, they would not have accomplished their goals. This virtue held true across many contexts, including: the online sphere and living in a different culture.

Resilience also resulted in mastering their emotions, being open to different views, finding ways to overcoming challenges, and being true to themselves and their values.

> *"When I talk to people there [in SA], I'd not tell them I grew up*
>
> *in a different culture or that my mom is [non-Arab], because they*
>
> *would tell me that I'm not pure Arab, that I have mixed blood. They*
>
> *would compromise my authenticity [...] But I don't let that stop me,*
>
> *one minority plus one minority, we can make a majority one day."*, P6.

The key to being resilient, from the participants point of view, is through accomplishments, which are an excellent motivation for remaining strong. Achievements, as the participants indicated, can be gained through education, reading widely, spreading knowledge, and the positive change that comes from within.

5.5.1.2 BEING AWARE

Having knowledge, perceptions, or concerns for a situation, facts, or development are constructs that have emerged strongly from the data. Awareness of identity in OSNs is a complicated construct:

> *"The Saudi woman is not a victim and at the same time she is not*
>
> *free. It is a variable that depends on cases and stories. So, I see that the*
>
> *media coverage [on Saudi women] is polarized and superficial.", P5.*

Awareness can be sharpened and provoked by the interaction with others on OSNs, as the participants explained. Beyond the self, awareness helps chart the way to establish a more compassionate community. It also helps to tackle long-term societal issues, such as expats working and living in Saudi Arabia, which were discussed in details with the participants.

5.5.1.3 BEING RESPONSIBLE

Feeling the weight of their responsibilities had affected the participants' views and actions in and out of the OSNs domain. An enforced sense of responsibility can happen in the early stages of the Saudi woman's life, and her family obligations tend to take priority over her social ones:

"I have a lot of responsibilities in my life, husband-related

responsibilities, kids responsibilities, my parents, sisters and brothers

responsibilities as the eldest in the family. and just never enough time

to socialize", P2.

Moreover, by using OSNs, they feel responsible in presenting their best self and what is best for their families' reputation. Any indication of radical opinions on their part might tarnish their family name and force these women to quit using the site or to use an anonymous identifier.

5.5.1.4 <u>BEING CRITICAL</u>

The participants criticize the way some women behave towards other women - opposition, giving men dominance and control, and debasing women who fight for their freedom. Women's issues on OSNs have gained major criticism, as one participant clarified:

"I would emphasize the point of media, women's empowerment,

employment, moderation, the disappearance of wasta [nepotism]

because we have been hurt by it. The qualified can't find a job and the

lazy unqualified [persons] are holding such high positions, it is

immoral, and it needs to stop.", P10.

They also expressed concerns for the younger generation that has become isolated and more attached to the virtual world. They also suggested a list of social reform practices that will be presented in a later section.

5.5.1.5 BEING CAUTIOUS & SELECTIVE

Since participants have been careful to avoid potential problems or dangers, they have shown evidence of altered online behavior. For example, selecting the right thing to write on Twitter can be a long and exhausting process since it requires paying extra attention to the words used. In addition, going against the mainstream opinion on certain issues can cause trouble. Politics on OSNs have been a place where caution needs to be exercised the most:

"I learned that one should be beside the wall [attentive] to avoid

the sensitive and political issues, especially when one is living abroad;

you don't want to ruffle the wrong feathers, irritate the wrong people.",

P5.

Encouraging individuals or cases cannot be done without precautions. In the participants' opinion, values and social norms must take precedence over personal cases. They developed a strategy for ruling out suspicions cases by using information filtering, judgement, and an investigation of the case/personal history. Next, they would decide

whether to support the case/person based on their conclusions from the above-mentioned process.

5.5.1.6 BEING SUPPORTIVE

Supporting other women is a significant goal for the participants, and that support is driven by sympathy, compassion, and a sense of duty. For example, encouraging hand-made and family-operated businesses on OSNs, as well as supporting women in politics despite the challenges is important:

"The municipalities have been in the hands of men for a long time. I remember that I tweeted about my vote [for a woman candidate], and the reaction I got from one of the men is that she is not going to win anyway. I replied that it doesn't really matter. I participated, and she participated, and that was the first step.", P6.

Participants utilized OSNs functions to show a different kind of support: retweets, replies, mentions, cost-free ads, and providing consultations on matters they are experts in (e.g., e-marketing). Participants who held an academic position helped their students by showcasing their inventions, achievements, and supporting initiative projects. Social movements and organizations (such as volunteer groups and not-for-profit associations) have been praised and supported by the participants as a crucial step towards a more civil society.

5.5.1.7 BEING A LEADER IN INITIATIVES

The ability to assess and initiate things independently is the last construct in Self-Progress. Initiatives were launched based on the dire need to "do something about" many of the problems that the participants see in society. For example, Twitter and Instagram were utilized to popularize a healthy lifestyle project and for initiating a walking group in one of the largest cities in Saudi Arabia. The project got national media attention and the Ministry of Health support, as indicated in P2's shared success story.

Lack of reading interest seems to be a national problem as well. On an academic level, the lack of reading has produced a lack of available research material in Arabic and a lack of resources. Participants P2, P9, and P12 started different reading clubs in their community and on the university campus. In addition, Participant 4 is volunteering for Wikipedia to enrich the scientific Arabic content. Other participants used different strategies for different problems. For instance, initiating face-to-face discussions in real life or the virtual world has helped to spread important information about women's rights, tolerance, acceptance, critical thinking, and objectivity. For those who lived outside of Saudi Arabia, they initiated discussion groups that enabled them to represent their country's values, culture, and heritage.

5.5.2 Social Progress

One's social identity cannot form without the influence of social development that occurs in one's environment whether that influence is positive or negative (Lackey Jr and Minta 2013; Vignoles 2011). The study's analysis showed that there are three main sub-constructs of social progress that affected the participants' OSD: social empowerment, social traits, and social pressure (Table 6-3).

TABLE 5-3 Effects (%) of the constructs of social progress on women's OSD

Construct	Effect
Social Empowerment	53.27%
Social Traits	28.33%
Social Pressure	18.40%
Total	100%

5.5.2.1 SOCIAL EMPOWERMENT

The participants stated that over the last decades, changes in society have led to women becoming stronger and more confident. Few key-turning points include seeing other women in leadership positions, having a clear idea of the problems in society, proposing solutions to the government through OSNs and official channels, and overcoming challenges in implementing reformation ideas.

In addition, the participants indicated that using OSNs as a tool for social development requires certain skills a person (especially a woman) should be aware of, such as determination, patience, caution, timing, mindfulness, and bestowing fame not shame as one participant clarified:

"I didn't like the way those women rights activists were presenting their demands. They were exaggerating the problems. They had options, but a rebellion wasn't one of them. I'd support them if they asked peacefully, but if they did so with violence, breaking the rules, igniting the public wrath, this wouldn't be right at all", P10.

The discussion about social influence concluded with a list of requests that the participants believe will enrich the quality of women's life, such as improving working conditions; equal pay; career development in small cities; multiple employment resources; developing education, training, and extracurricular activities; providing opportunities to study and work abroad; and ensuring a woman's right and safety in the workplace. In addition, initiating child protection acts and providing more awareness and methods to educate the public about children's safety and rights was one of the most important demands.

5.5.2.2 SOCIAL TRAITS

Though social empowerment had the most influence on Social Progress, Society Traits factor came first in terms of time, as it has the longer and lasting effects. The participants agreed their society has undertaken a major transformation. Saudi society tended to be closed in on itself because of the lack of proper social representation (e.g., leadership), favouritism, and the school system that did not encourage respect for different opinions. For girls, the option of having a social life was minimal as a result of family overprotectiveness, fear of misjudgment, and old traditions.

In the last decade, OSNs functioned as a virtual playground to all cultural and social traits, and with time, OSNs has affected society in a positive way, as one participant put it:

> *"The Saudi community was very heterogeneous, not homogenous*
>
> *at all. Every group of people who were similar or just associated with*
>
> *another had very, very limited opportunities to learn about the other's*
>
> *opinions, perspectives. I think in SA, society was more polarized before*
>
> *social media came along.", P5.*

Social discussions on Twitter, for example, have exposed and refuted some of the major cultural beliefs, including the idea of "*touched by the evil eye or by the devil*" and the male guardianship rules. Though OSNs have ushered societal change, living abroad was also a significant life-changer as well. The National Scholarship Program has

contributed to this change by changing individuals. More information about it will follow.

5.5.2.3 SOCIAL PRESSURE

Social pressure refers to the force, persuasion, and manipulation that peers, family, and the general population exert towards each other. As the Saudi society revolves around the family, the concept itself is paramount, as all participants indicated. Family ties, connections, relations, and the sense of familial responsibility never end even if the children become adults and start families of their own.

Though all participants shared interesting snippets of their childhood, it seems that those who grew up with a strong role model (either their mom, dad, or both) were more likely to progress than others. This was due to several reasons, such as they got their rights early on, embraced many sources of support, and family life was a safe haven for them. In addition, open families that do not enforce restrictions based on gender were the best environments to grow up in because they helped to keep up values yet liberated the mind, as P2 and P5 concluded.

With respect to OSNs, the pressure of social interaction can be used to expose corruption, human rights violations, and abuse. It has also helped to support women, even in conservative societies, and has given paramount support to people with special needs.

5.5.3 Religious and System Progress

Self- Progress and Social Progress are subjected to the influence of religions and systems. With the exception of expatriates, the only religion in Saudi Arabia is Islam and the majority of Saudi people are bound by the Sunni sect. The *system* refers mainly to the government, its functions and policies, and anything that might hold a person accountable in the eyes of the law (i.e., Sharia Law)(Alrasheed 2012). Since Saudi society's core identity derives from those two constructs, it is no wonder that they have emerged very strongly in the data (Table 6-4).

TABLE 5-4 Effects (%) of the system & religion progress constructs on women's OSD

Construct	Effect
System Influence	47.71%
Male Guardianship Regulation	39.22%
Religion Influence	13.07%
Total	100%

5.5.3.1 SYSTEM INFLUENCE

The political system, along with the rules in which the Saudi society is functioning, form an important construct in OSD. The participants discussed some of the system's old

rules that contributed to women's identities including: the education system (both public and higher education), the political system (a special form of the monarchy), the rules (ban of women driving for decades, and the male guardianship). The participants emphasized some of the issues that hindered their recent progress, such as male-dominant government services, ignorance, and even fraud that surround some government initiatives.

On OSNs, the authorities monitor and react to what is happening almost instantly, for example, by exposing some agencies' misuses and individual corruptions. This reaction might result in changing certain regulations, as one participant noted:

"When a female lawyer came into the courtroom without the veil,

the judge [man] cancelled the case, so people opened that discussion

on Twitter. The government reacted immediately stating that the judge

has no business in the lawyer's clothes since this was not one of his

responsibilities. This shows you that the government listens and

observes those discussions whether they are local or international.",

P4.

The transformation of a major practice in the Saudi society that has been occurring for decades is noted, such as the regulations that govern the rules of the *haia'a* [Religious Police]. Therefore, it is imperative to have more engagement with people on OSNs - as

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the participants requested. In addition, they stated that Twitter allows them to reach twice as many people than newspapers or TV channels.

5.5.3.2 MALE GUARDIANSHIP (MG) REGULATION

MG is the product of the integration of both religion and system that has been applied since the inception of the Saudi regulations (Al-Rasheed 2013). The participants agreed that the term MG itself is a religious concept, which was not clarified to everyone, hence, contradictions cloud and undermine its understanding. To illustrate the point, one participant explains:

"almost all Saudis grew up in a time when the MG was a

fundamental matter or a fact of life. It was framed by a religious frame;

hence, everyone in SA knows that the necessities are provided for her

[the woman] like housing, food, etc. Her male guardian is supporting

her in this regard.", P1.

However, male dominance has had side effects on Saudi women, such as self-deprecation, lack of independence, and forced sacrifice on the mother's side when divorced, for instance. On the men's side, there have been cases of hypocritical behaviour and extortions to get the woman's share of inheritance. When hiring women, organizations have suffered delayed and lengthy hiring processes since the MG agreement.

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The discussion of the MG rule on OSNs was characterized as: a way of venting and exposing MG misuse, a social uproar that took the Saudi society by storm, and a way to spread awareness, as one participant observed:

"A hashtag like guardianship tries to limit his [the man's]

control; threaten his power. The man fears that his power and control

over women will be eliminated, so no wonder you see the man's voice

in this hashtag is the loudest. In his opinion if "I can't control, then I

don't exist.", P3.

Proposed solutions evolved around pleas for the system to clarify the concept, set boundaries for men's control, facilitate safe channels for abused women, change social mentality, and extensive considerations for the woman's maturity as the key to stop the control. The participants also advised other women to be peaceful yet insistent, build trust, use persuasion, and be mindful of others. They ask men for their support (not control), to use a humanitarian approach towards women, and to believe in women's empowerment as a reward for all members of society.

5.5.3.3 RELIGION INFLUENCE

A *Madhhab* is a school of thought within *fiqh* (an Islamic jurisprudence). The major Sunni *madhhabs* are *Hanafi*, *Maliki*, *Shafi'i* and *Hanbali*. Though there are very few practitioners of other paths, the *Hanbali* way is the dominant one in Saudi Arabia. It

has been highly implemented in the educational, juridical, and social systems, as one participant summarized:

> *"The Saudi people, especially our generation, those born in the*
>
> *80s and the 90s, have had their general thinking and understating of*
>
> *life and the greater matters highjacked by the school curriculum. It*
>
> *hasn't allowed us to be critical thinkers. That's the reason why if*
>
> *clerics from that generation made us believe in something, especially in*
>
> *the name of religion, we would believe it, and we shouldn't criticize or*
>
> *think or argue or analyze that matter in any way.", P5.*

OSNs have changed the way people view religion and many fraudulent practices that have been done in the name of religion were exposed. In addition, since the Saudi woman is a true believer, she uses the exact same argument against those who try to hinder her development:

> *"I usually try using religious scripts to strengthen my argument,*
>
> *and that helps a lot. I believe that the Prophet is a human rights*
>
> *advocate and our religion is misrepresented not only by non-Muslims*
>
> *but also by Saudi people.", P6.*

The Saudi society takes pride in its Islamic identity and in its Islamic heritage. Moderate Islam is the new calling now since the Crown Prince has been promoting it in

the last few years, as the participants noted. That and the openness that people are exposed to on OSNs have contributed to the less rigid and less conservative social rules.

5.5.4 Global Progress

Since Saudi women's issues have been discussed widely in the media, the participants were asked how they perceive this attention. This was done to identify whether women's national self-expression and presentation on OSNs have contributed to their OSD. The data revealed that there is indeed an influence through the national image construct. The data also yielded interesting perceptions of women in other cultures, and the global progress in terms of women's empowerment. The effects of these constructs are shown in Table 6-5.

TABLE 5-5 Effects (%) of the global progress construct on women's OSD

Construct	Effect
National Image	48.12%
Global Women's Empowerment	51.88%
Total	100%

5.5.4.1 NATIONAL IMAGE

The religious, economic, and political position of Saudi Arabia have greatly contributed to the national image of SA and Saudi citizens in the world. Saudi women care very much about upholding their national image:

"I'm happy that I presented a good picture of us, Saudi women:

independent, aware in a positive way. I was wearing a hijab. I was

happy to see that they [Americans] realized that just because I'm with

a hijab, I'm not constricting my brain. I'd never do anything that

jeopardizes this image as a Saudi woman, as an Arabic woman", P2.

However, global media (GM) interest in Saudi women's issues was not welcomed by the participants, thus it was met with absolute refusal to participate in a conversation with the media and skepticism. The participants' reasons are: a) GM attention serves certain agendas and most of them are not good; b) GM provide no support in sight, so what is the point of the discussion?; c) GM are using our problems to cover theirs (e.g., gun control); d) GM use unfair representation to the point of racism; e) GM think they are helping Saudi women, but in truth they cannot, f) GM could not possibly understand our culture even if they try; g) Saudi women's issues are not that big of a deal to earn this much attention; and h) in the end, it all comes down to politics.

5.5.4.2 G<small>LOBAL</small> W<small>OMEN'S</small> E<small>MPOWERMENT</small>

To put things into perspective, participants were asked about their perceptions of women living in other cultures: (i.e., Western cultures vs. Eastern cultures). The comparison helped put Saudi women's issues on a broader spectrum for the participants. In other words, the comparison helped to answer questions such as what and how could they learn from others in order to take a more comprehensive OSD approach?

Work-life balance, freedom of expression, and independence were global empowerment aspects that the Saudi woman needed to apply in her life. In addition, the system support is also crucial, as one participant clarified:

"There are organizations to help her [the Canadian woman] to

be independent. There are shelters and houses that can be provided for

those who need them. That will help her change her life, take action,

and be independent. Pensions, child benefits and subsidies help her to

be independent as well.", P8.

On the other hand, the participants agreed that the concept of collectivism is preferred to individualism that surrounds many western cultures, hence undermining the importance of immediate family and distant relatives. Furthermore, they also clarified that the global empowerment projects held by the UN, for example, need more marketing and utilization of the new media so that the benefits can be felt by other societies.

5.5.5 Moderators

As shown in the previous sections, OSD has been influenced by four main constructs: Self, Social, System & Religion, and Global Progress. An analysis of the data also identified factors that appeared in all other constructs. Those variables have impacted the direction and the strength of the relationship between other constructs, as well as between their sub-constructs.

The analysis showed that Living Abroad and Social Media Influence had played a moderating role, and Transformative Thinking was the product stemming from their collaboration. The intensity of the moderators' impact on OSD is presented in Table 6-6.

TABLE 5-6 Effects (%) of the moderator constructs on women's OSD

Constructs	Effect
Social Media	56.97%
Life Abroad	25.25%
Transformative Thinking	17.78%
Total	100%

5.5.5.1 SOCIAL MEDIA (SM)

The power of SM is enormous because it touches every aspect of the participant's life. They identified the concept of SM *as "a source of self-growth and a home of social*

respite", P5. In addition*,* SM brought to the surface the question: between the real and virtual world, where does a person's real identity lie? P9 answered:

> *"I think that their real identity is what they represent on SM*
>
> *platforms… In real life, they can't be their authentic self because of the*
>
> *pressure from their culture, the system, society, and traditions… SM is*
>
> *a space where people can be free since they can use two or three*
>
> *accounts; one to maintain and uphold their public face and another*
>
> *one for their private endeavours.", P9.*

Therefore, the participants did not take the flow of information on SM at face value. They made sure to measure these "data" against their own values and beliefs. They also agreed that social media show different views of "*morality and cause extreme emotional stress"*, P8. They noted that the absence of SM footprint for those who should matter had led to many cases of fraud, lies, and deception to become the new #Trend. Finally, SM had made the public *"naked under the microscope and caused a dramatic decline in personal privacy*", as P5 observed.

