Privacy and Social Media Use in the Arabian Gulf: Saudi Arabian & Qatari Traditional Values in the Digital World

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ABSTRACT

We explore the meaning of "privacy" among citizens of the Gulf states of Qatar and Saudi Arabia as it manifests in digital environments. Privacy is an essential and widely respected value in many cultures, and the way in which it is understood and enacted depends on context. Therefore, we conduct this research to understand user behaviors regarding privacy in the digital sphere, where individuals increasingly publish personal information. We present the results of two Arab Gulf based-studies, the first one is a mixed-methods analysis of 18K Twitter posts of Qatari nationals that mention "privacy." The second study provides qualitative insights through 34 ethnographically-informed interviews that focus on online privacy with Saudi Arabian nationals. In our analysis, we pay attention to the face-to-face and digital contexts in which privacy is mentioned and enacted, and how those contexts lead to varied ideologies regarding privacy. Our findings reveal that in this context, the need and pursuit of privacy stems from the Islamic faith, in addition to the use of paternalistic language by men when discussing women's privacy is common. Above all, privacy is framed as a communal attribute, including not only the individual, but the behavior of those around them; it even extends beyond one's lifespan. We contribute an analysis and description of these previously unexplored interpretations of privacy, which play a role in how users navigate social media.

Keywords

Privacy; Islam; Qatar; Saudi Arabia; Twitter; Mixed Methods; Arab world; Gender; Honor.

ACM Classification Keywords

• Security and privacy →Social aspects of security and privacy • *Human-centered computing* →*Social media*

1. INTRODUCTION & MOTIVATION

The concept of privacy in the age of social media has spurred much discussion and research among scholars, designers and practitioners. While privacy in and of itself has been a topic of inquiry for centuries, the introduction and spread of digital technologies have brought novel questions to the fore that impact how privacy may be viewed and considered when we place it in the context of technology design, particularly of web-based social networking sites. When we look at existing literature on privacy,

and especially in the context of technology use, we note that majority of interpretations are informed by an understanding of privacy that is based on an individualistic perspective, i.e. privacy is tethered to the notion of the self as separate from a group. To illustrate, in his book on Understanding Privacy [40], Daniel Solove provides a classification system for how to interpret privacy in six primary ways: "the right to be let alone," "limited access to the self," "secrecy," "control over personal information," "personhood," and "intimacy." While these are all bona fide and recognized approaches to understanding "privacy," interpretations that look at privacy from a non-individualistic perspective are lacking.

Moreover, studies of social media use among Arabs have largely focused on the political impact of these technologies, such as in the various demonstrations and uprisings associated with the Arab Spring. Although it is true that social media have provided Arabs, especially young Arabs, a means for political expression and engagement, the use of social media extends well beyond politics into the quotidian interactions. We believe that by studying these everyday uses of social media, we gain greater understanding into the way these global, modern, and "exposed" forms of communication are taken up by users who adhere to cultural and religious ideals that may differ from those held by the designers of the technologies.

In particular, we recognize the gap in considering cross-cultural privacy as it is interpreted and enacted in the Arab world, specifically the GCC states. The GCC, or Gulf Cooperation Council, is a group of six countries that border the Arabian Gulf. Comprised of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, the countries share historical and cultural heritage, political interests, and economic ties. They all have a majority Muslim population who adhere to a conservative interpretation of the Quran, the religious text of Islam, and the Hadith the example of the prophet Muhammad, which are considered the underlying sources of *sharia law* (Islamic law), which directly impacts—whether culturally or legally—many practices of the region. Importantly for this research, the concept of privacy is held within high regard among citizens of the GCC. Privacy is a prominent value that touches upon all aspects of behavior; from how people dress, to the design of homes [38], to their interactions in physical and digital environments [1,42].

In this paper, we report on the extended research we have conducted on the everyday use of social media among citizens of the Arab Gulf states of Qatar and Saudi Arabia. We focus on the discussion of privacy and related terminology within digital environments. In particular, we glean insights from two GCC-based empirical studies conducted by the authors. The first study [45], looks at discourse posted on Twitter, a popular and widely-used social media platform in Qatar. We examine tweets posted by Qatari nationals who contribute to the conversation on privacy

from a local, or regional, perspective. We focus on Twitter because it provides a lens through which we are able to observe how privacy is mentioned and discussed, and how Twitter users come to define and revamp what privacy is via Twitter. Furthermore, we provide supporting in depth insights on privacy practices and concerns through the second study that is based on 34 ethnographically informed interviews with Saudi Arabian men and women who are active social media users and rang in age from 18 to 35. The second study is informed by the earlier research of Abokhodair and Vieweg on social media and privacy with Arab Gulf participants [1]. However, in this paper, we emphasize findings that are relevant to the first study with additional insights that goes beyond the contributions of [1].

This paper is an extension of earlier work by the authors [45], in the following ways: (1) Including the qualitative data from research in Saudi Arabia–the largest country in the Arabian Peninsula that shares a boarder with Qatar, many of the cultural heritage, and the Islamic faith. (2) Extending the discussion of the Islamic religion influence on privacy practices. Within this larger context, our goals are two-fold: (1) To understand how Twitter–a public, wide-reaching social media platform–is used to discuss ideas and circulate recommendations regarding "privacy" within a culture that views privacy as a sacrosanct right (study 1). (2) To contribute a contextually grounded research to the cross-cultural design research arena, with specific focus on the Arab Muslim region in order to better inform technology designers of the importance of culturally-sensitive design.

The GCC society is rapidly evolving; there is great pressure on the governments and the whole population to modernize, while at the same time, to preserve tradition. Observing and understanding how privacy is interpreted via social media provides us with the ideal backdrop through which to understand this tense movement. By tapping into the rich corpora comprised of thousands of tweets, supported by in-depth interviews, we explore the meaning of privacy using a mixed-method approach that involves quantitative and qualitative techniques.

2. NON-INDIVIDUAL UNDERSTANDINGS OF PRIVACY

According to Solove, "privacy involves one's relationship to society; in a world without others, claiming that one has privacy does not make much sense." Taking a cue from [33,40], we provide a contextually grounded understanding of privacy based on two empirical studies in the Arab Gulf. In this communicatory milieu, notions of privacy are formed through a negotiation between individuals and society. Contradictory to the common theories of privacy that are individualistic in nature, and shaped by the cultural assumptions of those who developed them [9]. In other words, the individual is deemed solely responsible for achieving the level of privacy they need. Individuals are presumed to act in an egoistic manner, with little regard for the larger group. This intersubjective formation of privacy falls in line with Altman's Privacy Regulation Theory, in which he argues against the meaning of privacy as total withdrawal, and instead advocates for understanding it as a process of optimization [8,9]. In other words, privacy is attained as individuals arrive at the acceptable personal balance between withdrawal and disclosure to a group.

As we shall see from the studies presented here, within the GCC, many Gulf Arabs approach social media with a very different notion of the individual. The social media users we spoke with (study 2) stressed that their online identities are representative not just of themselves as independent individuals, but also of the larger familial units of which they belong [1]. Within the GCC region, membership in a larger collective (e.g., the family, the tribe) is of paramount importance and impacts the way social media users adapt social media platforms devised with different assumptions about the individual in mind. In many cases, separating from one's family and seeking seclusion (such as in an online space) is viewed negatively within the GCC. Moreover, the concept of privacy is not solely about achieving "interpersonal boundaries" but is about maintaining family honor, an accomplishment achieved with the help of the entire group. In performing this study, our aim is to introduce an understanding of privacy that has yet to be theorized to any great extent – i.e. by citizens of the GCC.