5.5.5.2 LIVING ABROAD

Living abroad (LA) was a life-changing factor in the lives of the participants who experienced living outside of Saudi Arabia to work or study for more than two years. LA not only transformed their selves, but it also caused major social reforms in terms of

mentality, openness, independence, self-discovery, freedom from discrimination, gaining multiculturalism experience, accepting others' opinions, and respecting other cultures as well. On the other hand, there were many challenges along their journey including: communication, homesickness, facing uncomfortable social habits, and racism.

Furthermore, after years of living in a different culture, returning to Saudi Arabia is a challenge in itself since reintegration is not easy for them. For those who have children, the ordeal is greater, as one participant explained:

"My kids observed other religions, other cultures, they opposed discrimination even at home. Alas in SA, there is a huge problem with discrimination. In addition, in Canada, they get exposed to different cultures and different celebrations and holidays. They understand that other people have other beliefs and we should respect them in order for them to respect us. In SA, we are all Muslims; there is hatred towards non-Muslims; they are viewed as too different from us.", P4.

Finding support can lessen the effects of this transition. In addition, overcoming those challenges made the participants stronger and more prone to develop a healthy and resilient personality, which reflected on their families and social circles.

5.5.5.3 TRANSFORMATIVE THINKING

Transformative Thinking (TT) refers to the mental process, strategies, and methods that the individual or the society undertake and work with in order to form a new idea, accept an inflected change, adapt to a sudden circumstance, or eliminate old conventions (Illeris 2013).

TT impacts had the power to energize the OSD process on every level: self, social, and national. Each level has one or more "change agent" that is represented in percent in Table 6-7.

Previous analysis showed that Self-Progress is the product of Self TT and the latter was produced by four major "change agents": living abroad, SM, education, and time interval. Furthermore, society is a group of individuals that are held tightly either by values or by physical location. Change in those individuals caused a change on a larger scale. From the Social Progress constructs, the results showed some of those positive and negative change effects. The change agents were as follows: living abroad, Social media (SM), the system, openness, time interval, and mentality alteration. Ultimately, individuals and societies think of themselves in many terms; one of them is moving as a nation united by religion, cause, and pride. The data showed that national identity perspectives have also transformed because of global interaction and responsibilities, as well as the system's new ways in leading SA towards a more humanitarian, religiously moderate and economically progressive nation.

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TABLE 5-7 Levels of the tramsfomrative thinking (TT) related to OSD and the effects of the change agents (%)

Area	LA	SM	System	Openness	Education	Time	Mentality	Total
Self TT	58.3	29.2			4.2	8.3		100%
Social TT	17	26.4	20.8	5.7		7.5	22.6	100%
National TT			40	60				100%

5.6 Discussion

5.6.1 Results explained

OSD constructs are best described as a loop of online and offline factors. This observation is supported by other women's self-development studies (Alfurayh 2016); (Kim Koh and Wang 2012). The factors are encompassed by larger influencers that are grouped into four main categories: Self- Progress, Social Progress, System & Religion Progress, and Global Progress. The fifth factor is the Moderators, which can be thought of as the center of a network (Figure 6-1) with routes that reach every other construct. The moderators are culturally related and are best described in the context of this study as suggested in Charmaz, (2014), Guest et al. (2011) and Radsch & Khamis (2013). The dynamics of those main factors had made their mark on SD in general and OSD in particular (Dunkel and Harbke 2017), hence the questions "what are the factors that

construct females' online self-development (OSD)?" and "how do these constructs form OSD?" have been answered as discussed below.

Self-Progress is the main construct that directly affected OSD. Unlike other main constructs, self-progress is very personal, emotional, and unique to each participant (Alfurayh 2016). There were eight personality traits that have directly formed OSD. Resilience was an instrumental factor (Gu, Schweisfurth, and Day 2010; Thoits 2013). In an online context, mastery of emotions and being flexible and open-minded were the central qualities (Kania-Lundholm and Lindgren 2017; Madini and de Nooy 2014). Awareness of one's true self and opinions, and of the situations and circumstances and challenges around her is another influencing factor that leads to self and social reform (Al-Dabbagh 2015; Kivran-Swaine and Brody 2012). A personality with a high sense of responsibility towards the self and society is a progressive one and is more likely to be fair-minded and to develop compassion toward others (Ali 2014; Vignoles 2011). Thinking critically and exercising caution and selectivity about one's situation and decision-making techniques and strategies (Illeris 2013) (e.g., what and how to discuss important issues related to self and society) are also considered as self-progress (Berkowski 2017; Fleck 2015). Lastly, being emotionally, mentally, physically, and financially supportive of others (especially women) enhances self-progress on the one hand and boosts social gain on another (Alfurayh 2016).

Social Progress is the second construct of OSD and refers to the variety of social changes that have affected women's OSD (Gu et al. 2010; Illeris 2013; Kietzmann et al.

2011). Many of these changes were imposed by the system (Alrasheed 2012; Alyami and Matwin 2017; Landig 2011), and most of them came as the answer to forceful demands (Al-Dabbagh 2015; Alyami and Matwin 2017). Women in leadership positions within the system enhanced the participants' sense of *support* and *responsibility* (Chaudhry 2014; Thompson 2015). The society's culture also had a significant impact on OSD, regardless of whether or not it acted as the sounding board that the participants tested new principles against in order to stay true to their values (Metcalfe 2011; Pavaloiu and Vasile 2014). Culture and social pressure are the powers that gave rise to social empowerment (Cheung and Lee 2010; Gruzd et al. 2011). The force originated from one's family (mostly the parents). This was followed by new opinions, motivations and social interaction on OSNs (Cheung and Lee 2010). Another major source, if not the largest in the context of this study, was the impact of living and studying abroad for a long period of time. In many cases, social reforms were started by individuals who returned home and tried to change their societies for the better (Alfurayh 2016; Hattingh, Matthee, and Lotriet 2012; Madini and de Nooy 2014; Ramelb 2016).

Both the system and religion constructs are highly influenced by context and culture (Alrasheed 2012; Alsagri and Alaboodi 2015). Therefore, they affect OSD in accordance with those two factors. In highly religious culture, many practices that concern women, in particular, are rooted in clerical and social perceptions, as well as government perceptions and regulations that are derived from the dominant religion (Alfurayh 2016; Alrasheed 2012). For example, the male guardianship regulation is a

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concept that is rooted in Islam (Alfurayh 2016). However, the excessive unseemly practices imposed by social norms and systematic regulations are challenged by women in Saudi Arabia who stand against excessiveness and call for a ban (Aloufi 2017). This contextual and cultural issue made Saudi women aware of their individual abilities. They realized where they stand with the men in their lives, and therefore took more of a self-development approach to minimize the influence of the man (e.g., by being resilient, empowered, responsible, and independent) (Alfurayh 2016; Chaudhry 2014; Moghadam and Sadiqi 2006). Meanwhile, regulations have improved as religious practices have also progressed towards more openness to other cultures and schools of thinking (Alrasheed 2012; Dunkel and Harbke 2017). OSNs played a vital rule in this regards by facilitating social movements and expanding social reforms (Al-Dabbagh 2015; Al-Rasheed 2013; Almahmoud 2015; Alruwaili and Ku 2020; Chaudhry 2014).

Global Progress may be considered a remote factor, yet it is one that the women frequently mention when discussing their OSD (Hale, Giles, and Ox 2014; Jenkins 2008; Pavaloiu and Vasile 2014). Globalization is one feature of most online social networks, where ideas, opinions, and perceptions can be mobilized freely (Jenkins 2008; Thoits 2013). One advantage of this is the "uniformity of specific concepts, whether economic, political, social, cultural, or religious ones" (Lerner and Castellino 2002). National identity in the global context has become fundamental and pervasive (Alruwaili and Ku 2020; Lerner and Castellino 2002; Rosengren, Johnsson-Smaragdi, and Sonesson 1994). Nonetheless, the philosophies behind social and national identities are interrelated in a

complex way and worth further examination in the future (Alruwaili and Ku 2020; Orsatti and Riemer 2015; Radsch and Khamis 2013).

In an answer to the study question: in what way do self, social, and national identities relate to and impact OSD?, the results show that though the participants take pride in their national identity and defend it through their actions in life and self-presentation on OSNs, their awareness of stereotypes and discriminations is clear. Largescale assessment on women's empowerment and challenges around the world has helped the participants to put their own situation into perspective, which was supported by the suggestions in (Radsch and Khamis 2013). It also helped them conduct a balanced yet authentic review of how their OSD can be enhanced by the practices of others and those of groups and movements in other countries in accordance to their culture, beliefs, and values, which was also supported by the findings in (Ramelb 2016). Again, social media and living abroad played a major role in ushering that review as was pointed out by (Al-Rasheed 2013; Alruwaili and Ku 2020).

Throughout the formation of OSD, its constructs were manipulated, influenced, and directed by three main moderators. SM and LA took the lead role in that regard. The results showed their effect on every process related to that formation. Since the framework of this study is focused on OSD, SM emerged as the strongest factor, while LA is purely contextual. LA, is a metaphor for openness, living and thinking outside the box, coping with challenges, and accepting differences in opinions, views and practices (Abokhodair 2015; Alfurayh 2016; Aloufi 2017; Alruwaili and Ku 2020). Those qualities

helped reduce discriminations, prejudice and enhanced women's standing in society (Saqib, Aggarwal, and Rashid 2016). Lastly, transformative thinking is the process that best described the results related to the progress on every level, as well as described why the growth happened in the first place (Illeris 2013).

5.6.2 Women's OSD Process and FIMD Stages

There is a strong positive relationship between transformative thinking and the feminist identity development as explained by Illeris (2013). The next section will test the process of OSD against the different stages of the Feminist's Identity Development Model (FIDM) (Downing and Roush 1985). Here, the findings of this study are linked to the process of the model and the variances that are related to context and culture are outlined as well (Charmaz 2014; Guest et al. 2011; Losh 2014). The link is important for many reasons. First, women in exclusive contexts develop strength and resilience towards social roles and conventions (Erchull et al. 2009; Thoits 2013). Second, in some cultures, such as in Saudi culture, to be socially labeled as "feminist" is frowned upon (Alfurayh 2016; Aloufi 2017; Alrasheed 2012). Third, the feminist theories have been developed and explained mostly in the American context, flowing from feminist movements (Denzin and Lincoln 2011; Illeris 2013). Although different cultures have studied the feminist identity development (Losh 2014; Pompper 2014; Shirazi 2013), there have not been many studies done in the Saudi context (Alrasheed 2012; Lim 2018; Metcalfe 2011). Conclusively, the relationship between OSD and FIDM does not only broaden

our understanding of the process of the two concepts in the given context, but it also helps widen the scope and implications of both concepts in different contexts (Erchull et al. 2009; Guta and Karolak 2015).

Therefore, a further analysis was conducted to answer the question: what OSD constructs have formed, influenced, or resulted in one or more stages of the FIDM: Passive Acceptance, Revelation, Embeddedness-Emanation, Synthesis, and Active Commitment? Using NVivo matrix analysis queries (Wiltshier 2011), the relationship was determined by finding the strength of the stage coding intensity in each construct. Table 6-8 presents this relationship as discussed in the following sections.

TABLE 5-8 Relationship between OSD constructs & FIDM stages explained by the frequency of coding reference (%)

| | | | Stages | | | | | |
			Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total (%)
OSD Constructs	**Self-Progress**	A: Being Aware	2.42	3.93	2.72	2.72	6.95	18.73
		B: Being Cautious	0.30	1.81	2.42	0.00	1.51	6.04
		C: Being Critical	1.81	4.83	5.14	2.42	4.83	19.03
		D: Being Initiative	0.00	0.60	1.51	0.60	4.53	7.25
		E: Being Resilient	1.21	2.11	2.11	2.42	2.72	10.57
		F: Being Responsible	2.11	2.11	4.53	5.14	7.25	21.15
		G: Being Selective	0.30	0.60	2.72	0.91	2.42	6.95
		H: Being Supportive	0.91	0.91	1.81	1.21	5.44	10.27
		Total (%)	9.06	16.92	22.96	15.41	35.65	100
	Social	A: Social	7.51	9.66	14.81	8.15	23.18	63.30

			Stages					
			Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total (%)
	Progress	Empowerment						
		B: Social Pressure	4.08	3.22	3.43	2.79	1.72	15.24
		C: Social Traits	4.29	5.58	2.36	2.79	6.44	21.46
		Total (%)	15.88	18.45	20.60	13.73	31.33	100
	System & Religion Progress	A: Male Guardianship	15.15	7.88	5.45	8.48	6.67	43.64
		B: Religious Influence	2.42	3.64	0.00	1.82	2.42	10.30
		C: System Influence	6.06	7.27	7.27	2.42	23.03	46.06
		Total (%)	23.64	18.79	12.73	12.73	32.12	100
	Global Progress	A: National Image	2.29	10.69	12.98	8.40	17.56	51.91
		B: Women's Empowerment Globally	12.98	11.45	10.69	8.40	4.58	48.09
		Total (%)	15.27	22.14	23.66	16.79	22.14	100
	Moderators	A: Living Abroad	1.78	7.10	5.92	5.33	2.96	23.08
		B: SM Influence	4.44	15.38	14.79	7.10	13.91	55.62
		C: Transformative Thinking	3.55	6.51	4.73	2.37	4.14	21.30
		Total (%)	9.76	28.99	25.44	14.79	21.01	100

Stage 1, Passive Acceptance, was dominated by the influence of the System and Religion constructs (25%), and mainly through the influence of the Male Guardianship issue (15%). The domination of certain cultural practices has emphasized the importance of male dominance and certain social prejudices against women, as the results of this study have explained previously and supported by (Hoffman 2006).

However, the results also showed a strong revelation phase caused by the main three mind-shifting moderators: SM, LA, and TT (28.99%). This stage was also strengthened by social empowerment (9.66%) and women's empowerment globally (11.45%). The revelation stage as Downing & Roush explained, helped women unite together and move towards a more collective perspective with like-minded people (Downing and Roush 1985). The Embeddedness stage was emphasized by all constructs almost equally, yet social empowerment and SM sub-constructs took the lead. In Stage 4, Synthesis is achieved through balancing feminism and conservatism in the global context and through taking responsibilities for oneself in the dynamics of that process (Erchull et al. 2009). Stage 5 is highly impacted by self-progress (35.65%) for the main constructs, and social empowerment and system influence on the sub-constructs levels.

By looking into the total effect of the constructs on the FIDM stages, it is worth noting that there is a positive relationship between the constructs and the development of the stages based on the average threshold of 19.9%. Stage 2 has the highest relation percentage (28.99%) while Stage 4 has the lowest (14.79%) after Stage 1 (9.76%). This may be because the Synthesis stage is skipped in favor of active participation (Erchull et al. 2009) as Stage 1 is skipped in favor of the revelation stage (ibid). It is also noted that the moderators have little to do with the Active Commitment stage. One explanation is that being actively committed to the cause of women's rights and women's development is the product of the moderators' sub-constructs (Lim 2018). Furthermore, awareness, being critical, and taking responsibilities are the markings of an independent personality,

and thus they played a significant role across all stages (Kim Koh and Wang 2012). Social empowerment has the most significant role across all stages with 63.3% frequency. Social media influence, national image, and the system's influence are the next dominant factors in the development of the stages.

5.7 Conclusion

Women in many cultures are experiencing enormous challenges (Finch 2004). In the Saudi context, the challenges are more complicated than just to be held accountable to the men in the family (Alrasheed 2012). Society, norms, religious practices, and politics have added more complications (Alfurayh 2016; Aloufi 2017). OSNs was a major contributor to enhancing transformative thinking, as well as impacting self-development constructs directly or indirectly (Al-saggaf 2011; Alruwaili and Ku 2020; Guta and Karolak 2015; Saqib et al. 2016).

In feminist and women's studies, self-development studies, and online social network studies, there was a shortage of comprehensive understanding of women's OSD. This study has explored online self-development constructs and analyzed them in light of one of the most prominent feminist identity development models, FIDM (Erchull et al. 2009). In addition to Phase 3, the results from this phase helped answer the second research question by providing enough evidence of OSD process that leads to the formation of Saudi women's online SD formations process (i.e., the WCOSIF model).

A qualitative method was most appropriate for serving the purpose of this study (Charmaz 2014; Creswell and Creswell 2017; Finch 2004; Guest et al. 2011). Using a mixed strategy (i.e., Grounded Theory and Applied Thematic Analysis) is not only a way to generate a model that is elicited from the data (Fleck 2015; Guest et al. 2011), but also to quantify the results in a way that aid the understanding of the relationships between the different constructs (Coetzee et al. 2019; Guest et al. 2011).

This study is bounded by two factors: context and domain. The domain is the online sphere where previous self-development studies have been unable to explain the behavioural process associated with an identity shift (Orsatti and Riemer 2015). The context is the Saudi context, where women have experienced this shift (Al-Dabbagh 2015). In this regard, Koh & Wang (2012) stated that "the development of the self involves the interaction between neurocognitive growth and social-cultural experiences, a process that likely holds true in all cultural settings." (Kim Koh and Wang 2012).

Though I believe that the results of this research contributed to the understanding of the behavioural process in many fields such as HCI, information technology, sociology, and psychology (Finch 2004), the results can be adapted, with caution, to different settings, domains, and contexts (Charmaz 2014; Guest et al. 2011).

As for future work, the next step in my research will be to detect discourse sentiment variation towards Saudi women in the online sphere, which will build on a previous study (Alyami and Matwin 2017). The results should unite the link between self-development and self-presentation (a metaphor for tweets and social media

messages) (Watanabe et al. 2018) as the two main components of online identity (Yang and Bradford Brown 2016), which is the subject under study. They will also help shed light on social interactions and social pressures that are exercised through OSNs (Ramelb 2016).

Overall, the findings can be used by decision-makers to build a more systematic and appropriate course of actions that support women's empowerment (Erchull et al. 2009; Lerner and Castellino 2002; Sbaity Kassem 2012). Since there is a long-term relationship between women's empowerment and social and economic growth (Al-Rasheed 2013; Saqib et al. 2016), this study can contribute to that relationship by presenting the new trends and paths of that growth to encourage a flourishing economy, an improved position of women in and outside the workforce, and a stronger global standing in that regard (Government of Saudi Arabia 2016).

6 PHASE 4: WOMEN'S SELF-PRESENTATION & EMOTIONS: EVIDENCE FROM THE SAUDI TWITTERSPHERE

6.1 Study Objectives

Studies showed that OSNs have played a significant role in shaping the users' identity (Orsatti and Riemer 2015) through self-presentation and social interaction (Shi et al. 2014; Yang and Bradford Brown 2016). Until a few years ago, when social media effects on people were still understudied and unrealized, negative speech towards women were not taken seriously nor was this negative sentiment undermined by the OSN platform itself or by the users (Chatzakou et al. 2017; Hardaker and McGlashan 2016; Watanabe et al. 2018). The victims of online hatred were advised to leave the site or go anonymous (Chatzakou et al. 2017). This affected not only women but the quality of online interaction and communities by embedding the risk of antisocial behaviour (AlMuhanna, Hall, and Millard 2016; Guta and Karolak 2015; Skalli 2014).

Twitter is a well-known OSN and it is used as a micro-blogging platform. Its users can also interact with one another even if the relationship between users is not

reciprocal[36] (Das, Goard, and Murray 2017). It is essential that all users understand this discussion about women and that this understanding leads us towards insight that helps in building better systems, rules, and address the problem of sexism and racism (Chrisler et al. 2013).

In the Saudi context, Twitter is considered a virtual field for national discussions regarding women's issues and rights (Alotaibi 2019; Alyami and Matwin 2017; Hamidaddin 2020). These discussions are loaded with negative sentiments (Almahmoud 2015; Chaudhry 2014; Peel and Ft 2017). Moreover, traces of hate, sexism, and mockery have led to overall negativity, depression, lack of self-esteem, and lower self-confidence for women (Alrasheed 2012; Madini and de Nooy 2014; Mourtada and Salem 2011).

Based on the findings from Phases 1-3, the participants have revealed that Twitter is either "an emotional tornado" or "a place to ease mental pressure". Phase 1, in particular, showed how the Twittersphere was a replica of real-life dealings when it comes to women's social interaction and self-presentation (Alyami and Matwin 2017). However, there is a need to establish a complete picture of Saudi women's online self-presentation and to close the research by examining the changes between the first phase and this one. Therefore, this study hypothesizes that there is a high risk of negativity towards women in general and that there is hatred directed towards Saudi women's development. The aim of this study is to mine Twitter Arabic hashtags related to Saudi

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[36] A user can follow, mention, or reply to another user even if they are not virtually connected.

women to determine the level of sentiments in those discussions. The conceptual framework of this study draws from the information system sources, as well as it applies recent text analysis techniques from the Computer Science domain (Figure 7-1).
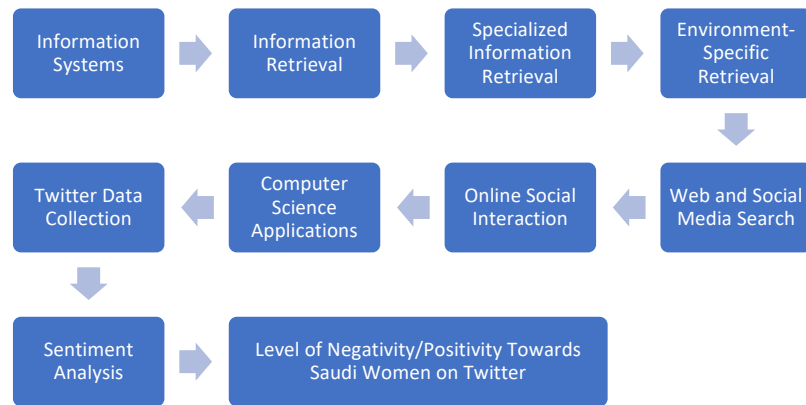
Figure 6-1 The study context

6.2 Methodology

Sentiment analysis is the technique used widely in computer science and information system studies to examine the words, semantics, and tweet syntax (Cardie 2014; Salameh et al. 2015). The analysis makes it easier for decision-makers, for instance, to assess customers' perceptions of a particular product (Trung, Nguyen, and Jung B 2014); to predict the percentages of the votes in national elections (Kurniawati et al. 2019; Wojcieszak and Smith 2013); to detect hate speech towards a given topic or

person (Al-Hassan and Al-Dossari 2019; Watanabe et al. 2018); or to identify user behaviour problems (Chatzakou et al. 2017).

To achieve these goals, researchers build automatic classifiers that classify the tweets into polarities (negative, positive or natural) based on the words included in that tweet (Tromp and Pechenizkiy 2014; Trung et al. 2014). The process seems doable if the data is relatively clean. However, 99% of tweets are far from being readable by automatic systems (Derczynski et al. 2013). The issue is mainly due to the limited number of characters Twitter gives its users in one tweet, many acronyms, shortcuts, links, emojis, misspelled and grammatically incorrect words, and language-mixed words that fill the tweet (Billal, Fonseca, and Sadat 2016; Derczynski et al. 2013).

Researchers are continuously working on mitigating these problems, especially with widely used languages such as English (Assiri, Emam, and Al-Dossari 2018). However, there is still a shortage of Arabic focus on sentiment analysis (Abo, Raj, and Qazi 2019; Alsayat and Elmitwally 2020; Mallek et al. 2017), and even less focus on dialects such as those spoken by Saudi people (Al-Thubaity, Alqahtani, and Aljandal 2018; Al-Twairesh et al. 2016; Alahmary et al. 2019; Assiri et al. 2018). Here, I will explain how the data for this study was collected, how we[37] tried to alleviate the problems

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[37] A research assistant helped with the technical process.

with Saudi tweets based on methods found in previous studies, and how we built a successful classifier that resulted in very high accuracy within the domain of this study.

6.3 Data Collection

6.3.1 Twitter as a data source

Twitter data is publicly available, and it has been accessed by hundreds of researchers around the world (Gabielkov, Rao, and Legout 2014). In 2017, I acquired different data sets using tools such as Netlytic and Keyhole [38]. Each set is related to a discussion on one or more Saudi women's issues, such as #Don't_tell_NYT, Ban_of_Male_Guardianship, and #Women_Driving. I set the parameters to only include Arabic tweets and the geolocation from Saudi Arabia. The estimated volume for those combined sets is over 3k tweets over the span of a month. Twitter API[39] limits the amount and time for each query since changing its privacy policy and regulations in May 2017 (twittercommunity.com[40]). Nonetheless, I believe the data is sufficiently representative since: a) the hashtags ignited the attention of many Saudi women towards social rights, health, safety, employment, globalization, feminism, Islamic feminism, and

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[38] Cloud-based social networks data collectors and text analyzers

[39] Application Programming Interface

[40] https://twittercommunity.com/t/policy-update-clarification-research-use-cases/87566

national identity; and b) they reached a large number of users (i.e., 16 million people worldwide for #Don't Tell NYT only).

6.3.2 Challenges in Arabic Language Text Mining

Arabic is the number one language spoken and written in the MENA region (Alhumoud et al. 2015; Sadat et al. 2014). It has 26 letters: (ا ب ت ث ج ح خ د ذ ر ز س ش ص ض ط ظ ع غ ف ق ك ل م ن ه و ي). Unlike English, Arabic text is read from right to left. Diacritical marks (e.g., ُ ِ َ ْ ُّ ِ ◌َ) are used in written Arabic to help pronounce the word correctly and to distinguish one word from another that has the same characters but a different meaning. In addition, Arabic has 3 forms: 1) classical Arabic, which is related to religious and very formal texts, 2) Modern Standard Arabic (MSA), which is associated with news media and the written format, 3) informal (or dialect) Arabic, which is the spoken Arabic that is bound to different accents and tongues across different MENA countries (and also within the same country) but has no standards (Saad and Ashour 2010).

Saudi Twitter includes 90% of dialect as compared to MSA (Al-Thubaity et al. 2018), which made it very challenging for the researchers to build text classifier models to be used for sentiment analysis purposes. On the other hand, translation to English may yield good results with MSA (Mallek et al. 2017; Salameh et al. 2015), but dialects are hard to translate since the meaning is purely context-related (Assiri et al. 2018). Therefore, previous studies have tried the supervised learning approach, which means the

data was labeled by the researchers before feeding it to the model (Al-Thubaity et al. 2018; Al-Twairesh et al. 2016; Alhumoud et al. 2015). This approach ensured the accuracy of the classifier in a relatively small data sample as compared to unsupervised learning approach (Assiri et al. 2018). We experimented with the two learning approaches, which will be explained in the next section.

6.4 Data Pre-processing

6.4.1 Data Filtering

The work on the data began by filtering non-Saudi generated tweets. This step was necessary to ensure the validity of the tweets used for this study and to examine the variation of information diffusion among all 13 provinces of Saudi Arabia (Figure 7-2).

Second, we removed spam tweets. Spams were determined manually by using two indicators: tweets that use large number of hashtags in one tweet, and tweets posting highly similar or identical content (e.g., ads) (Hua and Zhang 2013). The total amount of tweets that remained for us to work with was 756 tweets[41].

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[41] Upon initial data inspection, majority of tweets were generated from outside Saudi Arabia by Saudis, who live abroad (est. 200k out of ~30m population). It was impossible to filter out those tweets, so I relied on tweets generated locally, hence data was reduced. More on this issue in the concluding chapter.
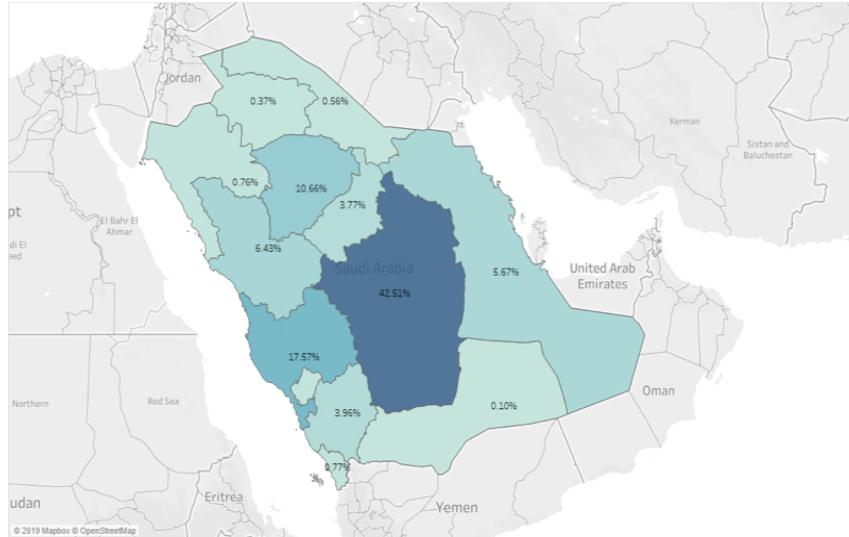
Figure 6-2 The density of tweets generated across Saudi regions

6.4.2 Data Preparation

R programming language was the software used during all stages of our process. We did some tweaks in order to make our Arabic data readable. For example, we set the locale of R script to Arabic instead of the initial default to English and changed the readability to UTF-8 encoding for more compatibility with Arabic and for easier data manipulation in R.

Next, hashtags were disseminated to words shown in Figure 7-3. We kept them since they are essential to the understanding of the sentiment of the tweet (Billal et al. 2016). They also add weight to the polarity of the tweet (Billal et al. 2016; Ritter et al. 2011). Further steps to data pre-processing were taken, as follows:

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- Data normalization: We removed repetitive letters in words such as "نساااااااء" to become نساء. Also, we removed diacritics using the DiacriticRemover package. In addition, we normalized similar letters to have one form, such as آ أ إ = ا in the word امراة as not to confuse the system by considering one word as different words (Assiri et al. 2018; Chatzakou et al. 2017).

- Tokenizer application: We used an Arabic Tokenizer provided by Al-Thubaity et al. (2018). The tokenizer uses the white spaces between the words to segment each word. This creates a bag of words (or vector of words) that can be used for the classification (Fodil et al. 2014).

- Stop words: Non-functional words that have no special meaning were removed, such as في، من، على.

- Stemming: arabicStemR library in R was used to originate the word to its root without the possibility of missing its meaning (e.g., وطن = وطني، وطان، اوطان) (Al-Thubaity et al. 2018). This step is important for increasing the efficiency of the classifier by reducing the amount of similar terms that need to be processed (Fodil et al. 2014).

مبروك لنساء الوطن <= #مبروك_لنساء_الوطن

Figure 6-3 An example of hashtag dissemination

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6.4.3 Data Annotation & Classification

Two of the authors, who are native Arabic speakers, worked simultaneously on data labelling manually. The tweets were classified into three classes (positive, negative, and neutral) (Figure 7-4). In order to compare and minimize subjective judgement, we performed the inter-rater reliability test (Boudreau, Gefen, and Straub 2001). For the three main classes coded, the following percentages of agreement were obtained: positive (96.3%), negative (72%), and neutral (92.3%). We also calculated the Cohen kappa coefficient (McHugh 2012). For all classes, the average kappa was 0.8, which is considered "Strong" since it is above the 0.7 inter-rater minimum reliability threshold (Boudreau et al. 2001; McHugh 2012).
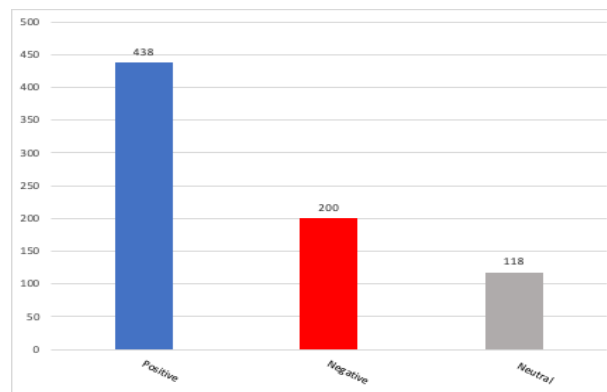
Figure 6-4 Count of polarity classes

6.5 Experiments & Results

Sentiment analysis classifiers are usually built using a lexicon-based approach. The bag of words is integrated into the lexicon. The classifier determines the number of positive words in a tweet and tests them against the number of negative tweets. Then it classifies the tweets based on which sentiment has the highest occurrence. When the two sentiments have the same occurrences, the classifier deems the tweets as neutral. This step is done regardless of the human annotation. Consequently, in most dialect sentiment assessments, the results are not satisfactory. Nevertheless, we experimented with both the non-supervised (no annotations) and supervised (with annotations) approaches, as discussed below.

6.5.1 Experiment 1

After pre-processing the dataset, we used a pre-built Saudi lexicon (SaudiSenti) that was proposed and developed by (Al-Thubaity et al. 2018). It has a dictionary of positive and negative words lists. At first, we followed an unsupervised learning approach with unlabeled tweets. The method we used involved reading the tweets and classifying them according to SaudiSenti. The Support Vector Machine (SVM) algorithm was chosen first as a preferred classifier.

SVM did not yield adequate results because the accuracy was low (<50%). Hence, we experimented with different algorithms such as Naïve Bayes (NB), Random Forest

(RF), and Trees Random (TR). After comparing the results, we were not satisfied with the prediction results produced by these algorithms either. The results were mostly negative and did not follow the logical meaning of the tweet from a human perspective. This problem happened mainly when the tweets contain different variations of the word (i.e., colloquial or slang) that hinder machine judgment accuracy (Al-Twairesh et al. 2016). Consequently, we pursued a different approach.

6.5.2 Experiment 2

We fully integrated our manually labelled dataset with polarity classes instead of partially configuring it within the SaudiSenti lexicon. As we mentioned before, in order for the "machine" to learn how to classify the text properly, the data needs to be labelled by human first (Chatzakou et al. 2017). This step was necessary as feeding the data to the system based on a pre-determined lexicon did not work out for our data as experiment 1 showed.

Here, we used WEKA Explorer integrated with R to figure out the percentage of the polarities and their representation within the dataset. WEKA required that we convert the file to ARFF (R library) to avoid the tokenizer's error that usually occurs with WEKA's ARFF viewer. The error is due to the UTF-8 encoding language problem that occurs when working with non-Roman characters (e.g., Arabic).

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When experimenting with our preprocessed manually labelled dataset, we also tried different algorithms, as shown in the previous experiment (Table 7-1). We found that Naïve Bayes produced the highest accuracy results (98.54%) based on 10-fold cross-validation. Cross-validation is a technique that is widely used in machine learning studies to evaluate the algorithmic models (e.g., NB, SVM, etc.) (Moreno-Torres, Sáez, and Herrera 2012). It splits the data into two sets: training and testing. Usually, the training set is larger (in percentage) than the testing set to give the model enough berth to classify the data correctly (Moreno-Torres et al. 2012). For our experiment, the percentage split was 66% training and 34% testing (Appendix 5). Table 7-2 presents the results from different classifiers, with NB leading the accuracy score.

TABLE 6-1 Results across different classifiers

Classifier	Accuracy (%)
Rules.ZeroR	57.94
Lazy.IBK	98.25
RandomTree	74.64
RandomForest	93.28
Naïve Bayes	98.37
Rules.OneR	27.59

TABLE 6-2 Detailed accuracy table and the confusion matrix

Cross-validation summary	
Metric	Value
Correctly classified instances	98.545%
Incorrectly classified instances	1.455%

Cross-validation summary			
Kappa stats	0.974		
Mean absolute error	0.022		
Root mean squared error	0.92		
Total no. of instances	756		
Confusion matrix			
Classified as =>	a	b	c
a: Negative	193	3	4
b: Neutral	1	117	0
c: Positive	2	1	435

6.6 Discussion

This study is the last part of ongoing multidisciplinary research that aims to build the conceptual framework of Saudi women's contextual online social identity formation. We aimed at mining the Saudi Twittersphere to explore the level of social support towards women by analyzing the level of sentiments targeted towards women.