3. BACKGROUND
3.1 Understanding privacy in Islam
In the Arab world in general, Islam is the main force that dictates the institutional norms, patterns, and structures of society. The primary sources for the legal framework are the Quran and the 'Hadith' (verbatim quotes of the Prophet Muhammad). Together, they establish the foundation of *sharia law*, which is widely practiced throughout the region. When Muslims speak of "privacy," they are often referring to a host of values that are foundational to both religious and cultural norms. Islam recognizes the importance of the fundamental human right to privacy [21]. In the Quran, the mention of privacy arises in a few passages—one that prohibits people from spying and gossiping on one another: *'Do not spy on one another'* (49:12), and the second mention in the commandment to seek permission when entering another's home: *'Do not enter any houses except your own homes unless you are sure of their occupants' consent'* (24:27).

For Muslims, there are many domains in which privacy should be sought or given. In reviewing the literature, we note that there are three domains that are often mentioned vis-à-vis Islamic practice and privacy, these are: (1) privacy of the home, (2) privacy for gender exclusive spaces and gatherings, and (3) individual privacy.

3.1.1 Privacy of the Home
When dealing with privacy in the home, multiple layers are implied. At one end is the privacy of the entire property; a need to protect the home from outsiders. At the other end is the protection of privacy amongst the members of the home and guests [21, 34, 38]. Figure 1 illustrates these, in addition to the varying degrees within. The reader will see that females' privacy is of profound importance and as a result they are afforded more privacy than males. Then comes the privacy of the family which is an important aspect of Islamic teachings. At the heart of the hierarchy we find privacy of the self.
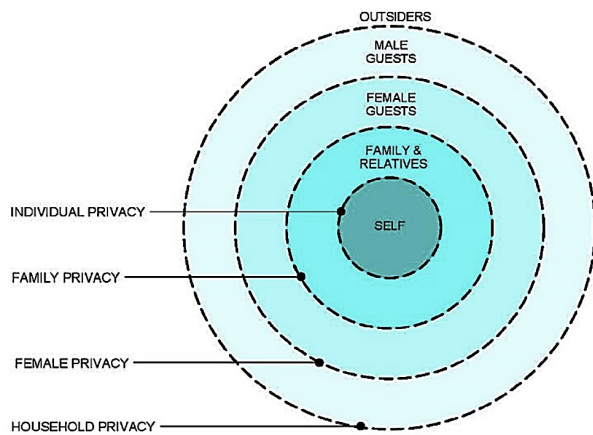
Figure 1: Hierarchy of home privacy domains [10]

It is important to note that the concept of a nuclear family is not commonly used within Muslim communities as the care for the family members includes the extended family as well [23]. This is one aspect of collectivistic and relationship-based societies that is of paramount influence on how people conceptualize privacy.

Researchers who focus on privacy in Arab Gulf homes note how religious and cultural values manifest in architectural design. In their study, Sobh and Belk provide detail about traditional home design in the Gulf Arab countries, where houses are typically designed with an inward-facing center to protect the family from the public eye [38]. The idea is to maintain the sanctity of the home, which is considered sacred and pure, and which must be guarded from the gaze or intrusion of non-family members. In another study, Othman et al. discuss the issue of privacy and design in Muslim homes by conducting an extensive literature review [34]. They found that privacy in Muslim homes can be attained through the maintenance of three important types of privacy: 1) *Visual privacy*, which is concerned with the visual design of the home that provides safety and privacy to its members. 2) *Acoustical privacy,* which is concerned with the control of voice transmission from the outside and within the home between the internal spaces of the home. 3) *Olfactory privacy,* which is concerned with the control of odors and smells within the home. In sum, the results are in line with Sobh and Belk [38] regarding privacy being of the upmost value in Muslim homes, as well as a major influencer regarding home design.

3.1.2 Privacy for Gender Exclusive Spaces

Privacy among single-gender gatherings inside the home as well as elsewhere is also of paramount importance. In the GCC, there is great emphasis on the need to respect the privacy of male or female-only spaces. There are two kinds of relationships that guide the interaction amongst opposite genders within the family and outside: *mahrams*, this group consists of unmarriageable kin (e.g., father, son, brother) and *non-mahrams*, men and women who can marry each other. There are clear rules that guide the interactions and socialization between opposite genders. For instance, women are not required to wear *hijab* (a veil that covers the head and chest) in the presence of mahram men.

3.1.3 Individual Privacy

The preservation of one's chastity is of a great importance in Islam. Multiple verses in the Quran and Hadith describe the importance of individual privacy that is mainly concerned with the protection from the intrusion of others, particularly the protection of the intimate parts of one's body. This practice is represented by

the word *awra* (عورة) which are the parts of the body that must be covered by clothing[1]. In Islam, the protection and respect of one's awra is a personal responsibility, as well as that of society as a whole. For example, one must lower their gaze when another's awra is exposed. The mention of awra in the Quran is associated with the rule to seek permission before entering a private space so as to avoid walking in on someone, and exposing their awra.

The protection of awra is often associated with *hurma* (حرمة). Hurma literally means "holiness," or "sanctity." It can also be used in reference to a woman, a sacred space (mosque or home) or a sacred time (holy month). Essentially, hurma is the law that protects anything that is unlawful to obtain or look at without permission. Risking intrusion on the sanctity (hurma) of places and people is considered sinful [34,38]. Consequently, respecting others' privacy, and maintaining one's own privacy is a rule that citizens of the GCC adhere to by seeking blessings of God and maintaining a respectful image that is largely accepted by society.

Thus far, we have stressed how the protection of privacy is tantamount to following the example of the prophet Mohammed; what this process looks like in the age of social media is cause for new interpretations and implementations regarding privacy.

3.2 Study Context

We focus on social media users in two GCC states, Qatar and Saudi Arabia to capture how privacy is discussed, enacted and taught in this part of the world.

3.2.1 Population

Our participants are citizens of Saudi Arabia and Qatar. Saudi Arabia is the largest of the GCC countries, Qatar is a small peninsula that juts into the Arabian Gulf. Saudi Arabia and Qatar are home to 30.8 million (33% expats) and 2.37 million (88% expats) respectively [26,32]. With the large percentages of expatriates, national identity and observance of cultural norms hold great importance among this population.

3.2.2 Technology Adoption

In terms of adoption, Saudi Arabia and Qatar are highly positioned. Saudi Arabia ranks 7th globally in terms of individual accounts on social media, with an average of seven accounts on different platforms per person [31]. Similarly, in Qatar, social media is popular and widely used among the native population: 39% of Qataris use Snapchat and 65% use Instagram, 44% are on Facebook, and 46% use Twitter [35,39]. A recent report that examines the high adoption of social media applications in Qatar states that younger users tend to adopt and use newer platforms and are also more likely to type and caption images in English than Arabic [39].