The results from our work showed a significant change in tone towards women in the Saudi Twittersphere compared to what we observed earlier (Alyami and Matwin 2017). Positive sentiments were accurately dominating the tweet sample. We did a quick breakdown of the two classes (positive, negative) to provide us with a broader scope for sentiment exploration compared to polarity. For this purpose, we used Plutchik's Wheel of Emotion. The wheel identifies basic human emotions and is culturally neutral (i.e., it can be applied to any human language) (Tromp and Pechenizkiy 2014). As our goal, this

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time, was a general exploration, a single author identified the emotions purely based on how they were conveyed in a tweet (Goldenberg and Gross 2020).

Figure 7-5 illustrates that emotions such as love and optimism were good indicators of the transference that happened during recent years (2017 and later). In addition, the opposition turned into submission and neutrality, since any hostility would mean disobedience towards the authorities [12]. Furthermore, as emotions (including sentiments) can be collectively communicated and spread via SM (Goldenberg and Gross 2020), the results also helped shed light on the link between self-presentation (a metaphor for tweets and social media messages) [4] and social interactions as well as social pressures that are exercised through social media [8], [10].

It is important to note that the context of this study was limited to the Saudi Twittersphere and the data used was as representative as we could get it to be. Nonetheless, women's interaction with Twitter is a rich field of information that requires knowledge from different perspectives (Lopez, Muldoon, and McKeown 2019). Emotional and mental health, for instance, is one area that is largely overlooked in many cultures (Larsen et al. 2015). We tried to draw attention to this lack by contributing a lexicon to the on-going efforts in expanding Saudi dialect dictionaries. It can be scaled to include updated phrases, words, and text. It can also be combined with other glossaries for more language variety (Assiri et al. 2018). Future research might consider utilizing different, yet suitable machine learning techniques to examine the state of mental health of perspective communities (e.g., youth)(Chatzakou et al. 2017).

Additionally, there is much to be improved when it comes to the paradoxes of sentiment analysis. To illustrate the point, we can assume that negative emotions were classified as such because of the inclusion of negative words despite the actual meaning perceived by a human reader. For example, "I hate those who want women to stop fighting for their rights" is a positive tweet. However, for a machine classifier, it contains three negative words (hate, stop, fighting); hence, it classifies it as negative. Double-meaning phrases have always been an obstacle in machine learning studies since they would result in an incorrect analysis of a tweet feed (Al-Hassan and Al-Dossari 2019; Mallek et al. 2017). Therefore, there is perpetually room for future improvements. For instance, prospective researchers might try to avoid duality by tokenizing phrases instead of words, since using words only might yield confusing results (Chatzakou et al. 2017).

SM platforms offer a wide range of functionality and affordances (Kietzmann et al. 2011). As the research world is building towards a more interdisciplinary understanding of ourselves and the technology around us (Aoun 2017), this study contributes to a more profound understanding of the workings of digital societies in different contexts. Taking Twitter as an example, technologists and developers might take into consideration how they might add more value to the life of marginalized societies. Overall, technologies can be utilized to help decision-makers advance women's empowerment, enhance their self-esteem, and create a statue of a symbol (Lopez et al. 2019).

Lastly, observing the number of tweets posted every day all around the world has, without a doubt, defined our understanding of Big Data (Agrawal et al. 2014; Xue et al.

2019). Our study helps set the course for SM researchers to mine this textual data, where content is exchanged on a massive scale, and the user behaviour is relatively uninhibited by the social restraints and rules that are mainly found in offline (real-life) settings (Hamidaddin 2020; Lopez et al. 2019).
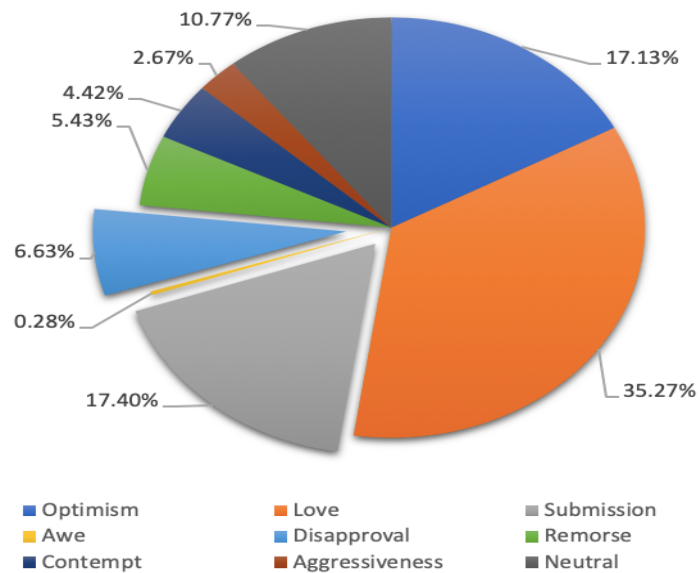
Figure 6-5 Wheel of emotions classified in the data

6.7 Conclusion

This study examined a developed stage of online self-presentation via social participation and the sentiments directed towards Saudi women on Twitter. Phase 4 was the last phase of this research. It helped (along with Phase 1) to build enough evidence to

answer the first research question, which concerns Saudi women's strategies and tools for dealing with challenging situations to have a positive self-presentation on SM (RQ1). Here, in Phase 4, we used machine learning techniques to build a classifier model for Arabic tweets that can be adapted and adjusted in the future to classify the tweets instantly into three main lases (positive, negative and neutral).

In conclusion, this study closes the triangular relationship of the multidisciplinary approach that is used to build the conceptual framework of Saudi women's contextual online identity formation (WCOSIF) model, which is the focus of our discussion in the next chapter.

7 DISCUSSION

7.1 Overview

This thesis is an exploratory study that aims to reveal the constructs of women's contextual online social identity formation (WCOSIF) process. Due to the lack of a model that describes the process, I used an inductive approach to formulate a model of WCOSIF. To do so, I looked into the said phenomena from two dimensions: self-presentation (SP) and self-development (SD).

Self-presentation was measured by examining posts from Twitter using text, tone, emotions, network, and content analysis. Chapters 4 and 7 described the methods and data collections for the two studies. The results of these studies revealed the constructs of self-presentation as a determinant of WCOSIF.

On the other hand, self-development was measured by examining user's perceptions, expectations, and experience of OSNs use that aligned with the chronological set of events that happened simultaneously. Chapters 5 and 6 described the methods and data collections for the two studies. The results of these studies revealed the constructs of self-development as a determinant factor of WCOSIF. Table 8-1 shows a

summary of the four phases results. It is important to note that these results do not apply, necessarily, to all women nor, likely, to all Saudi women[42].

It is important to note that though each study contributes individual findings, the goal of this chapter is to synthesize the results using the qualitative meta-analysis (QMA) technique, as the research design in Chapter 3 has indicated. In this chapter, I outline the steps taken to generate the ultimate research results. In addition, I revisit the RQs, explain the stages of WCOSIF, and conclude with considerations pertaining to the proposed model.

TABLE 7-1 A summary of the results of the research phases

Phase	Results
1	- The beginning of the development of SP mechanisms in OSNs - Intensive use of OSNs by Saudi women. - Saudi women tended to use practical and informational approach by providing practical solutions while counter arguing religious and social objectives. - Evidence of the beginning of a transition from minority to a majority; fighting male dominance on Twitter. - Saudi women had begun the spread of ideas (ideology diffusion) and online communities' formation. - Wide use of fake, pseudo and non-gendered names on Twitter by Saudi women. - A tendency to use international event discussions (hashtags on Twitter) to get to wider audiences. - Apparent use of angry and sarcastic tones towards Saudi women from males and some conservative females. - Moderation has begun to evolve as a mode of religious belief by infusing transformative thinking into online discussions by moderate male and female Saudi intellectuals. - Loud and explicit calls for women's rights caused some Saudi women who took action to be censured; which created a sort of distrust and skepticism from Twitter Saudi female users.

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[42] this limitation will be explained in section 9.4.

Phase	Results
2	• The beginning of the development of SD mechanisms in OSNs • Education, seeking knowledge, online shopping, learning by imitation, information gathering, reinforcing one's online presence, and analysis of Twitter's information and its users' personalities were the main reasons for using Twitter by the Saudi female participants in the study. • The participants tended to reveal more identity aspects in their profiles (e.g., first and last names, occupation, etc.). • Results showed that there is more acceptance of self and the female identity as a woman (not daughter, wife, and sister). • Those Saudi women who got through the exposure phase on OSNs, are more likely to join/ mingle with wider audiences, reveal more information about themselves and post informative content. • There is an indication of the increase in participating in discussions related to exposing harassment, mental awareness, and acceptance of human life by the participants. • Saudi women used a narrative approach, where they tried to make sense of those events by re-defining and demarcating themselves from social expectations and practices. • Younger participants tended to endorse self-efficacy and empowerment while the older generation tended to participate in political discussions. Meanwhile, participants with a higher level of education tended to have more interaction and more transformative thinking influence. • The participants showed a firm adherence to national identity while objecting to global discussions on Saudi women. • The participants called for more participation in political discussions and forming groups. However, they showed reluctance in following influencers (Saudi females ones). • Overall, the participants experienced social gratification by getting solace, support, and initiating good role model figures from fellow females on OSNs.
3	• The later development of SD mechanisms in OSNs • There are four online self-development (OSD) constructs that Saudi women who participated in the narrative study have undergone: self- progress, social progress, religion & system progress, and global progress. Three moderators have affected the progress types: living abroad, social media influence, and transformative thinking. • Self-progress includes being: resilient (countering adversity), aware (human activity), responsible (enforced sense of accountability), critical (about decision-making), cautious & selective (cyber danger avoidance), supportive (emotion-driven), and a leader in initiatives (problem-solving). • Social progress includes: social empowerment (female role models), social traits (culturally-grounded conservative values vs mindful liberty), and social pressure (family ties and strong parental influence). • Religion & System progress includes: system influence (school systems, quality of life boost, and the national transformation program), male guardianship influence (independence and women safety), and religious influence (the power of faith vs fraudulent religious practices). • Global progress includes: national identity (proudness vs perceived global interventions), and global women's empowerment projects (work-life balance and project goals utilization with the Vision 2030 plans).

Phase	Results
	- Social media (SM) influence was intensified as it has become a virtual social playground, causing many changings to the progress types, as mentioned earlier, especially in terms of exposure, knowledge, and dominance. - Living aboard have introduced concepts such as openness, multiculturalism, self-discovery, and reintegration to the wider Saudi society virtually and in real life. - Transformative thinking has worked through all stages of the OSD by allowing growth in self and society functionalities over time.
4	- The later development of SP mechanisms in OSNs - Around 75% of the tweets collected for this study were generated internationally, and only 25% were from inside Saudi Arabia. - The analysis showed that major provinces have significant representation on Twitter (i.e., Riyadh, Makkah, and Hail). - The manual classification resulted in 438 positive tweets, 200 negative tweets, and 118 neutral ones. - We found that feeding the data to the system based on a predetermined lexicon did not work out for our data, so we used WEKA Explorer integrated with R to figure out the percentage of the polarities and their representation within the dataset. - The results showed that Naïve Bayes produced the highest accuracy results (98.54%) based on 10-fold cross-validation with a percentage split of 66% training and 34% testing. - The results from this study showed a significant change in tone towards women in the Saudi Twittersphere compared to what we observed in earlier phases. - Using Plutchik's Wheel of Emotion, the results showed that emotions such as love and optimism were good indicators of the transference that happened during recent years (2017 and later). - Positive discourse and supportive tones initiated by the role-models, the authoritative figures, and the women themselves alleviated discriminant behaviour and amplified social ratification. - Women experienced increased social gratification, as the discourse on Twitter indicated, as a result of feeling sanctioned (by the system), a feeling of authority (in their society), and having the power of choice (an aspect of freedom). - In addition, the opposition turned into submission and neutrality, since any hostility would mean disobedience towards the authorities.

7.2 Answering the Research Questions

The introspective meta-analysis was done to support the understanding of a new phenomenon by aggregating the results across four studies and examining them via a

theoretical lens to come up with a new conceptualization of that phenomenon (Sardi et al.

2019; Timulak 2009). In addition, this approach facilitates building a categorical

relationship derived from that conceptualization in an accumulative way (Stall-Meadows

and Hyle 2010).

I used a modified and adaptable approach of QMA. According to leading QMA

studies, when a conceptual framework (e.g., FIDM, U&T) is used, it is important to be

flexible as the emergent findings may feed the understanding of the generated model

(Finlayson and Dixon 2008; Timulak 2009). Figure 8-1 shows the steps taken to ensure

the completeness and unity of the meta-synthesis mechanisms used to answer the RQs.
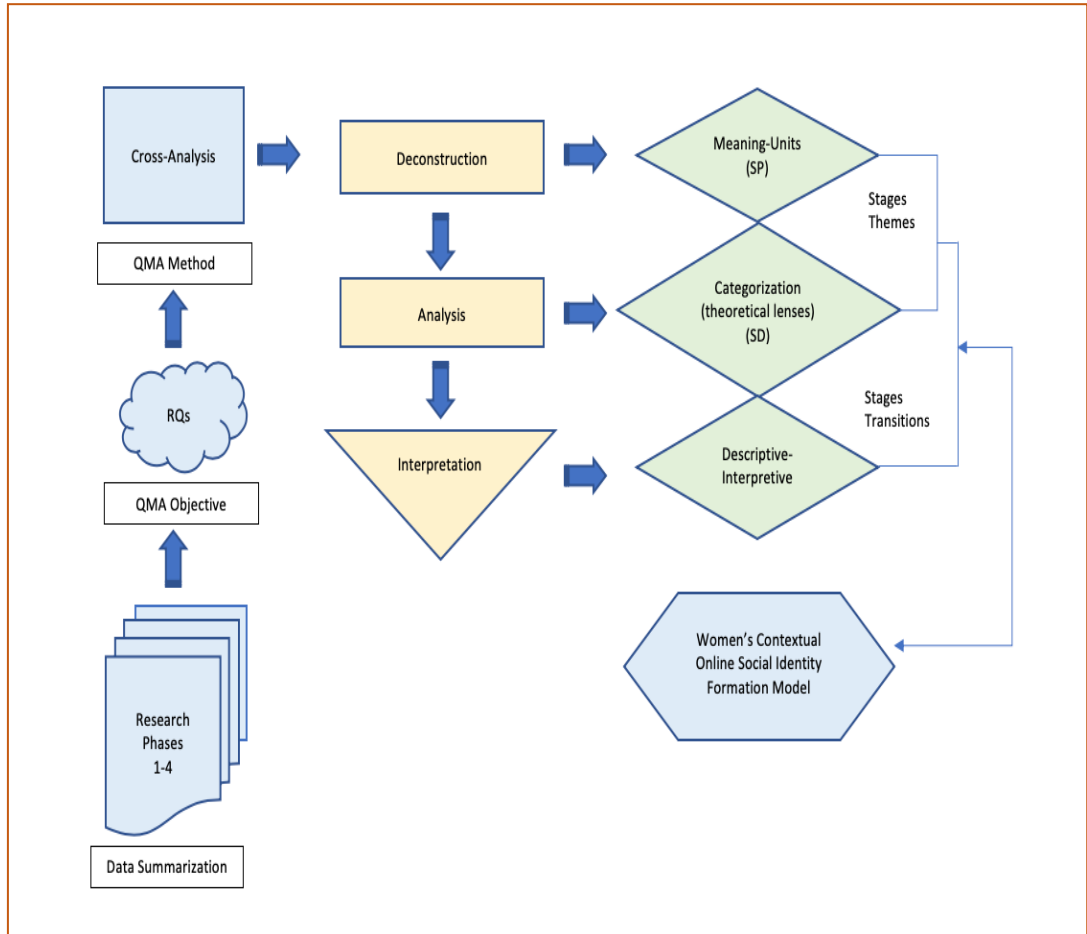
Figure 7-1 Qualitative meta-analysis (QMA) steps

The results of the four studies were summarized (data summarization) with the goal of answering the research questions. Using cross-case analysis the results were examined further via three mechanisms: deconstruction, analysis, and interpretation (Stall-Meadows and Hyle 2010; Timulak 2009). Deconstructing the results aided in identifying concepts or meaning-units pertaining to self-presentation strategies (RQ1). This was done by extracting evidence from the data that referred to a strategy or an online self-expression (Hamidaddin 2020; Mazur and Li 2016).

The second mechanism analysis aided in the categorization of the results pertaining to self-development (RQ2). This step was the hard-core process for the building of this model since it took several sub-steps to unfold. First, the FIDM (Feminist Identity development Model) stages were scrutinized further in light of other studies, such as research done by (Eltantawy 2013; Erchull et al. 2009; Lim 2018; Lopez et al. 2019), and by extracting emerging concepts related to online social movements (Lopez et al. 2019). In addition, since many of those concepts are cross-disciplinary in nature, a compilation of U&G theory was also done in context (Al-Jabri et al. 2015; Ali-Hassan et al. 2015). Concepts of the social media identity-making approach (Orsatti and Riemer 2015) were also considered (Fleck 2015). The final categorization of the data along with results from the first mechanism revealed four stages of identity formation concerning WCOSIF (Schmeltz 2012).

After the stages were re-defined and marked by their own characteristics and effects, the final mechanism consisted of using the descriptive-interpretive technique to explain the transition between the stages based on chronological relevancy (Alotaibi 2019). With that goal in mind, I took into consideration key contextual factors related to Saudi Arabia and explained them as they materialized in the process (Stall-Meadows and Hyle 2010). The following sections will explain how the QMA mechanisms were utilized to answer the RQs.

7.2.1 Addressing the research questions

RQ1: **How do women in challenging situations (i.e., in Saudi Arabia) use self-presentation in online social networks to formulate a social identity in both national and global contexts?**

By examining Saudi women's use of OSNs, the results from Phases 2 and 3 showed that there is indeed an extensive use of major platforms resulting from the perceived ease of use and usefulness of OSNs (Al-Jabri et al. 2015; Verma, Bhattacharyya, and Kumar 2018). The benefits of the use articulated around a strong desire to establish social interaction (Ahmed et al. 2017; Aloufi 2017), knowledge acquisition (Ahmed et al. 2018a), the need to demolish virtual boundaries between the social classes (Guta and Karolak 2015; Takhteyev, Gruzd, and Wellman 2012), having a sense of independence (Matthews et al. 2017; Xue et al. 2019), and overall reinforcing one's online presence by stating "I'm here… I have a voice" (Alsahi 2018; Amer 2016; Hamidaddin 2020). These observations support what most of the authors stated as the reasons for SM use for women in general and Saudis in particular.

Importantly, the results from Phases 1, 3, and 4 also showed that women, via OSNs, have articulated a unique style that contradicted what the status quo expectations of them have been throughout the years on OSNs. In a recent attempt to capture the phenomena of what is locally referred to as "the Saudi Twitter", Hamidaddin in his book, *Tweeted Heresies: Saudi Islam in Transformation*, observed that there seems to be a preoccupation with women on Twitter:

"The issue widely criticized and framed as Saudi religion or

Saudi Islam is prohibitions that are exclusive to women. The issue of

women is repeated time and again whenever the subjects of religious

reform and criticism are raised" (Hamidaddin 2020)[p.71].

In previous chapters, I presented how religion and women (as a generic concept of femaleness in Saudi Arabia) go hand in hand on almost all OSNs social discussions related to women's issues (driving, MG, employment, etc.). The findings of Phases 1 and 3 supported Hamidaddin's conclusion that Saudi women are using sensible and logical arguments to defend Islam, but criticize some of the Islamic practices (Hamidaddin 2020). Furthermore, I explained how Saudi women use a practical and informational approach to justify their situations and the consequences associated with the obscure side of being a woman in Saudi Arabia. They accomplish this by refraining from using hypothetical and emotional messages. Instead, they provide solutions and ask the general public to alter its mental and physical approach towards them. This behaviour is best described as a form of conscious persuasion. Perlof (2015) defined persuasion as:

"a symbolic process in which communicators try to convince

other people to change their attitude or behaviours regarding an issue

through the transmission of a message in an atmosphere of free

choice", (Perloff, 2010), [p12].

Though the message Saudi women transmitted at the beginning of their "call for rights" was clear, it was considered insolent and outrageous, thus it was condemned by both the system and society, as the results from Phase 1 and 2 showed (Alotaibi 2019; Alyami and Matwin 2017).

Within the last decade, and particularly during the Arab Spring revolutions, there was evidence of strong and effective women's participation in uprisings, especially in Tunis and Egypt (Finn 2015; Karshenas et al. 2014; Pompper 2014). These women's participation occurred mainly via OSNs (Brym et al. 2014). Retrospectively, the results from Phase 1, 2, and 3 showed that what Saudi women learned from their neighbors' experience was that outright defiance to the system and society was not acceptable nor tolerable (Alotaibi 2017; Alyami and Matwin 2017). The use of persuasion powers is intensified in counterarguments with those who are on the opposite ends as the participants narrated from their experiences. This conclusion was supported by J. Alotaibi's work (2019). Furthermore, these findings are aligned with the findings from another recent MIT project led by Richard Nielsen (2020). Nielsen studied women's authority in the public sphere (i.e., online) in patriarchal societies and why such societies recruit women to increase their visibility and increase their chances to reach wider audiences. He found that women who supported patriarchal ideologies used identity-based arguments, persuasion strategies based on religion and nature, and sought to reach new audiences (mainly young women) (Nielsen 2020).

In addition to using persuasion, the results from Phase 3 indicated that Saudi women also developed the strategy of unobtrusive participation. Unlike what the literature suggested (Al-saggaf 2011; Guta and Karolak 2015), Saudi women used pseudonyms to avoid personal judgment that would negatively impact their family names. These women used non-gendered names to draw attention to women's rights by counterarguing religious and social justifications using evidence from the same sources. This approach had led to the spread of a new ideology, the moderate school of thinking, as few authors have observed (Alotaibi 2019; Alrasheed 2012; Hamidaddin 2020). Moderation (in reference to religious practices in Saudi Arabia) has been claimed as a mode of systematic and religious practice, but seems distant from its application to women's rights (Hamidaddin 2020). In light of systematic developments led by the government, the results from Phases 1, 3, and 4 showed that spread of information over OSNs has allowed for women to transition from a minority to a majority, fighting not only the male dominance on OSNs but also the apartheid principles diffused by other women (Nielsen 2020).

This ideology diffusion, as the results of Phases 1 and 3 elicited, was achieved first via forming small groups of like-minded people, commonly known as an online community, which have been apparent in women's movement studies (Lopez et al. 2019; Losh 2014). These Saudi communities have tried enticing global attention by using global events related to women, such as the CIDAW conference and Women International Forums (Phase 1). This particular strategy was not as feasible as they might

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have expected. This observation is supported by the findings in J. Alotaibi's thesis, which indicate that in the early days of calling for women's rights (2014~ 2016) the Saudi online society strived to build a wall of defense towards what they deemed an intellectual westernized attack on the Saudi culture, identity and values (Alotaibi 2019). Therefore, women have replaced it by focusing their attention on local cases related to women activists (Phases 1 and 2).

Even in later years, the results of Phases 2 and 3 showed that there is a strong objection to "global media intervention" attributed, in part, to a strong sense of national identity (Aloufi 2017; Pavaloiu and Vasile 2014). It is important to clarify the paradoxes of this observation by taking a second look at the participants' discourse (from these two Phases) within the context of recent events and developments in the country. Currently, the Saudi government wants to take the lead in initiating "a better and sustainable" mode of life for its citizens (Government of Saudi Arabia 2016). Women have appeared at the top of this agenda, not because of UN conventions, foreign pressure, or behind the scenes political deliberations, but due to their open aspiration to improve the quality of life of the kingdom as an economic hub in the world (Alarabia.net, 2018c). Based on the findings across all Phases and supported by other authors (Alotaibi 2019; Hamidaddin 2020), it is prudent to conclude that Saudi women understood that projecting supportive national vibes gets them more than they bargained for. Though the system is by no mean democratic, it is not purely autocratic either (Al-Rasheed 2013; Karshenas et al. 2014). For women, it was a matter of understating the system's workings and rules and utilizing

them to push forward the public sphere's performativity in their favour (Lim 2018). Therefore, it can be concluded that this important social transition has been assisted/strengthened by the formation of identity of women in SA through OSNs participation.

The outlined strategies of self-presentation have shown the impact of collective transformative thinking in OSNs where social identity has emerged, what has worked best, and how the transformation did not take one shape nor was it purely formed by women (Hamidaddin 2020; Lee 2018). The next RQ discusses in detail the strategies of self-development that derived from that transformation.

RQ2: What are the factors that affect Saudi women's identity formation in the online context and how does this process develop?

Throughout the four phases of this research, a discernable pattern appeared across all phases. Arranging the themes based on the time the theme occurred, I refined them into Stages following the line of thinking found in the FIDM model. Based on this QMA technique, there are four stages that Saudi women have undergone to formulate an authentic and united social identity in the online sphere: exposure, transformation, emergence, and social actualization. These stages are the final product of the combined research results as I illustrated them in Figure 8-2. They represent the stages of the WCOSIF model.

The results across all phases revealed that there are three main identity types controlled the development of each stage: reflective, narrative, and active identity. Reflective identity is where self-presentation (SP) has taken place on OSNs while active identity represents the last stage of self-development (SD) on OSNs (Orsatti and Riemer 2015). Each stage is labelled by positive and negative features (referred to as faded vertical arrows inside each stage's box on the model illustration, Figure 8-2). The transition from one Stage to the other is also marked by a set of change factors that were outlined at the bottom of the model (horizontal chevrons). The following sections describe the characteristics of each stage in light of self, social, system, religion, and global progressions. References to the findings and observations from different literature sources were also mentioned as they support the inferences in each stage.

Stage I, *exposure*: In the early years of the last decade (2010-2014), women were exposed to a wide variety of OSNs. According to the participants from Phases 2 and 3, up until then, some highly practiced cultural traits were prevalent, including: women's public presence was absent, the Saudi society was closed on itself, everyone assumed that the 30 million citizens were identical to each other, and gender segregation was at its peak (Alrasheed 2012). The results from Phase 2 reveled that Saudi women, in their efforts to explore "the other", utilized this exposure by intensive online usage for the following purposes: knowledge acquisition, breaking the boundaries that surrounded women in the name of piousness and religion, and obtaining a sense of satisfaction that comes from social interaction. In addition, results from Phase 3 showed that awareness of

women and culture in other parts of the world marked this stage, as well as it helped Saudi women view their national identity in context (Aloufi 2017).

In this phase, Saudi women realized that the virtual social playground was nothing but a reflection of the gender-apartheid and discriminating practices that existed in real life as the results from Phase 1 showed (Alyami and Matwin 2017) and supported by the observations in the literature (Hamidaddin 2020; Nielsen 2020). Therefore, according to the participants in Phases 2 and 3, they tended to go anonymous using pseudo or non-gendered names (Guta and Karolak 2015); and in many cases, the permission of the male guardian or brother was sought to allow participation (Alfurayh 2016; Thorsen and Sreedharan 2019). The exposure stage was also marked by distrust between the users, skepticism of authority and social censorship, and risks to morality impunity, which was evident in Phases 1 and 2 and supported by (Hamidaddin 2020). These factors impacted women by making them feel inferior, adding emotional stress, and bestowing an enforced sense of responsibility to withhold the "family name", which also was evident throughout the interviews with participants in Phase 3.

To get out of this social dilemma, Phase 3 strongly showed that Saudi women had to increase their capability by increasing their self-discovery mechanism (skills-building, living abroad, etc.) (Aloufi 2017), by developing the skill of reflection-retention (what was right with social practices and could continue to be right and what was wrong and how to break the stigma) (Lim 2018), and by starting the implanting of the seeds of identity cultivation (Alfurayh 2016).

Stage II, *transformation*: In this stage, women have developed the ability of infusing transformative thinking into online discussions, which was apparent in Phases 1 and 4 through self-presentation mechanisms. They used ideology diffusion, as well as confrontation, as two main approaches to encourage public trust (Hamidaddin 2020). By upholding conservative values as a way of persuasion, they defended their presence in the online discussion related to women and society (Phases 1, 3, and 4) (Al-Dabbagh 2015). Their additional goal was to fight male-dominance in those discussions and to form small-scale groups of like-minded people (the majority of which were women), as Phases 1 and 3 showed and supported by (Hamidaddin 2020; Thorsen and Sreedharan 2019).

Phases 1 and 2 showed that when those groups took shape on Twitter, for example, they were either self-labeled or socially labeled (e.g., conservatives, feminists, human rights activists, Islamist, liberals, seculars, etc.) (Alotaibi 2019). Each group was advocating for its presence and its interests in women's rights and issues. The labels have caused public outrage, to say the least, and extreme censorship and user's account suspension or detention by the authorities, according to the participants' experience in Phase 3 (Lim 2018).

This stage, which occurred during 2014- 2016, was marked by many deliberations on women's participation in the political arena (Alotaibi 2019) and loud and explicit calls for women's rights as the results from Phase 1 clearly pointed out (Al-Sudairy 2017; Alyami and Matwin 2017). Furthermore, Saudi women used a narrative approach, where they tried to make sense of those events by re-defining and demarcating themselves from

the social expectations and practices as Phase 2 indicated and supported by (Hamidaddin 2020). Though the women in this stage were starting to materialize more distinctly on the online sphere on topics other than the inappropriately labelled women's topics (e.g., cooking, child-caring, etc.), the social condemnation and the authorities' intentional ignorance or extreme practices were paramount during the aforementioned years as (Alotaibi 2019) observed and was evident in Phase 3. Therefore, the results across all phases suggested that women have taken an interval that allowed for a more tolerant mentality to emerge as a result of their increasing level of self-esteem, self-trust, and ego development (Lim 2018).

Stage III, *emergence*: Saudi women, at the beginning of this stage, have turned their efforts into initializing the concept of "women and capitalism" on OSNs as (Sen 2019) puts it. Phase 3 stated quite clearly that Saudi women, influenced by the major transformation that accompanied the Saudi Vision 2030 and its event's implication on everyday life, advocated (on the ground and via OSNs channels) for more political presence and the chance to participate in the decision-making operations, which have also been observed in (Alotaibi 2019; Alsahi 2018).

According to the major news source (Alrabia.net, 2019b), some of the major events that took place in this stage were: 1) lifting the ban on women driving; 2) diminishing the consent of the male guardianship for the purposes of entering educational, recreational, political, and healthcare organizations; 3) assigning the role of Deputy Minister of Labor and Social Development to a woman; 4) women's entry into Saudi's General Security

division as officers of the law; 5) allowing women and families to enter stadiums and sports events; and 6) having more Saudi women assigned to top posts in banking, finance, and health. In light of these events, the results from Phases 3 and 4 showed that women ultimately got to optimize their high level of education in order to have an interactive and broader social value in their society including online communities on Twitter, What's App, Telegram, and Snap Chat[43] (Alruwaili and Ku 2020; Williams et al. 2019).

According the results from Phases 3 and 4, the emergence stage was also marked by an intense global interest, global openness, and bringing forward Saudi women's agenda to the table of international events where representatives of the government participated (Hamidaddin 2020). Phases 2, 3, and 4 revealed that this stage was also marked by the support women got from each other, the spark in entrepreneurship adoption, independent line of thinking, and fading male-relatedness on OSNs and in real-life situations (Nassir et al. 2019). In addition, Phase 4 showed that those who held on to the old status quo started to use submissive and neutral tones, instead of outright defiance, to the transformative approach the Kingdom has taken towards women (Hamidaddin 2020; Nielsen 2020). Overall, the systemic effects and social gains, that went hand in hand on the virtual and real spheres, have created a sort of "collective effervescence", as (Morgan et al. 2018) described, that led to the development of the next stage.

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[43] Major social media platforms in Saudi Arabia.

Stage IV, *social actualization*: In the last stage of online identity development, Saudi women worked towards fulfilling their needs for achievement and empowerment. Results from Phases 3 and 4 vividly demonstrated that they experienced increased social gratification as a result of feeling sanctioned (by the system), a feeling of authority (in their society), and having the power of choice (an aspect of freedom), which was also pointed out in the works of (Alruwaili and Ku 2020; Saleh 2020).

This stage is marked by the launching of online active role model figures on both traditional and social media channels and the commitment to establishing problem-solving initiatives through knowledge dissemination on OSNs, the internet, and on the ground, which was pointed out by the participants' experience in Phase 3 and observed by (Saleh 2020; Thorsen and Sreedharan 2019). The stage is also marked by an outburst of women employed in both the private and the public sectors. According to the participants in Phases 2 and 3, this increase is attributed to many factors related to the 13 programs involved in the Vision 2030 roadmap as it is formulated to increase women's participation in the labour market as part of ensuring equal access to job opportunities, which is one of the Kingdom's goals for a thriving economy (Williams et al. 2019).

According to the participants in Phases 2 and 3, over the last two years, two envisioned programs appealed to women in particular: a) the national transformation program (NTP[44]) in partnership with the Ministry of Labour and Social Development,

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[44] https://vision2030.gov.sa/en/programs/QoL

which created a digitization shift that aims to avail the government and public services 24/7 via call centres and online communications [45], and b) the quality of life program in partnership with the Ministry of Tourism, which created temporary and permeant jobs for over 30k of the young and experienced women[46] during the Saudi Seasons International Festivals[47].

This push towards presenting women at a forefront of the Saudi national image was very apparent on OSNs as the interviews revealed in Phase 3 and observed by (Alotaibi 2019). Such attention helped Saudi women to have an increased sense of self-efficacy, individuality, and security (Saleh 2020). It also contributed greatly to the shift in the dialogue on Saudi women's public appearance and participation in national and international events as appeared in Phase 4 and mentioned in works such as (Alotaibi et al. 2019; Alruwaili and Ku 2020). The positive discourse and supportive tones initiated by the role-models, the authoritative figures, and the women themselves alleviated discriminant behaviour and amplified social ratification; which was clearly evident in Phase 4 and also outlined in the works of (Alotaibi 2019; Hamidaddin 2020).

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[45] https://mlsd.gov.sa/en

[46] Based on one-third of the estimation of total jobs offered. (Source: https://www.elbalad.news/4113298).
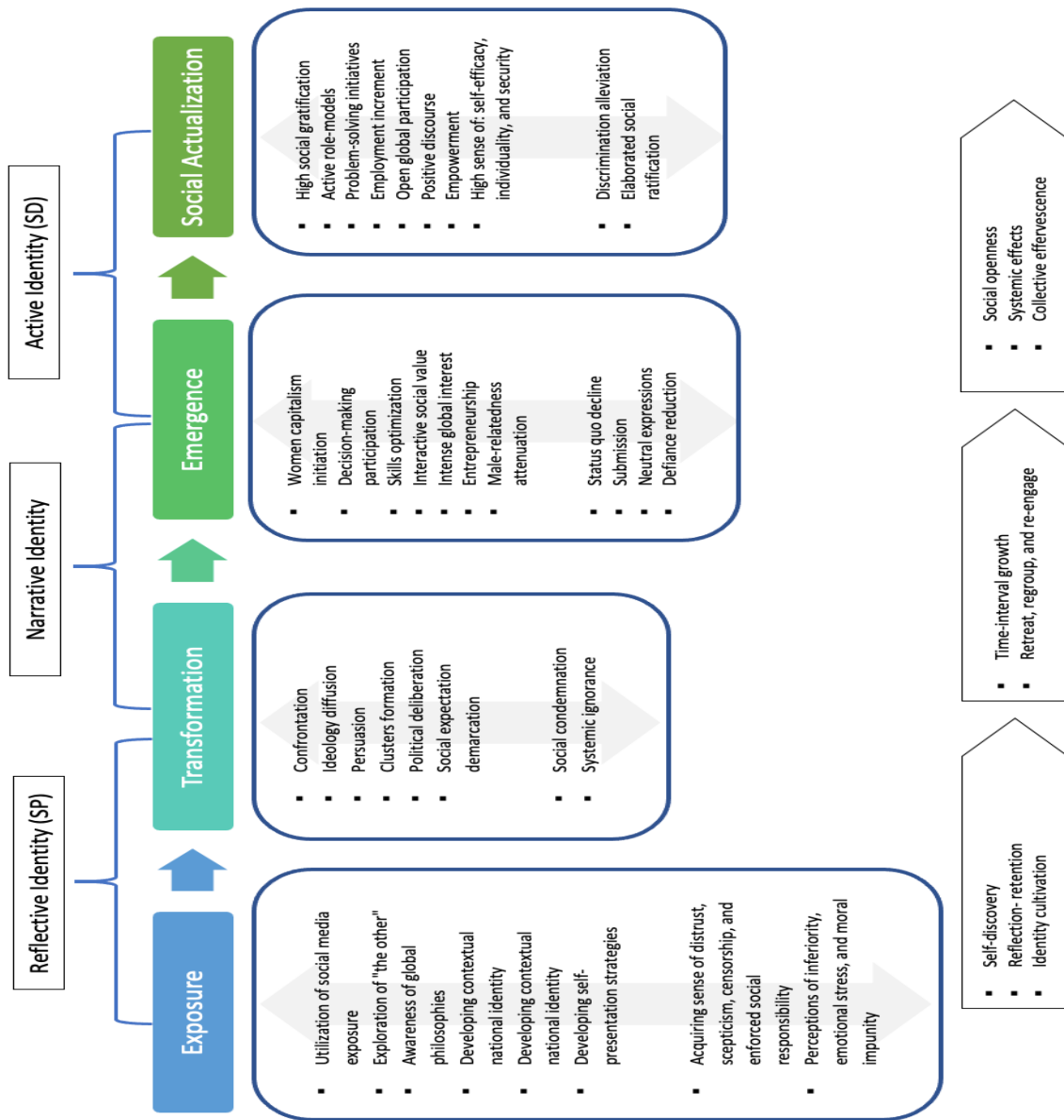
[47] https://mt.gov.sa/Pages/default.aspx

Figure 7-2: Women's Contextual Online Social Identity Formation Model

7.3 WCOSIF Considerations

There are a few key points related to the WCOSIF development that merit mentioning. First, throughout the different stages, Saudi women project strong ties to their faith. Even when a controversial issue like the male guardianship (MG) emerged on OSNs, the religious scripts (*Quran* and *Hadith*) were not questioned as the participants in Phase 3 said. Rather, as I explained before in Chapter 6, the women questioned the systemic and social practices that are done in the name of religion. They also called for enactments that are feasible and can easily be utilized because they fit the contemporary day to day lifestyle promoted by the Vision programs.