3.2.3 Legal Approach to Privacy

The ways in which the legal system in Qatar and Saudi Arabia treats privacy is additionally helpful in explaining how privacy is approached and understood by the native population. In Saudi Arabia, the rule associated with privacy is "*haq al-khososyah"* (حق الخصوصية), which is defined as "individual's right to protect some aspects of his/her private life and maintain confidentiality to safeguard his/her reputation and aspects of his/her life that are kept away from the interference of people" [6]. In addition, Saudi

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[1] The instruction on which body parts must be covered varies between different schools of Islamic thought.

Arabia upholds the right to privacy in its Basic Law of Government: "Dwellings are inviolate. Access [to homes] is prohibited without their owners' permission. No search may be made except in cases specified by the Law." Similarly, the Qatari Penal Code sets out certain rights of privacy that include: "The sanctity of the individual's privacy shall be inviolable, and therefore interference in a person's privacy, family affairs, home or correspondence, or any other act of interference that may demean or defame a person, shall not be allowed, save as permitted by the provisions stipulated in the Law" [4].

As we note from the laws mentioned above, the law that protects an individual's privacy stems from religious and cultural expectations; it is not a civil right. Additional articles within Qatari and Saudi law mention privacy, though it is never explicitly defined—it is treated as a value that is intertwined with multiple facets of one's life. Privacy is bound up in the most fundamental and revered details that comprise human existence as seen from an Islamic perspective. It is a sacrosanct value that must be respected and upheld.

We observe that when it comes to social media use, people turn to legal articles that speak to the use of digital technology vis-à-vis privacy, though not in so many words. These laws are even more important for expatriates and visitors to avoid any encounter with the legal system in case they break the law. Laws that mention privacy in relation to news or pictures—such as Article 331 in the Qatari law—state the penalties for "spreading news, photographs, or comments related to secrets of the private life of families or individuals, even if they are true." i.e. regardless of veracity, if you are to share private information about another person or family, you will be punished. In addition, Article 333 lists the following acts which are considered illegal intrusions into others' private lives if carried out without their consent: opening a private letter or telegraph addressed to someone else; listening secretly to a telephone call; recording or transmitting conversations that took place in a private place through any kind of apparatus; and taking or transmitting photographs of an individual in a public place through any kind of apparatus.

Overall, though social media are not specifically mentioned in the contemporary Qatari or Saudi law, the ways in which they should and should not be used with regards to privacy are implied in existing legal text (e.g., The Saudi Anti-Cybercrime Law.) It is conceivable that violating privacy through actions taken via social media could be punishable by the law, and perhaps more seriously, could severely harm honor and bring shame to an individual and their family.

4. RELATED WORK
4.1 The Role of Social Media in the Arab World
The use of technology in Arab World has been investigated during the recent Egyptian, Tunisian, Yemen, and Libyan revolutions, and the ongoing Syrian Civil War (the so-called Arab Spring) [2,3,11,25,29]. Researchers especially focus on the innovative ways Arab youth utilized Social Media during that time [25]. They highlight the opportunities offered by digital media for youth to participate in collective action, such as creating Facebook events for demonstrations, and live tweeting/blogging public action. Others focus on the critical roles of digital societies—groups of stakeholders collaborating via electronic means—in the organizing, coordinating, and publicizing of the protests [11]. Different platforms have been utilized as a medium to express opinion and to call for equal rights [3]. As noted by [25],

Facebook enhanced the ability of activists and protesters to coordinate peaceful protests while allowing larger segments of the public to participate as citizen journalists documenting and sharing witness accounts and cell phone images and videos. Another study by [11] analyzes the different roles of Facebook during the protests that led to the resignation of President Mubarak in Egypt and the start of a new sociopolitical period. While the results of these studies show the crucial role these technologies had on Arab youths' political awareness and engagement, they also revealed a complex set of practices and tensions, especially in how they experience privacy and manage identity on digital environments.

In this line of research, very little focus has been given on studying the daily interactions and experiences with digital technologies, and the opportunities and challenges these technologies bring in terms of managing privacy, honor, reputation, and identity. Therefore, this study is vital in making a first step towards explaining the nuance of the everyday experience on digital environments of this user group.

4.2 Cross-Cultural Privacy
Privacy is multidimensional and contextual; it is interwoven with notions of identity, seclusion and autonomy. According to [16,30], age, gender, education, and culture are the most important factors that affect online privacy concerns among individuals. A survey study conducted by [27] reinforces cultural norms as a major factor. Participants in India reported fewer concerns with providing personal health information online and lower levels of privacy concerns compared with American participants. In the Arab world, a questionnaire of 325 social media users in the Emirates and Egypt [30] revealed no personal restrictions on sharing personal information, such as city, religion and gender. However, respondents do not share family photos, cell phone numbers, and friends' photos. In addition, [30] reports that the more respondents were concerned with their online privacy, the less likely they were to give accurate personal information. These results have been discussed in the privacy literature as an example of *data withholding* (i.e., limited disclosure or removal of data) [41] or *data fabrication* (i.e., misrepresentation of data by providing inaccurate or incomplete information) [28].

The difference in gender roles and expectations within a society is another key aspect to understanding privacy. A study by [1] provides examples of the different ways women from Qatar and Saudi Arabia protect the privacy of their social media accounts based on adhering to societal expectations. For example, women tend to not use their real pictures for a profile photo when creating social media accounts because this might have negative consequences regarding their personal reputation and that of their family. In addition, the profile photo might risk exposing a women's awra (in this case, their face) to the public.

Much research has been done within the field of Human Computer Interaction (HCI) that provides insight for technology designers and policy makers to promote privacy. However, the notions of privacy that are inscribed in most technologies and services derive from a particular perspective—privileged, technologically-oriented, and North American/Western European [18,23]. One way to address the lack of diversity regarding the conceptualization of privacy in technology design is through the inclusion of a wider spectrum of users, and the employment of methods that explore differences across cultures by keeping myriad values and beliefs in mind during the design process. Many researchers have contributed work in this area [1,5,16,17,35,42].

Challenging the Western norm, a recent content-driven study by [43] provides new insight into how privacy is conceptualized in China. The authors conducted a semantic network analysis of 18,000 posts on Sina Weibo, China's largest social networking platform. They focused on posts containing the equivalent word to 'privacy' in Mandarin. The individuality that was expressed in the study was different than the one commonly referred to in cross-cultural research. In China, the individual is expected to "still engage in constant dialogue with the traditional Chinese self embedded in a network of relations and situations."

With the goal of providing addition insight on privacy, in this paper, we report on research we have conducted on the everyday use of social media among citizens of the Gulf states of Qatar and Saudi Arabia. In the following sections we will provide the details of the 2-GCC studies, including the method for data collection and analysis.

5. STUDY 1: PRIVACY IN THE CONTEXT OF QATARI TWITTER
5.1 Dataset Creation & Refinement
The analysis below is conducted by the authors, who have all been living and conducting research in the GCC for several years. In addition, the team includes two native Arabic speakers. We aim to answer the following research questions based on three types of analyses:

RQ1) How do Qataris express/refer to privacy in Twitter communications?

RQ2) What topics or contexts do they refer to in their discussions/discourse?

RQ3) Are there any indications of gender differences? Is gender a topic that is discussed regarding privacy?

5.2 Step One: Identifying the Qatari Users
We began with a dictionary of locations in Qatar including the main cities and districts. We then matched this list to a 45-day sample of the Twitter Decahose (a sample of 10% of all Twitter traffic.) For each user whose tweet was captured, we requested the list of their followers (based on the assumption that in this region, followers are more likely to be from the same country). Then, we requested the profiles of the followers and filtered out those users who did not mention a location corresponding to Qatar. The same process was iteratively executed on the list of newly added users; i.e. find their follower IDs, then follower profiles, then filter out followers with irrelevant locations, until no new users are identified.

The resulting list consists of over 100K users who claim to be living in Qatar. In order to identify the Qatari users, we first built a dictionary of the most common family names in Qatar, both in Arabic and English with different spellings[2] (such as Al Hammadi, Al-Hammadi, as well as the Arabic original الحمادي). Using this list, we identified the group of users whose name or screen name matches a Qatari family name. The result of this operation is a list of 12K Twitter accounts. Finally, we gathered the latest 3200 tweets of each of these users (the maximum allowed by Twitter API). This collection generated a dataset of over 8.5M tweets that were posted between September 2006 and July 2014.

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[2] The list of names is available at https://tinyurl.com/qatarinames

5.3 Step Two: Identifying Privacy Related Keywords
Following [33,40], we aimed to capture related dimensions of privacy as it is conceptualized and practiced in face-to-face interactions, in addition to privacy in the digital world. Building on the literature and our understanding of the Arabic language and Qatari culture, we focused on mentions of privacy that are related to honor, reputation and individual sanctity. The generated list of Arabic words related to privacy is explained in Table 1.

Table 1: List of words related to privacy

Arabic word	Word in English alphabet	English equivalent	Number of Tweets
خصوصية	Khsosyah	Privacy	388
عزلة	Ozla	Isolation	448
سرية	Sereyah	Secrecy	839
حرمة	Hurma	Sanctity	424
عرض	'Ird	Honor	9660
شرف	Sharaf	The space where honor applies	5757
حياة خاصة	Hayat Khasah	Private life	3

In Arabic, there is no single word that means "privacy"— it always depends on the context in which one is trying to convey a sense of privacy. The most general Arabic word that indicates privacy is *khososyah* (خصوصية). If we translate "privacy" from English to Arabic in Google Translate the results will include isolation (عزلة), and secrecy (سرية), as well as khososyah (خصوصية).

In generating Table 1, we took into account eight parts of speech (e.g. nouns, pronouns, verbs) that expanded the list to include all subsets of each entry. Our list contained 26 words and terms: خصوصيتي, خصوصية الخصوصية, عزلة, العزلة, عزلتي, سرية, السرية, سريتي, حرمة, الحرمة, حرمتي, حياة خاصة, الحياة, الخاصة, حياتي الخاصة, شرف, الشرف, شرفي, اختلاط, الاختلاط, إختلاط, الإختلاط, عرض, العرض, عرضي.

A sub-string matching algorithm that matches each of these 26 keywords to tweet text resulted in a collection of 18,233 tweets. In Table 1, we provide the size (in number of tweets) of each category (aggregated over parts of speech).

5.4 Step Three: Identifying Relevant Tweets
Next, we turned to the tweets in which these keywords appear. We use frequency analysis and manual inspection for smaller collections, and algorithmically-assisted sub-topical analysis for larger ones.

5.4.1 Manual Frequency Analysis
We assessed tweet content by examining the top 100 words (after removing Arabic stop words) for each group, and then performing a high-level manual analysis. As a result, eliminated the categories *sereyah, sharaf,* and *ozla* because these tweets were mostly not related to the concept of privacy, or were ambiguous. Other collections, such as those about *hurma*, *hayat khasah* and *khososyah* were merged, as we noticed topical similarities.

5.4.2 Latent Dirichlet Allocation (LDA)

For the remaining term which resulted in a collection of over 9K tweets—'Ird—we used an automatic topic discovery algorithm to disambiguate its several meanings, and selected only topics relevant to privacy. We did this to classify tweets into different semantic categories, and hence identify the relevant subset of tweets. To infer topical categories, we employed the Latent Dirichlet Allocation (LDA) [12] algorithm, which attempts to explain similarities among groups of observations within a dataset. The result of LDA was a set of 50 topics, each of which was identified as a list of words extracted from the tweets, and a probability matrix stating the contribution of each topic to each document. For the sake of simplicity, we assign only one topic (with the highest probability) to each tweet. The resulting collection included just over 1772 tweets, which were then further analyzed.

6. DATA ANALYSIS

Taking an empirically-based, ground-up approach, we analyzed 2587 privacy-related tweets, identifying major themes relating to privacy concerns that involved both digital and face-to-face situations. We employed both quantitative and qualitative approaches throughout the analysis; the two Arabic speakers regularly discussed the analysis, compared notes, and came to mutual understanding regarding results and claims.

6.1 Quantitative Analysis

We begin with computing co-occurrence between the terms in the context of 'ird and khososyah. We then generate graphs with terms as nodes and extent of co-occurrence as weight of edges, as shown in Figures 2 and 3. The size of the node's label reflects the frequency of the corresponding term in the dataset, and the width of the edges provides an approximation of the number of times the two terms appear together.
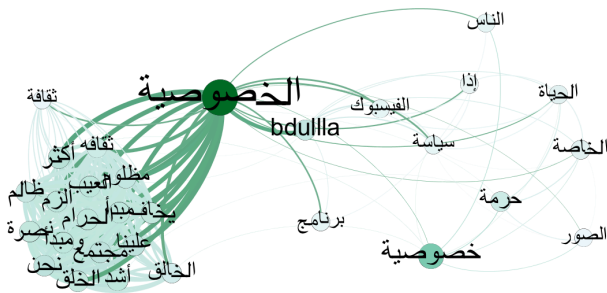

Figure 2: Terms Associated with Khososyah (privacy)

There are two ways in which the term khososyah is mentioned in the dataset, both with and without an article preceding it. In Figure 2, we observe that the central node—Al-Khososyah ("*the* privacy")—is mainly associated with terms such as *fear, culture, demerit, society, haram, software, Facebook, policy,* and *people*. While the second most frequent term, khososyah (privacy *of*) is associated with terms such as: *photo, hurma, people,* and *life.* While the first set of terms is concerned with defining the concept of privacy, the second set is primarily concerned with the context, or the space, to which privacy should apply.