Second, the national image was consequently of utmost importance and was clearly and strongly pointed out across all phases. Saudi women are projecting high images of their culture on OSNs by exhibiting how the culture can be restructured and modernized, while keeping the values and beliefs that the Saudi society has. Interestingly, they showed excessive reluctance in following the news and discussions of international news channels, as the results showed in Phases 2 and 3. This might be attributed to the lack of understanding of media and politics as shown in Phase 2 and supported by the work of (Alotaibi 2019; Alrasheed 2012). Media and international media studies, and subsequently understanding them, is not part of the systemic education, nor it is discussed widely beyond the concepts of loyalty and nationalism. The same holds true for political studies. Upon a quick inspection of Saudi universities' political science departments, only two have departments for political studies, engulfed by men. Few others offer courses as

part of sociology or economics majors. Therefore, it is not surprising to see many requests for political participation, but the reality is that very few women are equipped with the basic understanding of universal strategies, including global media handlings. Political careers for women are considered a challenge in this case let alone diplomatic or international ones (Al-Asfour et al. 2017).

Third, Saudi women have an astounding sense of femaleness as opposed to feminism. Time and again, the concept of feminism, Islamic or otherwise, is not established well and that leaves much to be desired (Lopez et al. 2019; Seedat 2013; Williams and Wittig 1997). In an alarming statement issued in November 2019 by the General Administration for Countering Extremism headed by the State Security, feminism was considered one of the terrorist dealings[48]. A few days later, and after an uproar and massive national and international debate on Twitter, the statement was retracted (ibid). An announcement broadcasted on the state television indicated that the statement contained a number of errors in defining extremism and that the individuals who prepared and published it did not do their job properly.[49] The Saudi Human Rights Committee spoke up saying that feminism is not a crime and that the Kingdom "attaches the highest importance to women's rights"[50].

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[48] https://www.bbc.com/arabic/trending-50368484

[49] Saudi Official Channel, YouTube: https://www.youtube.com/watch?v=l8070HhpQn4

[50] https://www.bbc.com/arabic/trending-503684

Is feminism considered threatening to the state? The concept itself has deep roots in politics since its inception (Doumato 1991; Shannon 2014; Wajcman 2010). In the following decades, calls for feminism were usually associated with liberty and breaking social and religious constrains, which was unacceptable and loathsome to the very conservative kingdom (Alrasheed 2012; Badran 2011; Seedat 2013). Later on, when OSNs groups of feminists were calling for rights, they were labelled conspirators (Al-Dabbagh 2015; Alrasheed 2012). Subsequently, some of those advocates were suddenly arrested in the last two years on alleged charges of spying and selling information that tribulate the kingdom[51]. Though the results of this research indicated an apparent trajectory of feminism development in OSNs in its abstract sense (i.e., not subjectified by politics or religion), there was substantial evidence in the results indicating that the development was grounded in the necessity of existence as a female with independent capabilities within the boundaries of womanliness characteristic ecosystem (Sen 2019).

Lastly, social actualization has enhanced that necessity by boosting the realization and fulfilment of women's talents and potentialities (Al-Jabri et al. 2015; Alruwaili and Ku 2020; Guta and Karolak 2015). The phrase is a pertinent extension of the term "self-actualization" that was introduced by Maslow in 1943 as the top stage of the hierarchy of human needs (Morgan et al. 2018; Winston 2018). Here, I modified the phrase to "social actualization" because the collective actions towards feeding the needs of female

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[51] https://www.theguardian.com/world/2019/mar/02/saudi-arabia-detained-womens-rights-activists-to-be-put-on-trial

actualization have contributed to the shared common goals. Though social actualization stage cannot be even remotely considered a utopian stage in the women's identity formation development in Saudi Arabia, it can be reliably rendered as the pivotal point in the life of Saudi women.

7.4 Summary

In this chapter, I summarized the four phases of my research, revisited the research questions, and explained how a holistic, multidisciplinary, and mixed-methods approach led to the presentation of the Saudi women's identity development formation in the context of online social networks whether this context is looked at inside or outside of Saudi Arabia. As challenging and dynamically changing contexts go, the Saudi setting in which this research took place proved to be both intriguing and thought-provoking. As this research concludes, the following Chapter presents a set of implications that might be useful to decision-makers in Saudi Arabia specifically, and, with careful generalization, applied to a larger body of knowledge focusing on women's affairs in the rest of the world.

8 CONCLUSION

8.1 Overview

At the outset of this dissertation, Chapter 1, I discussed how online social networks had dramatically changed women's identity in Saudi Arabia. Though this change has not been observed until recently, Aloufi (2017) predicted that:

> *"The future of Saudi identity, as reflected by women, will be different given the current levels of engagement. As the current population, which is largely made of youth, grows, the status quo will no longer remain as such. Majority of boys and girls are going abroad for studies and interacting with other cultures. In addition, the youth at home are interacting with the secular content through satellite Television and social media tools. Change is inevitable, and the Saudi national identity will not be the same again in two decades or less."*

Chapter 2 stated a few considerations from the previous literature on the conceptual framework for this research and how these works have driven this study. Lack of understanding the concept of identity in social media (SM) research, how it is constructed, and how regular engagement in SM affects one's identity - especially in a challenging context and for marginalized voices - has motivated me to explore the social nature of identity. Based on these factors, two focal research questions have materialized: how Saudi women use self-presentation on Twitter (as the prominent SM platform in Saudi Arabia) to break the stigma of women's public presence, and how that presentation repeatedly reinforces their feelings about the prejudice and discrimination they experience as women in order to achieve authentic and positive identity via self-

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development. Chapter 3 explained how unlike traditional research disciplines, this research is a multidisciplinary framework with the implicit goal of advancing the emancipatory function of knowledge. Therefore, I used a multi-phased approach (i.e., phases) in order to fulfill the aim of this thesis.

Phase 1 (Chapter 4) was an empirical study that served as the foundation of this thesis, which was completed by doing content analysis on discussions farmed from Twitter. However, mining Twitter data alone was not sufficient for understanding different critical stages of online identity formation as it lacked the breadth necessary to build a comprehensive model.

Phase 2 (Chapter 5) was assembled to understand the users' perceptions and attitudes regarding Saudi females' use of OSNs in general, and Twitter in particular. This phase used a survey method to widen the scope and reach of the participants' selections so that the results could include all social levels. Few participants were chosen for the subsequent study.

Phase 3 (Chapter 6) served as the theory-building process, where a grounded theory approach was used to formulate a theory of online self-development. The methodology of this phase was consisted of long and in-depth interviews with 12 Saudi women.

Phase 4 (Chapter 7) circled back to the first study and analyzed the chronological effects of the cases and events on Saudi women's online identity formation. This study was a text mining analysis that took into consideration the time interval between the first and the last phase (a span of roughly four years).

Chapter 8 (Discussion) described in detail how a qualitative meta-analysis strategy was used to summarize, analyze, and synthesize the results of the four phases. Using an inductive approach throughout my research, I proposed a multimodal framework of women's contextual online social identity formation (WCOSIF).

This chapter concluded the research by a) outlining the methodology, b) stating potential academic and theoretical contributions, as well as pragmatic ones, c) proposing clear guidelines for the Saudi government on how to utilize the research for empowering women, and d) identifying research limitations and how they could be revamped in future works.

8.2 Research Contribution

This research focused on women as essential, but marginalized, social media community players. Below are a few points that this research can contribute to enhancing the theoretical and applied understanding of women's identity[52]:

- The proposed model can help redefine and build on the ever-growing interest in the role of online communities in changing political and social practices concerning secluded societies, especially in the Saudi context (e.g., women, different sects etc.) (Shirazi 2013).

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[52] Please refer to Appendix 6 for a full list of the research contributions.

- While the extending literature focuses on Western feminist identity development modes (Lopez et al. 2019; Williams and Wittig 1997), this research manifests as one of the few studies that extend the concepts of feminism to a non-Western context (Lim 2018).

- The stages of WCOSIF (i.e., exposure, transformation, emergence, and social actualization) are influenced deeply by the real-life context and the factors that impact the real identity of the female user. As the presentation of the user identity can often happen via the conscious or unconscious subjective information, the study of thoughts, feelings, likes and dislikes, and how those feelings can be integrated into machine learning techniques is paramount, and has become popular in recent years (Alahmary et al. 2019; Alsayat and Elmitwally 2020).

8.3 Guideline for WCOSIF Utilization in the Saudi Setting

In the previous chapter, I outlined how the Saudi Vision for 2030 enhanced women's conditions and took a few steps to empower them (Government of Saudi Arabia 2016). In an effort to support the implications of the plan, the results from this research helped me compile a list of guidelines for the Saudi government and its agencies[53]. Since

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[53] Please refer to Appendix 7 for the detailed guidelines.

these guidelines can be quantifiable and verifiable, the list can be used to thoughtfully establish the inception of a centralized bureau or Ministry of Women and Youth.

- Strategic utilization: In the WCOSIF model, I explained how the systemic changes that aligned with the new Vision for the country had helped women's identity to transform to the emergence stage, which helped set the course for women's capitalization. In this regard, the government can encourage that evolvement by setting a strategic plan designed for enhancing Saudi women's quality of life.

- Global efforts utilization: Based on the results of this research, Saudi women have reached the stage of social actualization, by creating a unique identity. Using openness, global events, participation, and self-actualization, they are ready to be part of the more global efforts in women's empowerment. Therefore, those strategies can be further applied to a wider range.

- Social media utilization: As this research has established and confirmed how OSNs in general and leading social media channels, in particular, have shaped and changed Saudi women's identity (as the WCOSIF model indicates), it is imperative for the government to utilize these applications for maximum benefits in the future.

- Social utilization: Saudi women's self-presentation and self-development were greatly influenced by the social order and its economic and ideology. Though Phases 3 and 4 indicated a major shift of those two social traits, few areas need to be spotted on.

- Teaching & learning utilization: Though the participants of this study have a high degree of education, the traditional, and still masculine, education system needs to be revolutionized (see Appendix 7 for more details).

These recommendations (Appendix 7) can be helpful as a foundation to a new era for women, and they can certainly enlist the help of the public through OSNs (Sen 2019). Moreover, they can help the private sector businesses attract more female workers by providing them with support with respect to learning, traveling, and leisurely activities when the funds are not sufficient for capping those made by the public sector (Al-Asfour et al. 2017).

8.4 Limitations & Future Work

This research is limited to a certain time frame that covers the recent events that happened in Saudi Arabia. When I embarked on this research, I found that local and international politics had played a significant role in shaping Saudi females' identities in the past decades, which resulted in many social identities within the Saudi society (Alyami and Matwin 2017). Nonetheless, the philosophies behind social and national

identities are interrelated in a complex way and worth further examination in the future (Alruwaili and Ku 2020). In addition, the results of this research can be explained through the socio-cultural and socio-political structure in order to build ample and inclusive plans on women's and human rights related to the next generation of technology use in the region (Hamidaddin 2020). More focus on system characteristics, vendor support, NPOs support, and other macro-environmental factors, will be useful (Nassir et al. 2019).

Apart from the time frame, another limitation is the generalizability of the results. As I mentioned above, the data and sample were from Saudi Arabia, so the results from each phase of this research and the generated WCOSIF model reflect the context in which this research took part in, with few considerations as follows:

Like many Arab countries, Saudi culture is categorized as a collectivist culture, which is reflected in the formation of strong ties and connections with others (Thorsen and Sreedharan 2019). The influence of social factors is paramount as more Saudi women use Twitter to express themselves. This is also true for Arabic and other women worldwide (ibid). Therefore, on the one hand, when we consider the WCOSIF model, the four main stages of women's online social identity formation (i.e., exposure, transformation, emergence and social actualization) can be applied to different women who are using OSNs regardless of their social class, level of education, or the culture. In other words, whether a woman is Western or Eastern, the stages can be applied to different contexts. The reason for that is the model was built on worldwide known theories and models that are culturally-neutral (i.e., FIDM, TAM, and U&G).

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On the other hand, variations and differences in which the identity operates and forms have to be acknowledged. Again, looking at the WCOSIF model, the stages were marked by positive and negative components that are purely context-related and culturally sensitive. Future researchers have to take into consideration those characteristics and how they operate within each main stage. Overall, the model and its constructs are worth investigating within new settings, where the lessons learned can be applied to other contexts with care.

Another limitation was that the main focus, here, has been on Saudi women. Nonetheless, this model might have some relevance for the development of gender consciences in Saudi males, although extensive work is needed to discern similarities and differences between the genders in the area of OSNs research (Hardaker and McGlashan 2016). It is hoped that future theoretical and empirical efforts will address the intrapersonal, inter-personal, institutional, and cultural forces that both catalyze and impede progress through the WCOSIF stages (Sen 2019). As such, more research can be done to substantiate the constructs of the model outlined in this research. Hopefully by continuing the exploration, the shared understanding of the process would increase, as well as the ever-altering effects of serendipitous events would be reduced not only upon women, but on societies in general (Winston 2018).

It is imperative to note that I used the snowballing sampling technique for the second and third phases, and most of the participants were highly educated women. Exploring the model by applying it to less literate and adolescent generation (under 18 years old) can help set the course for new technologies to emerge (Chatzakou et al. 2017;

Fadaak and Roberts 2018). Future research should investigate the experiences of young women and how they come to maturity based on the events that take place during these years (Lopez et al. 2019). For example, lots of text mining projects could be built in order to identify meaningful clusters (online communities) in larger datasets with different users' characteristics to recognize classes directly relevant to the identity formation mechanisms (Chatzakou et al. 2017). Longitudinal research that combines qualitative and quantitative methods would be ideal (Lim 2018).

Lastly, at the time of writing these lines, the world has been struck by a global pandemic (Coronavirus) that left the globe in dire economic and financial need. The world has gone virtual to compensate for the social distancing and remote working obligations (Harris, 2020[54]). Needless to say, the users' behaviour and identity may have experienced climatic changes that are worth examining in the near future. Again, academics, teachers, marketers, and IS designers can utilize the dimension of this model to promote social media-driven products and services with more attention paid to women in challenging situations, such as those who were most venerable to the pandemic economic effects (Yezli and Khan 2020). Technology becomes easier to use, and its usefulness becomes obvious with time. Therefore, as the users' expectations become sophisticated, technologies that might seem useful today, might be less so in a decade or more. Prospective research can attempt to employ such technologies in understanding the

users' needs that might be of use for such future developments, especially in preparation for unexpected and desperate times (Ahmed et al. 2018a; Aoun 2017).

8.5 Conclusion

In conclusion, this thesis investigated women's contextual online social identity formation by appropriating Twitter's text and its users' behaviours as primary data sources. By using mixed-method studies and cross-disciplinary theoretical lenses, the generated model has many implications that can contribute to the life of women in dire circumstances. As one of the pioneering research studies that empirically and inductively explores Saudi women's use of OSNs as a way to form a distinguished social identity, this research adds value, not only to the theory building on SM research, but also to enhance the contextual knowledge of technologies and users' behavior.

This chapter concludes the thesis by outlining some of the useful applications and further procedural recommendations for all those concerned with the Saudi women's empowerment. Subsequently, I discussed some of the limitations of this thesis and stated appropriate considerations for future work. Hopefully in the near future more practical attention will be given to women and youth in order to help to build sustainable and healthy human capital.

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[54] Harris, Grant (2020, May 15) How Investors Can Navigate Pandemic-Related Risk in Emerging Markets, *Harvard Business Review*, retrieved from https://hbr.org/2020/05/how-investors-can-navigate-pandemic-related-risk-in-emerging-markets

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APPENDIX 1 SURVEY QUESTIONNAIRE

Global Identity and Traditional Culture

Title of the study: Global Identity and Traditional Culture: A case study of Saudi females' participation in social media
Principal Investigator: Eman Alyami, Ph.D. student, Faculty of Graduate Studies, Dalhousie University
Academic Supervisor: Dr. Stan Matwin, Faculty of Computer Science, Dalhousie University
Contact Person: Eman Alyami, Alyami@cs.dal.ca

You are invited to participate in our research study being conducted by Eman Alyami who is a Ph.D. student under the supervision of Dr. Matwin of Dalhousie University, Halifax, Canada.

The purpose of the study is to understand the effects of using Twitter on Saudi females and how women in Saudi Arabia use social media to support each other and to establish a Saudi female identity nationally and globally. To be eligible to participate in the study, you must be a Saudi female, 18 years or older, and an active Twitter user. The study runs through two phases: a questionnaire and an interview. You can participate in one or both phases. However, this consent form concerns only survey participation. Additional consent form and information will be provided for those who are eligible and willing to be interviewed.