In Figure 3, the central and most frequent term is 'ird, which is connected to three clusters. 'Ird—or honor—is of the upmost importance regarding the protection of privacy [13]. The top cluster mentions topics/descriptions such as: *picture, personality,*

suitable, values and *ambassador.* The tweets associated with this cluster talk about the photo as a representative of the user, instructing users to be mindful of the image they put forth. The left cluster revolves around awra, a term which translates as "private parts of one's body," but which carries deeper meaning, and extends to the notion of anything that one should or wants to keep private.
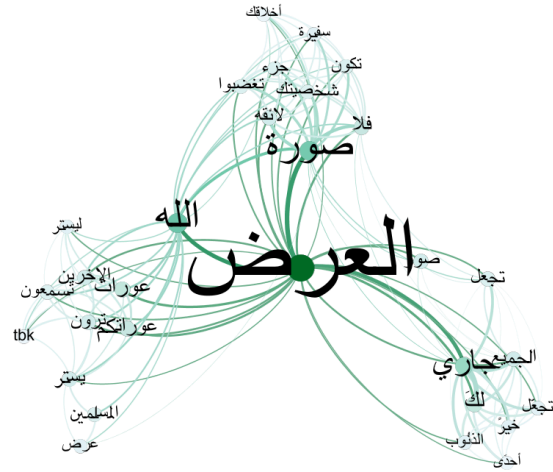

Figure 3: Terms associated with 'Ird (Honor)

Tweets that mention awra discuss anything that should not be disclosed in public, be it parts of the body, certain behaviors, or thoughts. The terms in this cluster are *awra, others, your awra, Muslims,* and *protect/hide.* Most of these terms are linked to the term *God,* indicating a religious connotation. Overall, the main idea expressed in these tweets is a call to protect others' awra if one wants God to protect their own awra, i.e. "do not violate others' privacy if you do not want your own privacy to be violated." In the lower right cluster, we see words that relate to the idea of accumulating good deeds. In Islam, there is an understanding that deeds, be they good or bad, follow a person and their family through eternity; i.e. the death of a person does not mean death of their actions (an important point we discuss later).

6.2 Discourse Analysis of Privacy Related Tweets

To better understand what and how Qataris communicate when discussing privacy, the Arabic speaking authors read each tweet in the dataset, with the goal of identifying themes—a process which utilizes computer-mediated discourse analysis (CMDA). CMDA is defined by Herring as: "any analysis of online behavior that is grounded in empirical, textual observations." In performing CMDA, analysts take the technological affordances of computer mediated communication systems into account, and adhere to three assumptions as listed by [22]:

1. Discourse exhibits recurrent patterns
2. Discourse involves speaker choices
3. Computer-mediated discourse may be, but is not inevitably, shaped by the technological features of computer-mediated communication systems.

By taking a CMDA approach, we aim to answer macro-level questions that take an entire society or culture into account, but which can be explored by performing detailed, micro-level analysis.

6.3 Qualitative Coding

We were careful to take context into consideration when interpreting and formulating themes, and eventually identified a set of topic categories of increasing specificity that speak to the concepts or ideas that are mentioned in the data. This process involved several iterations of coding which we describe below.

6.3.1 First Round: Coding For Relevance

In the first round of coding, the Arabic speakers read all tweets in each file ('ird = 1772; khososyah = 815) and coded for *relevance*, meaning that we decided whether or not the tweet was privacy-related. We found that in some cases, tweets used a similar word to *khososyah,* but in reference to unrelated concepts. For example, "khososyah" is used to describe "private teaching lessons;" a topic outside our area of inquiry. Another source of ambiguity is the short vowels (*harakat*), which in Arabic can change the word meaning, and which many platforms, including Twitter, do not support. For example, the word 'ird could be associated with the word "day," meaning "judgment day," which is not directly relevant to our research. Coding for relevance brought the set of tweets from 2587 to 354.

6.3.2 Second Round: Development of Primary Codes

Next, we use CMDA, developing of a list of qualitative codes that provide a meta-level description of the tweets. The purpose of the second pass was to determine what the relevant tweets are communicating at a more detailed level. The Arabic speakers developed the list of codes through multiple rounds of reading and discussion amongst the team. The codes used in this phase are not mutually exclusive; annotators may assign more than one code to a tweet. The primary codes are as follows:

Individual: Content refers to personal privacy

Society: Discussion of society as a whole vis-à-vis privacy

Family: Reference to family members, tribes

Technology: Technology-related mentions of privacy, i.e. technology companies, cellular carriers, and/or applications

Law: Information about the legal aspects of, or rights to, privacy

News: Communication about media coverage of privacy and technology use and their impact in the country/region

Religion: Focus on references to God, the afterlife, or sin

Culture: Cultural aspects and references, in contrast to religion, e.g., reference to non-religious proverbs

Personal Identifiable Information (PII): When the subject matter is related to some kind of personal data that is stored, transferred or otherwise used via technological means

Opinion: Personal views about privacy. Including (but not limited to): opinions; jokes; poetry; praise for privacy as a societal need; criticism of the modernity that is changing views of privacy; rhetorical questions

Warning: Warnings or cautionary statements regarding the maintenance of personal and others' privacy

Recommendation: Instructions and suggestions on how to protect privacy for oneself and others

Concern: Expression of worry or concern over privacy violations or lax attention toward privacy

6.3.3 Third Round: Specification of Topics

As annotators were coding tweets with one or more of the above categories, they noted that further specification was helpful, i.e. labeling tweets with the codes listed above was useful, but there were more details within the tweets that would benefit from another tier of analysis. Throughout the second round of coding a second tier of codes was developed—we frame these codes as "topic codes," i.e. they are more detailed, micro-level descriptions of content. These include applications like Facebook, Twitter, WhatsApp, web browsers such as Chrome or FireFox, and other higher-level concepts such as respect, reputation, morality, hurma, God. In addition, personal and local topics and concerns were mentioned, such as Qatar University, gender, profile photos, and surveillance.

7. STUDY 2: THE INTERVIEW STUDY

In order to explicate the findings from the first study, we include additional evidence from the results of a qualitative inquiry. This study is foregrounded in the earlier research conducted by the first and third author and reported in [1], nonetheless in this paper we report on additional work that goes beyond what was published in [1]. We report a summary of the study design in this section.

7.1 Participants and Methods

7.1.1 Participants

34 individuals participated in the interview study (19 females, 15 males; age ranges: 18-35). Participants were recruited through various methods: personal and professional connections (i.e., "snowball" sampling,) and a couple of Facebook advertisements. It is worth noting that this is one of the very first studies that include face-to-face interviewing with both genders in Saudi Arabia. Conducting face-to-face interviewing in this context is often challenging due to couple of reasons: 1) the challenge of finding research participants who are willing to sit in for a face-to-face interviews and speak about intimate topics from both genders in Saudi Arabia. This is not only unique to this research, Al-Munajjed indicates that "a researcher is not readily accepted in a traditional milieu that frowns upon those enquiring into other peoples' lives" [5]. 2) the interviewer is a female researcher and finding a gender-mixed location to interview male participants in Saudi Arabia without jeopardizing the reputation of both the interviewer and the participant was hard due to *gender segregation*, which is considered a law in the Kingdom and touches on virtually every aspect of public and social life in Saudi Arabia (e.g., School, Universities, restaurants and some Malls are gender segregated.)

7.1.2 Method: Face-to-Face Interviews

Semi-structured ethnographic interviews were conducted face-to-face with Saudi social media users who are living in Saudi Arabia or in the U.S. Interviews lasted for an average of 1.5 hours and were conducted in English and Arabic between August 2014 and February 2016. Participants were native speakers of Arabic, and are bilingual in English due to the nature of the sample. The interviews offered an in-depth understanding of the participants needs in terms of online privacy and offered the participants an opportunity to express their opinions regarding what they deemed to be concerning and beneficial in regards to using social media. During the interviews, participants were asked many questions that were mainly generated based on each case. Example questions are: *Why do you use social media? What are the common issues you face in regards to privacy? How often do you use social*

media? What social media sites do you favor and why? What type of content do you feel un/comfortable sharing?

Answers touched on different topics such as, privacy, fear of judgment and shame, improving familial relationships, political engagement and freedom of expression. This study was mainly interpretive and qualitative in nature. Cases were added until a theoretical saturation was achieved. The aim in this research is not to generalize the results to the whole population but rather to explore and motivate future larger studies.

7.1.3 Data analysis

The collected data from the interviews went through a data reduction and preparation phase before the analysis started. During the data preparation phase interviews were transcribed in the original language, for the purpose of preserving the meanings of words and expressions. After that axial and open coding was conducted following the protocol described in Irving Seidman [44] to identify themes. The authors often convened to discuss common themes in the data with focus on mentions of privacy, associated risks and concerns, and how they are related to traditional values.

8. FINDINGS

Below, we describe the results of our qualitative analysis from study 1. In Figure 4, we illustrate the distribution of the most frequent qualitative codes from the Twitter-based study. Nodes in red are *primary codes* and nodes in grey are *topic codes*.
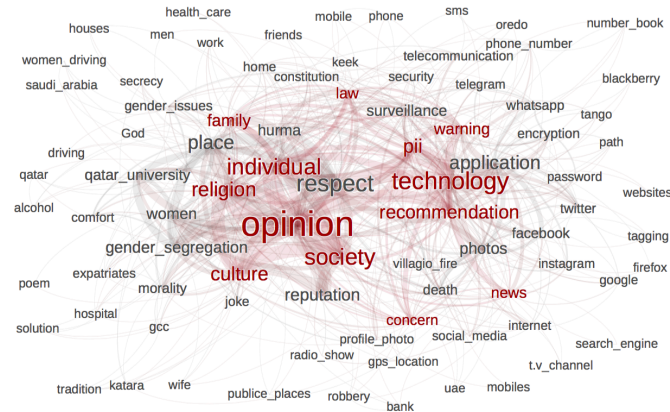

Figure 4: Code co-occurrence network, primary codes in red

8.1 Concerns about Technology Use

Twitter users were overwhelmingly concerned with how to safely and effectively use new technologies while maintaining a sense of privacy and adhering to societal expectations. Along these lines, many users in our dataset provide warnings and recommendations about applications and other digital technologies that could jeopardize privacy. They also express worry about the growing adoption of social media applications. Technological references mentioned include social media applications, web browsers, telecommunication companies, the government ministry of ICT, and encryption.

8.1.1 Meta-level Privacy

One way in which users discussed their misgivings about maintaining privacy while using technology was to express concerns regarding the mishandling of personal identifiable information (PII) through poorly managed databases and social networks. To illustrate, one user posted the following tweet:

[ar] @A1: @ah @OQ يحتاج عملائها بخصوصية متاجره من اوريدو تفعله ما
وقفه ضد هذه الشركة التي لا تحترم خصوصية عملائها …

[Translation] What [company name] is doing towards their customers by selling their PII needs to stop and we have to stand against this company that doesn't respect their client's privacy.[3]

As a response, the company followed up with multiple tweets explaining the situation:

[ar] @A1 الاتصالات قانون بان العلم مع ، الصحة عن تماماً عارية معلومة هذه
يحمي خصوصية العميل

[Translation] This information is not true. The telecommunication law does protect client privacy.

[ar] @A1 يمكن ولا العميل خصوصية على المحافظة على ينص الاتصالات قانون
ان تقوم كيوتل بإعطاء هذه المعلومات الا للجهات في القانون

[Translation] The telecommunications law stands for the preservation of customers' privacy and we can give this information only to legal authorities.

In this case, Twitter was used as a platform to bring the technology service company and the clients together to clarify issues regarding information privacy. While taking to Twitter to carp about a service provider is hardly unique, we highlight this example to stress the importance of the company's timely response, succinct and careful articulation regarding the security of client data, and citation of legal code. Because privacy is of paramount importance in this region, the company is obligated to not only reassure clients, but to support their position in a way that invokes not only law, but a formal tone that indicates the company understands the gravity of the accusation.

In addition, we note that it is common for users to express fear when technological trends are first introduced, such as new social media applications. They are unsure what negative consequences may ensue if they or their family members use them. However, ironically, we noted that Twitter was a platform users employed to convey Twitter-related privacy issues.

8.1.2 Privacy Invasion Warnings

Adherence to privacy in the GCC stems from a need to adhere to religious and cultural norms. We note that people often reference punitive measures and/or God's wrath when discussing the infringement of others' privacy, whether in digital settings (e.g., stalking on social media) or face-to-face (e.g., spying on another's home). For example:

[ar] @F1: على اعتدى فقد رضاه بغير لغيره موجهة خاصه رسالة بفض قام من
حرمة الحياة الخاصة للافراد ويعاقبه القانون بالحبس سنه فاحذر …

[Translation] Who reads a message/personal note that is meant to be for someone else without their consent then they have assaulted the sanctity (hurma) of that individual's life and can get up to one year in prison as per the law. So beware...

In this example, the reference to personal privacy is through the use of the term *hurma*, which is referring to the Quranic rule that requires one to seek permission before entering another's personal space. In this tweet, the permission rule was invoked in terms of accessing another's email. Although this rule is also punishable by

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[3] All tweets are translated by the first author from the original Arabic into English.

Article 333 in the Qatari law, the user preferred to cite the religious consequence rather than the legal one as the prior is associated with God's wrath which is of higher importance than other consequences in the Muslim context.

In regards to warnings of privacy in public spaces such as restaurants, people used Twitter to spread warnings of how marital privacy may be violated:

[ar] هل تعتقد عندما تكون أنت وزوجتك في قسم العائلات بأحد المطاعم أن الحواجز ذات الزجاج المعتم تمنحك الخصوصية ؟ http://t.co/q7pUmKo6ll..

[Translation] Do you think your privacy is protected when you are with your wife in the restaurant family section partitioned with frosted glass barriers? *http://t.co/q7pUmKo6ll*

This tweet is referencing gender segregation, which is often practiced as an unspoken law in some public places amongst GCC citizens. Often, restaurants will separate an area from the larger dining room with frosted glass, which allows women who cover their face with a *niqab* (a cloth that covers the face) the option to remove it so they can freely eat. This Twitter user is warning people about a simple trick (shown in the link) that involves applying scotch tape to frosted glass, which makes it transparent. If used, this trick risks the exposure of *awra*, in this case, a woman's face [36].

8.2 Privacy and Surveillance

Our data revealed interesting results regarding the discussion of surveillance. People not only discussed government-led surveillance, which is common on most ICTs in the GCC, but also highlighted surveillance performed by peers.

[ar] نحترم وحرمة تفاعل الناس مع كل حدث لكن القضايا العائلية تبقى لها خصوصية يجب مراعاتها والابتعاد عنها أفضل#معيذر

[Translation] People, we appreciate your concern during the current events, however, families still have their privacy and hurma that need to be respected and its better to stay away from people's business.