Participation in the survey is voluntary. It will take from 15- 20 minutes to complete. You may choose to withdraw at any time with no further obligations. You can also decide whether you want any of the information that you have contributed up to that point to be removed or if you will allow me to use that information. However, if your information has been analyzed and/or published, it would be impossible to remove your data.

All responses, records, and information collected for this study will remain private and secure. Data will be encrypted, and no personal or identifiable information will be shared with a third party. Data will be stored for up to five years until the results are published, then it will be eliminated. The risks associated with this study are minimal, and there are no known risks for participating in this survey. There is no compensation for participating in the study, and there might not be direct benefits to you. Your contribution is highly appreciated by the researcher.
If you have any questions, concerns, or need clarification about this study, please do not hesitate to contact me via Alyami@cs.dal.ca.
In the event that you have any difficulties with or wish to voice concern about any aspect of your participation in this study, you may contact Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics for assistance: phone: +1 (902) 494-1462, email Catherine.connors@dal.ca.

Q1:

Dear Participant,

Please fill the survey out in one session, if possible. It'll take up to 15 minutes to complete. Please don't use the back button on your browser. If you'd like to add or change some comments, please do so at the end of the survey.

Please check the following statements to indicate your agreement:

"I have read the explanation about this study. I have been given the opportunity to discuss it, and my questions have been answered to my satisfaction. At this moment, I consent to take part in the survey. However, I understand that my participation is voluntary and that I am free to withdraw from the study at any time."

"I agree that direct quotes from my answers may be used without identifying me."

"I would like to be notified by email when results are available via a publication."

[If this option is chosen, please include a contact email address:

I would like to be contacted for an interview

[If this option is chosen, please include one or more contact details (email, Skype, What's App number, iCloud etc.):

By clicking **Start**, you **Agree** to participate under the conditions described above

Demographics

Q2: Do you identify as:

◯ Female   ◯ Male   ◯ Other. Please specify:

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Note: if you have answered/chosen item [2, 3] in question 2, skip the following question

Q3: What is your nationality?

◯ Saudi   ◯ Other, please specify:

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Q4: If you are not a Saudi citizen, how long have you been living in Saudi Arabia?

◯ Less than one year ◯ 1-6 years ◯ 7-12 years ◯ More than 12 years

Usage Overview

Q5: How many accounts do you have on these social media platforms (except Twitter)? Please specify the main reasons for use (personal, for work, or for school) and the overall time you spend on each channel.

Platform	No. of Accounts	Reasons for Use	Time
FaceBook			Please choose (refer to Q5.1)
Google+			Please choose (refer to Q5.2)
Instagram			Please choose (refer to Q5.3)
LinkedIn			Please choose (refer to Q5.4)
Periscope			Please choose (refer to Q5.5)
Pinterest			Please choose (refer to Q5.6)
SnapChat			Please choose (refer to Q5.7)
YouTube			Please choose (refer to Q5.8)
Other(s), please specify			Please choose (refer to Q5.9)
I do not have an account on any social media because:			

Q5.1 Please choose

◯ Several times per day ◯ Once a day ◯ 4-6 times per week ◯ 1-3 times per week
◯ 1-3 times per month ◯ less than once a month

Q5.2 Please choose

◯ Several times per day ◯ Once a day ◯ 4-6 times per week ◯ 1-3 times per week
◯ 1-3 times per month ◯ less than once a month

Q5.3 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.4 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.5 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.6 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.7 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.8 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Q5.9 Please choose

○ Several times per day　　○ Once a day　　○ 4-6 times per week　　○ 1-3 times per week
○ 1-3 times per month　　○ less than once a month

Twitter

Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q6: Do you have one or more accounts on Twitter?

○　Yes　○　No

Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 6, skip the following question
Note: if you have answered/chosen item [3, 4] in question 4, skip the following question

Q7: We are interested in Saudi females Twitter users only. However, feel free to leave us your comments or suggestions. Thank you!

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q8: Please list up to 3 accounts you have on Twitter? Please tell us the main purpose of each account and the number of followers.

Account	Reasons for use	No. of followers
1		
2		
3		

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q9: For those most frequently used accounts on Twitter, how much of your identity do you reveal? Please choose all options that apply:

	Account 1	Account 2	Account 3
My gender	☐	☐	☐
My real first name	☐	☐	☐
My real last name	☐	☐	☐
my marital status	☐	☐	☐
My nationality	☐	☐	☐
My profession	☐	☐	☐
My age	☐	☐	☐
My city	☐	☐	☐
Other, please specify			

Q10: Generally, how much time do you spend on Twitter?

○ Several times per day   ○ Once a day   ○ 4-6 times per week

○ 1-3 times per week   ○ 1-3 times per month   ○ less than once a month

○ Other times, please specify:

If you have chosen "other", please specify:

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Q11:

For your most frequently used accounts on Twitter, what are the privacy settings? Please select one for each account.

1. Account #1:

Please choose (refer to Q11.1)

2. Account #2:

Please choose (refer to Q11.2)

3. Account #3:

Please choose (refer to Q11.3)

Q11.1 Please choose

○   *Private account (Followers by invitation and permission only)*

○   *Public account (Anyone can follow me and see my content)*

○   *Another option. Please specify:*

Q11.2 Please choose

○   *Private account (Followers by invitation and permission only)*

○   *Public account (Anyone can follow me and see my content)*

○   *Another option. Please specify:*

Q11.3 Please choose

◯ *Private account (Followers by invitation and permission only)*
◯ *Public account (Anyone can follow me and see my content)*
◯ *Another option. Please specify:*

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q12: For each account you have on Twitter, please rank your daily activity from 1-3 where 1 is the most done activity. (You can leave "Other" blanck)

Type of Use	Account #1	Account #2	Account #3
Generating new content			
Replying to others, or forwarding messages			
Reading others content or just browsing			
Other uses. Please specify:			

News

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q13: What international news media do you mostly watch on TV or follow on social media? Please select all options that apply:

☐ CNN   ☐ BBC
☐ New York Times   ☐ The Independent
☐ Huffington Post   ☐ Wall Street Journal
☐ Reuters   ☐ Other(s), please specify:
☐ Im not interested in international news media because:

Opinion

On a scale from 1-5, do you agree or disagree with these statements? In the comment boxes, please tell us why do you agree or disagree.

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q14:

I enjoy using Twitter

Please choose (refer to Q14.1)

Q14.1 Please choose

- ○ *1. Strongly disagree*
- ○ *2. Disagree*
- ○ *3. Neutral*
- ○ *4. Agree*
- ○ *5. Strongly agree*
- ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q15:

My Twitter accounts reflect who I truly am.

Please choose (refer to Q15.1)

Q15.1 Please choose

- ○ *1. Strongly disagree*
- ○ *2. Disagree*
- ○ *3. Neutral*
- ○ *4. Agree*
- ○ *5. Strongly agree*
- ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q16:

Using Twitter empowers me.

Please choose (refer to Q16.1)

Q16.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q17:

Using Twitter has changed my way of thinking with respect to some topics (Please give examples).

Please choose (refer to Q17.1)

Q17.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q18:

I express myself clearly and freely through Twitter

Please choose (refer to Q18.1)

Q18.1 Please choose

○ *1. Strongly disagree*　　○ *2. Disagree*　　○ *3. Neutral*　　○ *4. Agree*

○ *5. Strongly agree*　　○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q19:

In Twitter, I need to use pseudonyms in order to express my opinions honestly.

Please choose (refer to Q19.1)

Q19.1 Please choose

○ *1. Strongly disagree*　　○ *2. Disagree*　　○ *3. Neutral*　　○ *4. Agree*

○ *5. Strongly agree*　　○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q20: Twitter helps me in my daily life (Please give examples).

Please choose (refer to Q20.1)

Q20.1 Please choose

○ *1. Strongly disagree*　　○ *2. Disagree*　　○ *3. Neutral*　　○ *4. Agree*

○ *5. Strongly agree*　　○ *6. I don't know*

Q21: Twitter has enhanced my knowledge of my situation as a woman in the Saudi society

Please choose (refer to Q21.1)

Q21.1 Please choose

⃝ *1. Strongly disagree*	⃝ *2. Disagree*
⃝ *5. Strongly agree*	⃝ *6. I don't know*

⃝ *3. Neutral*   ⃝ *4. Agree*

Q22:

I use Twitter to look for future jobs or other job-related opportunities.

Please choose (refer to Q22.1)

Q22.1 Please choose

⃝ *1. Strongly disagree*   ⃝ *2. Disagree*   ⃝ *3. Neutral*   ⃝ *4. Agree*

⃝ *5. Strongly agree*   ⃝ *6. I don't know*

Q23:

In Twitter, my followers' opinions regarding my content matter to me.

Please choose (refer to Q23.1)

Q23.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Q24:

There are some topics I avoid writing about on Twitter (Please give examples).

Please choose (refer to Q24.1)

Q24.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Q25:

All people should use and participate on Twitter.

Please choose (refer to Q25.1)

Q25.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q26:

I'm satisfied with the level of governmental agencies engagement and participation on Twitter.

Please choose (refer to Q26.1)

Q26.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q27:

In Twitter, there are some efforts to focus on girls and women by the educational and governmental agencies.

Please choose (refer to Q27.1)

Q27.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Q28:

Saudi women support each other on Twitter (Please give examples).

Please choose (refer to Q28.1)

Q28.1 Please choose

○ *1. Strongly disagree* ○ *2. Disagree* ○ *3. Neutral* ○ *4. Agree*
○ *5. Strongly agree* ○ *6. I don't know*

Q29:

All topics related to Saudi women should be discussed on Twitter.

Please choose (refer to Q29.1)

Q29.1 Please choose

○ *1. Strongly disagree* ○ *2. Disagree* ○ *3. Neutral* ○ *4. Agree*
○ *5. Strongly agree* ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q30:

I participate in online discussions on Twitter (e.g., hashtags) related to Saudi womens issues.

Please choose (refer to Q30.1)

Q30.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q31:

Im aware of Saudi womens issues being discussed in the international news. Please give examples.

Please choose (refer to Q31.1)

Q31.1 Please choose

○ *1. Strongly disagree*   ○ *2. Disagree*   ○ *3. Neutral*   ○ *4. Agree*
○ *5. Strongly agree*   ○ *6. I don't know*

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q32:

I feel that Saudi females are represented correctly and fairly in international news.

Please choose (refer to Q32.1)

Q32.1 Please choose

- ○ *1. Strongly disagree*
- ○ *2. Disagree*
- ○ *3. Neutral*
- ○ *4. Agree*
- ○ *5. Strongly agree*
- ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q33:

I feel that Saudi culture and social norms, in general, are known in international news.

Please choose (refer to Q33.1)

Q33.1 Please choose

- ○ *1. Strongly disagree*
- ○ *2. Disagree*
- ○ *3. Neutral*
- ○ *4. Agree*
- ○ *5. Strongly agree*
- ○ *6. I don't know*

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Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q34:

I feel that Saudi culture and social norms, in general, are respected in international news.

Please choose (refer to Q34.1)

Q34.1 Please choose

- ○ *1. Strongly disagree*
- ○ *2. Disagree*
- ○ *3. Neutral*
- ○ *4. Agree*
- ○ *5. Strongly agree*
- ○ *6. I don't know*

Influencers

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q35: Please list up to 10 accounts of Saudi females or groups that you believe to be key players in the Saudi Twitter-sphere. Briefly, describe

why you think they are influencers whether it is a positive influence or a negative one:

I dont follow any Saudi female users because

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q36: In your opinion, what are the most important Twitter discussions or hashtags that concern Saudi women and made an impact on them?

Demographics

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q37: Where have you lived for most of the past year?

◯ In Saudi Arabia. Please specify the city.   ◯ Outside of Saudi Arabia. Please specify the country

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q38: Primary reasons for living outside of Saudi Arabia:

☐ Study   ☐ Work   ☐ Leisure   ☐ Other. Please specify:

If you have chosen "other", please specify:

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q39: What is your current job?

◯ Student   ◯ Business owner or self-employed   ◯ Government services
◯ Private sector employee   ◯ I'm not employed   ◯ Volunteer work
◯ Other. Please specify:

If you have chosen "other", please specify:

[   ]

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q40: What is your marital status?

○ Single   ○ Married   ○ Divorced   ○ Widow
○ Other. Please specify:

If you have chosen "other", please specify:

[   ]

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q41: How many children do you have?

○ I don't have any children   ○ 1-2   ○ 3-4
○ 5 children or more

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q42: What is your household monthly income in Saudi Riyals?

○ Less than 5k   ○ 5-10k   ○ 11k -16k   ○ 17k- 22k   ○ 23k -28k
○ 29k or higher

Note: if you have answered/chosen item [2] in question 6, skip the following question
Note: if you have answered/chosen item [2, 3] in question 2, skip the following question
Note: if you have answered/chosen item [1] in question 4 OR answered/chosen item [2] in question 4, skip the following question

Q43: How old are you?

○ Less than 18   ○ 18-23   ○ 24-29   ○ 30-34   ○ 35-40   ○ 40-44
○ 45-49   ○ 50-54   ○ 55-59   ○ 60 or more

Q44: What is the highest level of education you have completed?

◯ High school or less   ◯ Bachelors degree or its equivalent

◯ Masters degree   ◯ Ph.D. degree

◯ Other. Please specify:

If you have chosen "other", please specify:

Q45: Is there anything else you would like to share about your experiences with Twitter? Do you have any suggestions or comments? Please tell us.

Future Contact

Q46: We are interested in hearing from you in person. If you would like us to send you an interview invitation, please leave us one or more contact details (Email, Skype, What’s App number, iCloud, etc.).

Q47: We are interested in Saudi females Twitter users only. However, feel free to leave us your comments or suggestions. Thank you!

End of Survey!

Thank you for your participation. For any questions or concerns feel free to email the primary investigator at eman.alyami@dal.ca

APPENDIX 2 INTERVIEW INFORMED CONSENT (IN ENGLISH)

Title of the study: Global Identity and Traditional Culture: A case study of Saudi females' participation in social media

Principal Investigator: Eman Alyami, Ph.D. student, Faculty of Graduate Studies, Dalhousie University

Academic supervisor: Dr. Stan Matwin, Faculty of Computer Science, Dalhousie University

Contact Person: Eman Alyami, Alyami@cs.dal.ca

The purpose of the study is to understand the effects of using Twitter on Saudi females and how women in Saudi Arabia use social media to support each other and to establish a Saudi female identity nationally and globally. To be eligible to participate in the study, you must be a Saudi female, 18 years or older, and an active Twitter user. The study runs through two phases: a questionnaire and an interview. This particular consent form concerns the interview part.

Participation is voluntary, and you may choose to withdraw from the interview at any time with no further obligations. You can also decide whether you want any of the information that you have contributed up to that point to be removed or if you will allow me to use that information. However, if your information has been analyzed and/or published, it would be impossible to remove your data.

All interviews will be audio recorded only. All responses, records, and information collected for this study will remain private and secure. Data will be encrypted, and no personal or identifiable information will be shared with a third party. Data will be stored for up to five years until the results are published, then it will be eliminated.

The risks associated with this study are minimal, and there are no known risks for participating in this survey other than perhaps feeling bored or fatigue. You are entitled to breaks if you wish. The interview estimated time is 90 minutes. There is no compensation

for participating in the study, and there might not be direct benefits to you. Your contribution is highly appreciated by the researcher.

If you have any questions, concerns, or need clarification regarding this study, please do not hesitate to contact me via Alyami@cs.dal.ca.

In the event that you have any difficulties with or wish to voice concern about any aspect of your participation in this study, you may contact Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics for assistance: phone: (902) 494-1462, email Catherine.connors@dal.ca.

Since the interview is taking place via Skype, please type "I agree" after each following statement:

o "I have read the explanation about this study. I have been given the opportunity to discuss it, and my questions have been answered to my satisfaction. At this moment, I consent to be interviewed and it will be audio recorded. However, I understand that my participation is voluntary and that I am free to withdraw from the study at any time."
o "I agree that direct quotes from my answers may be used without identifying me."

Name: …………………………. 　 Date: …………………

　　 Signature:……………………………..

APPENDIX 3 INTERVIEW GUIDE

- What do you think of social media in general?

- Are you a member of (or follow) specific groups?

- Tell me more about your first impression of Twitter?

- How do you see Saudi women's presence on Twitter?

- Do you oppose any ideas associated with particular accounts?

- Do you support any particular accounts? Why?

- If I'm to follow you on twitter what do you think my impression would be of your profile?

- What are the challenges of using microblogging and open discussions forums?

    o What are the advantages?

- Hashtags are a way to popularize a case or an event. Are there any hashtags that have stood out for you?

    o What are your observations regarding those discussions?

    o How do you differentiate between males and females posts in discussions related to women's issues?

    o In your opinion, has the discussion helped the case or the event? Why or not?

- One of the benefits of social media is that they are widely viewed, and at times frequently discussed in the global media.

    o What do you think of Saudi issues (politics, social, economic) being discussed on CNN for example?

    o If a hashtag is populated and receives global interest, would you participate in that discussion? Why or why not?

    o What role did Saudi woman play in painting her global image?

- Away from the online sphere, please tell me more about yourself.

    o What shaped your way of thinking and personality?

    o Who are the people that left a mark in your life?

    o How do you interact with/ engage in your community?

    o Growing up what are the things (if any) that had, or still have, made an impact on you?

    o Have you lived in different cultures?

    o Do you see yourself behave differently from one culture to another?

    o How do you see women's situation in those cultures?

- If you were a leader at any organization, what would be the most pressing issue(s) that you would address or establish? Please explain.

    o How would social media help you?

    o What kind of challenges would you expect?

    o How would you overcome those challenges?

    o How do you see your role evolve in 10 or 20 years from now?

- What advice you have for other Saudi women?

- Do you have any last remarks, observations, ideas, or suggestions? Are there any topics that we did not cover in this interview that are of interest to you? Please feel free to share them with us.