In another tweet, a person is sharing his opinion regarding the phenomenon of *social surveillance,* which is commonly practiced in relationship-based cultures, of which Qatar and Saudi Arabia are one [42]:

[ar] لا يجب التضييق على الحريات والحق في التعبير والحق في ان تضمن كل القوانين والتشريعات هذا الحق ولكن الحرية أمرلا يتم إلا باحترام خصوصية الآخرين

[Translation] We should not restrict others' right to freedom of expression and we need to have the laws to protect this right, but freedom is a matter that is only granted when others' privacy is respected.

In this example, the tweet author is engaging with two values: *privacy,* and *freedom of expression,* to explain that they are closely related. The author is suggesting that to achieve the goal of freedom, members of society need to respect the privacy of each other and not infringe on others' personal matters. In addition, one participant from the interview study spoke eloquently to the topic of the incremental erosion of privacy by others within the society, saying: *"It [privacy] is not about me and my beliefs; it is about the audience and what they believe in and their objective."* In this excerpt, the participant is confirming the point of the previous tweet, that privacy is not a personal pustule, but rather a societal one. This belief of privacy as a group-wide practice stems from the nature of the GCC society that is highly collectivistic in nature.

In the Gulf, the notion of privacy—as revealed in our data—is negotiated amongst the group; it is not something that individuals are able to seek out and attain without societal consensus. Both those who watch and those who are being watched are empowered to arrive at a mutual understanding regarding how social media should be used vis-à-vis the maintenance of privacy.

8.3 Privacy and Honor: Immortal Values

Islamic values and beliefs in regards to the afterlife and the accountability of one's actions whether good or bad by the accumulation of deeds or sins were invoked in both studies. People often discussed their social media profiles as an extension of themselves, meaning that they are responsible for the content shared on them and the way this content circulates and travels online. For example, if one posts negative, revealing or blasphemous content, they accumulate sins. Alternatively, when they post positive or pious content, this is considered a good deed—one which generates more good deeds every time someone reads it, engages with it, or retweet it.

An example of that from the interview study was by a male participant, who says: *"I post some prayers on Instagram, like morning prayers, to remind people of praying and to receive the good deeds."* In this example, the participant explains his utilization of his Twitter account as a source of good deeds by sharing prayers and religious reminders o his followers.

Another issue that arose was that of photos of dead people. The mentions often refer to the sanctity or hurma of the dead person. it is a sin to impinge upon their privacy, even though they are dead:

[ar] ينتهكك وأنت في قبرك | الفيسبوك يعدل سياسة الخصوصية ليسمح بكشف بياناتك اوصورك لأصدقائك إذا فارقت الحياة إن طلبوا ذلك!

[Translation] Violates your privacy in your grave: Facebook updates its privacy policy to allow your friends and family to access your profile information and pictures after dying upon their request.

In this example, the source of concern is the Facebook updated policy to allows your family access to your private information on the platform after dying. Whether this information is still valid or not, it is interesting to note that in the context of the GCC where majority of people are Muslim, values that are very important have multiple life spans (the current life and the afterlife.) This tweet brings to light an aspect of Islam that is linked to eternal life. For Muslims, values such as privacy and honor have an everlasting association, so whether alive or dead, privacy and the protection of it remains the individual's responsibility. This can be seen in the following excerpt by a female participant from the interview study, saying:

[ar] " مشاركة صوري الخاصة على وسائل التواصل الاجتماعيه كان يشغل تقريباً 90% من وقتي. كنت استمتع عندما تصلني الإشعارات على جوالي بتفاعل اصدقائي. كنت أحب مشاركة صور تظهر وجهي وأحياناً ملابسي، وهذا النوع من الصور كان يأخذ أكثر من وقتي واهتمامي حتى أظهر نفسي في أحسن صورة. قبل مدة قررت أن امسح جميع صوري من كل حساباتي. غالباً لأني خفت من عذاب الله بالأخص إني أظهر وجهي وجسمي لرجال اجانب وهذا لا يجوز. وأصبحت أفكر ماذا اذا مت وهذه الصور بقت على صفحتي تكسبني الذنوب"

[Translation] "Posting was 90% of my life, I loved to receive comments and engagement with the content I shared. I shared photos of my self, and these took more time to produce than others because I cared about how people viewed me. Recently, I deleted most of the photos of myself from Instagram. Mostly because I was afraid of God. I am exposing so much of myself, my face and

parts of my body to men that are not related to me and I started thinking what If I died and these photos stayed."

In this example, the participant explains her perceived fear of posting photos of herself that show her body and sometime her face online. She believes that one of the negative consequences from posting pictures of herself online is accumulating sins every time her photos are viewed by men who are not considered mahrams. Therefore, in her words, she realized that she is accountable for the content she posts of herself and who views her pictures and decided to delete all her photos from her social media accounts. Importantly, the participant expressed her fear of the consequences related to these photos living on these platforms forever, even after she dies, which she considered a source of sins. This example highlights the perspective of this population on how they treat their social media accounts and the content they share as everlasting and that they are accountable for it even after they pass away.

This concern is also seen in discussions regarding the sharing of dead people's photos. In the following example, the issue of concern is the spread of photos of the dead after a fire that resulted in the death of nineteen people.

للموت حرمة يرجي عدم أرسال أي صورة،أشاهد بعضهم بدأ بأرسال الصور. [ar] #حريق

[Translation] Death has its sanctity, please respect it by refraining from sending photos of dead people. I see that some of them began to circulate on Twitter. #Fire[mall name].

8.3.1 Profile Photos
When conducting qualitative coding on the 'ird file, we noted that the most discussed subject was profile photos. In this case, the words *'ard* (display) and *'ird* (honor) are both spelled in Arabic in the same way with different *harakat* (Arabic diacritics,) which changes the meaning of the word. This resulted in the appearance of the "display photo" discussion in our dataset, although unintentionally. This was an unexpected opportunity, as it expands our understanding of how people conceptualize their privacy and honor regarding digital media. The display photo was clearly a source of discomfort for many, especially for women wanting to use their real photos. The following example illustrates how people viewed the profile photo and how it was closely related to morality and faith:

صورة العرض..هي جزء من شخصيتك بل قد تكون سفيرة اخلاقك ! فلا تغضبوا [ar] … الله بصوره غير لائقه...! احبتي...انتقوا. وارتقوا

[Translation] Your display photo is part of your personality and is the ambassador of your morals. Therefore, do not upset God with an inappropriate profile picture.

The message here is that profile pictures are part of one's personality (i.e. it plays the role of an ambassador as it represents who one is), thus, one should select a suitable photo, so as not to provoke God's wrath. The following is another example of the significance of profile photos:

صور النساء في العرض احدى الذنوب الجاريه ، فان لم تجعل لك خيراً جاري ، [ar] لا تجعل لك ذنب جاري

Display pictures of women is one of the ongoing sins. So if you do not create yourself an ongoing source of good deeds then do not create the opposite.

This discourse around profile photos illustrates how privacy and honor are intertwined; they are communal values that are negotiated and agreed upon by all members of society. Again, this is significant because privacy and honor are considered immortal values that do not end or stop existing when one's life ends.