APPENDIX 4 THE STUDY CODEBOOK

Node Name	Description
1- Self Progress	Develop towards an improved or more advanced condition. Specific to one's development in terms of personality, emotions, and dealing with life.
Being Adventurous	When the participant is willing to take risks or to try out new methods, ideas, or experiences. Used usually when living abroad. Involves excitement.
Being Attacked	Being criticized or opposed in an aggressive manner. Usually, when the participant is expressing herself via words or action. Attack is the counter-action from others.
Being Aware	Having knowledge, perception, or concern of a situation, fact, or development. May include awareness about self, society, or the broader spectrum.
Being Cautious	Careful to avoid potential problems or dangers. Includes online & offline problems.
Being Conscience-Driven	The participant's moral sense of right and wrong. Also, related to judgement, conscience, fear from Allah, doing the right thing etc.
Being Critical	The participant is providing evidence of critical thinking
Being Emotional	Relating to a person's emotions.
Emotions- Positive	
Emotions-Negative	
Being Empowered	Factors affecting the participant self-empowerment
Being Fulfilled	Satisfied or happy because of fully developing one's abilities or character. Usually have content, pleasant, and happy emotions to it.
Being Influenced	The participant express being influenced by others

Node Name	Description
Being Initiative	The ability to assess and initiate things independently. Includes leadership, having a strategy or a proposal to change things to the best.
Being Open-minded	Willing to consider new ideas; unprejudiced. Mainly non-discriminatory towards other's cultures and opinions.
Being Resilient	Able to withstand or recover quickly from difficult conditions. Involves evidence of being strong, tough, adaptable, and flexible.
Being Resourceful	Having the ability to find quick and clever ways to overcome difficulties. Being in a difficult situation is the key, otherwise code as "Being Initiative".
Being Responsible	Having an obligation to do something, or having control over or care for someone, as part of one's job or role.
Being Restricted	Limited in extent, number, scope, or action. Usually related to public, security, and sense of safety.
Being Selective	Tending to choose carefully. Different from "Being Critical" in terms the latter doesn't involve decision-making or making a choice.
Being Supportive	Providing encouragement or emotional help. Showing understanding, caring, and being sympathetic.
Being True to Herself	Acting in accordance with who one is and what they believe. The participate expresses a need to stay true to herself with too much influence or under pressure.
2- Social Progress	Develop towards an improved or more advanced condition. Specific to social progress online and offline. Includes positive progress and negative changes.
Empowerment	The process of becoming stronger and more confident, especially in controlling one's life and claiming one's rights.
Challenges	
Fighting for Rights	The participant provides examples for HR activists or actions

Node Name	Description
Examples of Activists	Examples of Activists esp. women
Future suggestions	
Women Empowerment in other Countries	
Leadership	This node shows how a woman can be a leader
Challenges	Difficulties of being a leader
Social Participation	People's participation in SM or other social projects
Social Pressure	How social pressure affects a person's behaviour
Parents Influence	How parents influenced the participant
Extended Family Influence	The influence of siblings or cousins
Social Responsibility	What others can do towards others in SM or in real life
Social Support	To women's particularly
Society Traits- Present	
Expats in SA	References to Foreigners who live in SA
Society Traits-Past	Characteristics of Saudi society in the past
Negative	
Positive	
Social Superiority	Examples where people do stuff just to gain other's respect, admiration or to build a certain reputation
3- Religion & System Progress	System and religion influence on culture, social and self-development.

Node Name	Description
Male Guardianship	
MG Roles	Roles of the man in the family or society
Religious Influence	How Religion was and is still influencing people's life and ideology
Examples for Misuse	Examples of religious practices that have been abnormal or harmful
System Influence	How the government reacted or would react to the citizen's issues
Overcoming Challenges	
4- Global Progress	Developing towards an improved or more advanced condition. Related to the international image of SA and its women.
Global Social Participation	When SA people are interacting with others around the globe.
National image	
Other sides	What image do the people in the west or other parts of the world have about SA.
SA Side	What image do Saudis have about themselves.
Other Country's Cultures	Matters related to living or perceptions of other countries
5-Moderators	Variables that impact the direction or the strength of the relationship between other variables.
Information Processing	How information or news are received and thought about
Living Abroad	Living in or to a foreign country or countries. Related to the participates experiences of living outside of SA to work or study.
Homesickness	Feeling attached to something in the participant hometown or SA>
Interactions with Family	When the participant interacts with her family while abroad
Social Participation	

Node Name	Description
Online vs. Offline Behaviour	Similarities and/or differences of one's behaviour.
Self-Development	How the participant changed to the best
Self-Expression	The expression of one's feelings, thoughts, or ideas, especially in writing, art, music, or dance.
Self-Identity	How some people express themselves on SM in particular
SM Influence	
Accountability	Taking responsibilities for what's been written on the SM platforms
Advice	
Cons	
Length of SM Use	How long the participant has been using SM
Pros	Benefits of using SM
Threats	Possible threats on SM platforms
Transformative Thinking	Indications of a shift or change in thinking or mindset
FIDM Stages	The Feminist Identity Development Model Stages.
Stage 1	Corresponds to the 1st stage of FIDM
Stage 2	Corresponds to the 2nd stage of FIDM
Stage 3	Corresponds to the 3rd stage of FIDM
Stage 4	Corresponds to the 4th stage of FIDM
Stage 5	Corresponds to the 5th stage of FIDM

APPENDIX 5 SYNTAX USED FOR CLASSIFICATION IN WEKA/R

```r
#current language of R

print(Sys.getlocale(category = "LC_CTYPE"))


#changes R to Arabic language

Sys.setlocale("LC_CTYPE", "arabic")


#libraries needed for cleaning the dataset

library(tm)

library(arabicStemR)

library(wordcloud2)

library(stringr)


#read and save the the selected tweets to a datafare with arabic encoding

arabic_text <- readLines("tweets.txt", encoding="UTF-8")

arabic_text

arabic_text = arabic_text[arabic_text != ""]


#clean with stringr

arabic_text = gsub("@\\w+", "", arabic_text)

#arabic_text = gsub("[[:punct:]]", "", arabic_text)

arabic_text = gsub("[[:digit:]]", "", arabic_text)
```

```r
arabic_text = gsub("http\\w+", "", arabic_text)

arabic_text = gsub("[ \t]{2,}", "", arabic_text)

arabic_text = gsub("^\\s+|\\s+$", "", arabic_text)

#clean with arabicstemR

arabic_text <- removePunctuation(arabic_text)

arabic_text <- removeNumbers(arabic_text)

arabic_text <- removeNewlineChars(arabic_text)

arabic_text <- stripWhitespace(arabic_text)


myartxt <- data.frame(arabic_text, stringsAsFactors = F)

myartxt$doc_id = c(1:nrow(myartxt))

myartxt$text = myartxt$arabic_text

#devide the text into three cloumns

myartxt = myartxt[,c(2,3,1)]

myartxt$text = transliterate(myartxt$text)

str(myartxt)


#create arabic text corpus

arabic_corpus <- Corpus(DataframeSource(myartxt))

#verify

myextract    <-    data.frame(text    =    sapply(arabic_corpus,    as.character),
 stringsAsFactors = F)

myextract$text


arabic_tdm <- TermDocumentMatrix(arabic_corpus)
```

```
#visualize matrix

arabic_m <- as.matrix(arabic_tdm)


arabic_v <- sort(rowSums(arabic_m), decreasing = TRUE) #get word freq, sum rows

arabic_tdm <- TermDocumentMatrix(arabic_corpus)

#visualize work

arabic_m <- as.matrix(arabic_tdm)

arabic_v <- sort(rowSums(arabic_m), decreasing = TRUE) #get word freq, sum rows


output_ar <- cbind(arabic_v)

head(output_ar)

tail(output_ar)

output_ar_df = as.data.frame(output_ar)

output_ar_df$arabic = row.names(output_ar_df)


for    (i    in    1:nrow(output_ar_df))    {output_ar_df$arabic_trans[i]    =
reverse.transliterate(output_ar_df$arabic[i])}


#save after re-transliterate into a txt file

write.table(output_ar_df, "arabicount.txt", quote = FALSE, col.names = FALSE,

          row.names = FALSE, sep = "\t", fileEncoding = "UTF-8")
```

APPENDIX 6 A SUMMARY OF THE RESEARCH CONTRIBUTIONS

Theoretical contributions

In the majority of disciplines (e.g., political science, communications, philosophy, media studies, computer science studies etc.), the dearth in the existing literature in terms of how women's identity forms in computer-mediated systems, and more so in contextual and demographic settings, cannot be overlooked (Lim 2018; Lopez et al. 2019). This lack is due, in part, to the massive branching of identity (Orsatti and Riemer 2015). In addition, social media research (i.e., a large body of articles and books) is relatively new and has been primarily focusing on business and information systems. In nuanced ways, this research provides a multimodal framework of identity-making for grasping the phenomena of identity in SM. Specifically, regardless of the discipline, the model aims to provide researchers with a complete tool for grasping identity formation in SM (Orsatti and Riemer 2015).

This research focused on women as essential, but marginalized, social media community players. Twitter, in particular, is a marvel for social transformation when it comes to that (Alyami and Matwin 2017; Lopez et al. 2019; Losh 2014). Two examples showcase the power of Twitter for women and isolated groups. Black Twitter is an

emerging concept that concerns Black Americans in the US, which was started and led by Meredith Clark, a University of Virginia professor. She defines her work as "a network of culturally connected communicators using the platform to draw attention to issues of concern to black communities".[55] In the Saudi context, marginalized groups have established similar scenarios (Andersen 2017). Kowther Alarbesh is a prominent female leader, a member of the Consultative Assembly of Saudi Arabia (Shura Council), and a Twitter influencer. She has been a leading female voice and working hard at bridging the ties between subcultures (mainly those of the Shea sect) and the general public. The proposed model can help redefine and build on the ever-growing interest in the role of online communities in changing political and social practices concerning secluded societies (Shirazi 2013).

The second example is the Me Too (or #MeToo) movement run by the social activist Tarana Burke. It has utilized SM platforms to expose sexual harassment and give support to assaulted women. The movement took Twitter by storm in late 2017, as famous Hollywood actresses broke their silence on male transgressions, many of which included distinguished names (Lee 2018). The trend has spread virally and internationally, resulting in significant changes in harassment laws, social backlash, and high-profile condemnations (ibid). Following the global example, Saudi women have also used Twitter to expose assaults and misconducts in the still new gender-mixed working

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[55] https://news.virginia.edu/content/black-twitter-101-what-it-where-did-it-originate-where-it-headed

environments (Al-Asfour et al. 2017; Lim 2018). As the victims regain trust and strength, the research model can provide a plan for therapists, social activists, and policy-makers to identify the needs and strategies for building a positive self and identity (Moradi and Subich 2002; Winston 2018).

Furthermore, while the extending literature focuses on Western feminist identity development modes (Lopez et al. 2019; Williams and Wittig 1997), this research manifests as one of the few studies that extend the concepts of feminism to a non-Western context (Lim 2018). Academics and future researchers may modify this research in a way that helps them theorize the actuality of the concept and its effects across different contexts, settings, and nationalities (Hamidaddin 2020; Lopez et al. 2019). Overall, since research that explicitly addresses the development of a positive identity is sorely needed (Lim 2018; Saqib et al. 2016), the WCOSIF model provides a useful assessment tool for researchers to gain a broader contextual understanding of users' experiences. As such, this research contributes to the existing knowledge and understanding of the activating properties of social media in behavioural studies (Alruwaili and Ku 2020; Saleh 2020).

Applied contributions

OSNs platforms offer a wide range of functionality and affordances (Kietzmann et al. 2011). As the research world builds towards a more interdisciplinary understanding of ourselves and the technology around us (Aoun 2017), I expect this research to be

useful for investing developing identities through SM technological research (Aloufi 2017; Mazur and Li 2016). For example, neuroscience experts, digital marketing specialists, e-commerce practices shareholders, and application developers can benefit from the model when constructing demographic goals (Bahri et al. 2018; Chatzakou et al. 2017; Lee 2018; Priante et al. 2017). In addition, entrepreneurs and consulting agencies can chart the way for achieving deeper insights into consumer behaviour (Ahmed et al. 2018a).

Likewise, technologists, marketers and service providers can focus more on the constructs of the model, focusing on women rather on the general public (Saleh 2020). Taking Twitter as an example, developers might take into consideration how the OSNs might add more value to the life of women, how they enhances their self-esteem, and how they create an income source (Lopez et al. 2019; Nassir et al. 2019).

Furthermore, observing the number of tweets posted every day all around the world has, without a doubt, defined our understanding of the concept of "Big Data" (Agrawal et al. 2014; Xue et al. 2019). This context provides a great opportunity for the social media researcher to mine this textual data, where content is exchanged on a massive scale, and user behaviour is relatively uninhibited by social restraints and rules that are mainly found in offline (real-life) settings (Hamidaddin 2020; Lopez et al. 2019).

The stages of WCOSIF (i.e., exposure, transformation, emergence, and social actualization) are influenced deeply by the real-life context and the factors that impact the real identity of the female user. As the presentation of the user identity can often happen

via the conscious or unconscious subjective information, the study of thoughts, feelings, likes and dislikes, and how those feelings can be integrated in machine learning techniques is paramount, and has become popular in recent years (Alahmary et al. 2019; Alsayat and Elmitwally 2020).

Overall, technology adoption is a replica of the dynamics of identity remaking and formation, which takes place in many areas, not only in the social space. Teachers and academics can use the constructs to fit and address different development criteria in the curricula systems for teaching and learning purposes (Yang and Bradford Brown 2016).

APPENDIX 7 GUIDELINES FOR THE RESEARCH MODEL (WCOSIF) UTILIZATION

In Chapter 8, I outlined how the Saudi Vision for 2030 enhanced women's conditions and took a few steps to empower them (Government of Saudi Arabia 2016). Regardless, according to the newest report on the Saudi labour market, females represent the highest percentage of officially unemployed workers (30% as compared to 5% for their male counterparts), and 90.8% of those females have never had a job [56].

In 2016, the unemployment rate for women was 33.7% (ibid). Some reasons for this high rate can be primarily attributed to issues related to transportation, male guardianships, and safety in the workspace (Alrasheed 2012; Bajbair 2016). Although some of those rules are somewhat relaxed now, and the issue of mobility is no longer a concern (Williams et al. 2019), few new challenges have emerged as the rate has not significantly dropped between 2017 and 2019. According to the head of the General Authority for Statistics, 38% of job seekers are opting for public services since the private sector is not doing enough to be an attractive and safe business entity[57].

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[56] Labour Market, Fourth Quarter 2019, retrieved from https://www.stats.gov.sa/en/6584

[57] Alrabia.net, a report on "Saudi female unemployment is declining as their participation in the economy rises", retrieved from https://bit.ly/2y9c

In an effort to mitigate some of those problems, the results from this research helped me compile a list of guidelines for the Saudi government and its agencies. Since these guidelines can be quantifiable and verifiable, the list can be used to thoughtfully establish the inception of a centralized bureau or Ministry of Women and Youth, as follows:

Strategic utilization

In the WCOSIF model, I explained how the systemic changes that aligned with the new Vision for the country had helped women's identity to transform to the emergence stage, which helped set the course for women's capitalization. In this regard, the government can encourage that evolvement by setting a strategic plan designed for enhancing Saudi women's quality of life. Participants from Phases 2 and 3 have outlined few national strategies, such as:

- Put clear guidelines for women's empowerment indicators and plans.
- Craft and clarify detailed plans for the empowerment of women and youth within the Vision strategies.
- Apply the transformative stages of the model to strategies for enhancing women's and young adult's citizenship programmes.
- Authorize clear and detailed rules for women's working conditions and rights within the labour law, especially in coexisting environments.

- Set a course of action to de-marginalize women's presence and participation in leadership positions and for having active rules in the largest manufacturing and industrialized organizations (Aramco, Sabic, etc.).

- Increase the presence of women in leadership positions in different strata of the SA society, starting with media, education and healthcare.

- Build and support women's centres for various reasons (care, healthcare, business support, mental and physical support, etc.)

- Set the commencement to a Ministry of Women and Youth Affairs in the country that can work with other agencies and within the vision strategies to:

  o Ensure women's participation in all fields

  o Benefit women in economic, social, political and cultural domains

  o Promote women's rights

  o Protect the rights and welfare of children in the country

  o Conduct, compile, and populate informational reality reports on the conditions of women and youth in the country for all stakeholders concerned

  o Monitor the signed global treaties applications and ensure their deployment and report back on issues and achievements

Global efforts utilization

Based on the results of this research, Saudi women have reached the stage of social actualization, by creating a unique identity. Using openness, global events, participation,

and self-actualization, they are ready to be part of the more global efforts in women's empowerment. Therefore, those strategies can be further applied to a wider range, as follows:

- Create uniform concepts of cultural identity and determine how they affect Saudi women in global dealings, sustainable development goals SDGs (the 5th goal: gender equality), and women's empowerment goals set by the United Nations.

- Open more doors to women for entering the workforce internationally as part of the legislative commitments to NGOs.

Social media utilization

As this research has established and confirmed how OSNs in general and leading social media channels, in particular, have shaped and changed Saudi women's identity (as the WCOSIF model indicates), it is imperative for the government to utilize these applications for maximum benefits in the future. Few suggestions that can be recommended incorporates:

- Conduct empirical research on the impact of SM on Saudi women's political and leadership ends.

- Utilize SM channels to considerably enhance organized political discussions between women and the government.

- Set legalized political campaigns and regulate advocacy rules to create a safe and informative cyberspace for women on SM.

- Project more highlights of Saudi female leaders and emphasize their social participation on SM, giving discussion-led platforms such as Twitter a distinctive consideration.

- Regulate and enforce SM platform cultural and regional regulations to ensure the safety and protection of young SM users.

Social utilization

Saudi women's self-presentation and self-development were greatly influenced by the social order and its economic and ideology. Though Phases 3 and 4 indicated a major shift of those two social traits, few areas need to be spotted on, such as:

- Enable new organizational groups to form with the goal of efficient dissemination of information.

- Enhance, promote, and engage more females and youth in political awareness campaigns.

- Adhere to social needs in employing seniors and experienced adults at advanced ages as consultants and in conciliatory positions.

- Enable more remote work conditions as a way of engaging and encouraging more women to work from home.

Teaching & learning utilization

Though the participants of this study have a high degree of education, the traditional, and still masculine, education system needs to be revolutionized. Few recommendations that emerged from Phases 2 and 3 include:

- Widen the scope of social studies to publicly include topics on women's empowerment, women's rights, and women and youth SDGs.
- Make more political and international policies courses and workshops available to women in universities and higher education institutes.

These recommendations can be helpful as a foundation to a new era for women, and they can certainly enlist the help of the public through OSNs (Sen 2019). Moreover, they can help the private sector businesses attract more female workers by providing them with support with respect to learning, traveling, and leisurely activities when the funds are not sufficient for capping those made by the public sector (Al-Asfour et al. 2017).