Similarly, the interview study revealed strong association between the need to protect privacy to maintain one's honor. For example, a female participant answers a question regarding her profile pictures on social media:

صورة العرض كانت عبارة عن صورة مقتبسة من الطبيعة واسمي كان عبارة عن اسمي الدلع...هذا لأني كنت مقتنعة إنه إضافة صوري الخاصة عيب وحرام وبالأخص إن المجتمع المحيط سوف ينصحني ويخبرني أن وضع صوري خطأ.

[Translated] "my profile photo was just like a picture of a flower and my name wasn't my real name it was a fake name…because that was shameful and it was prohibited (haram)…people will tell you 'no you can't do this and you can't do that'."

In this example, the participant is discussing that the reason behind not using her real picture or name as her profile picture is the fear of judgment from her society. Judgment and shame in this context can reflect negatively on one's reputation and honor.

8.3.2 "Exposed to" Versus "Exposing"
Qataris often took to Twitter when situations of discomfort happen. A sensitive topic that appeared in our dataset concerned the adherence to dress codes in public (e.g., the mall). This led to a country-wide campaign to educate tourists and foreign residents to respect the country's dress code [15].

ظاهرة قلة الإحتشام لدى الوافدين من نساء ورجال وعدم احترام خصوصية [ar] مجتمعنا العربي الإسلامي

[Translation] On the lack of modesty amongst expatriate women and men, and the lack of respect of our Arab-Islamic society privacy [link].

Reactions to this campaign were divided between support and discontent. Supporters often cite the saying "When in Rome do as the Romans do" and on the opponent side people expressed discomfort with the lack of tolerance.

In this example, the use of the term *khososyah* is associated with privacy. However, it draws upon a different facet of privacy—one that is not completely in the hands of the individual. Conversely, in this context, privacy is not only about what one exposes of themselves, but also what they are exposed to (what other expose). So, for example, if a Qatari is exposed to another's uncovered body, this is seen as an invasion of privacy because this person is within their eyesight and can not avoid looking at them. Similarly, in the second study, Saudis expressed their discomfort with posts on their social media walls that revealed intimate moments (e.g., kissing) or generally showed actions that are considered culturally or religiously unacceptable. Again, privacy in this sense is a value that is negotiated between the individual and the society. It is considered a collective practice and individuals who are part of this larger group are expected to adhere to the group laws. Therefore, the expectation is that a common enactment of privacy will materialize. We theorize that when privacy is conceptualized as a collective value it impacts the way people perceive and enact it. So, when an individual is thinking of their own privacy and how to protect it, they are thinking of others' privacy as well.

8.4 Gendered Expressions of Privacy
To answer the question, "is privacy gendered?" we conducted a third level of analysis by looking at users' gender.

8.4.1 Gender Labeling

Gender identification of social media users has attracted a lot of attention in recent years [19]. While most approaches identify gender by looking at content and social ties, the most practical ones try to identify gender directly from users' names and screen names. For instance, one widely used tool is the Genderize[4] API, which performs gender classification based on user names. The API uses a database of names extracted from major social networks, and produces the most likely gender associated with a first name, which can be *male, female,* or *none* when the gender cannot be detected. However, given the nature of names people provide in online platforms, it is common to end up with a high fraction of unknown gender (none). In [39], authors reported that over 30.7% of the US based Twitter accounts they used were labeled as "none" using the Genderize API. Given that we deal with Qatari users, identifying gender is even more complex for the following reasons: (i) user names in the Arab world are less likely to be correctly identified as they are often spelled as a combination of Arabic and Latin characters (Arabeasy), (ii) Women tend to anonymize their names and gender in their online personas as means to protect their privacy [1,7,20]. Thus, we decided to replace the automated gender labeling process by manually labeling the users in our dataset.

The manual labeling was done by the same authors that conducted the manual annotation. They looked at each user's name, screen name, and link to their Twitter profile. While in some cases, names and screen names were enough to assign gender, most accounts required more in-depth analysis into their profiles (profile picture, tweets, and biography.) Annotators relied on their cultural knowledge to infer the correct gender. Given the study context and our knowledge of previous studies that report statistics with low percentages of women [14,35], we had a hypothesis that men would dominate in our dataset. Surprisingly, we found that a substantial fraction of users who took part in the privacy discourse are females (47%). On average, women contribute 1.367 tweets while men contribute 1.445 tweets. We also identified two accounts corresponding to families (tribes) not to individuals; these accounts were labeled as groups and discarded from the analysis.
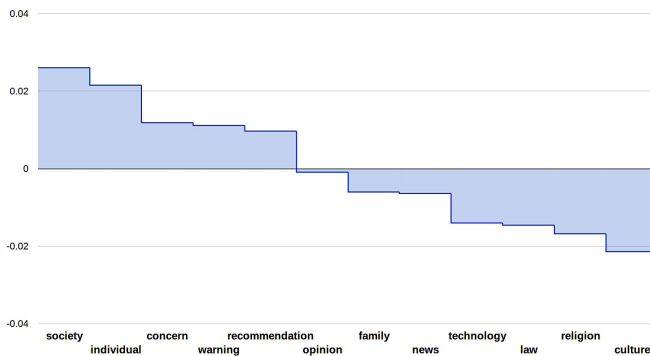
8.4.2 Gendered Privacy

Figure 5: Primary codes ranked by the difference between the fractions of women to men

For each of the primary codes we computed the number of tweets posted by men and women, and then normalized by the total number of tweets posted by each gender to get the fractions of tweets contributed by men and women for each code. The difference between the fractions of women to men was then computed. Figure 5 shows the resulting fractions. Topics mostly discussed by women are to the left and to the right are topics mostly discussed by men.

The relatively low numbers on the vertical axis reveal that male and female participation is similarly distributed over the different codes. However, small—yet important—nuances are present. Figure 5 shows that women are more active on topics related to *society* and *individuals* while men are more active on the religious and cultural aspects of privacy. We also observe that women tend to express more *concerns* and *warnings* about their privacy than men. This is due to the weight of societal expectations on women to adhere to a specific code of conduct. This also shows that women in this region are aware of the role society assigned them as bearers of cultural norms; they are responsible for maintaining a good reputation to protect their family honor. On the flip side, our results show that men had a higher tendency to participate in discussions of technical and legal nature. Lastly, the code *family* appears to rank higher amongst men, which can be explained in terms of their role in society as the bread winners and the protectors of the family. This aspect was also apparent in the interviews with men, which can be seen in the often employed paternalistic language men use when discussing women's privacy. In sum, this discourse shows that Saudi and Qatari men and women are both playing an active role when it comes to privacy, with different levels of interest regarding specific contexts.

9. CONCLUSION

The results of this study expand and enrich the Western-centric privacy notion inscribed in system design by providing the perspective of privacy as practiced in the everyday life in the GCC. We contribute the following observations specific to the Qatari and the Saudi society (largely applicable to the rest of the GCC): (1) The notion and expression of privacy is highly gendered, such that the specific requirements for privacy differ greatly between males and females due to the socially constructed role of each gender within the society. Surprisingly, in our dataset, women were as involved in the definition of these requirements as men. (2) Privacy includes what people are exposed to, not only what they are themselves exposing. That is, one's environment— the behavior of others around them—reflects on one's own honor, making privacy a highly communal concept that is shaped by the collective. (3) An individual's privacy should be preserved and accounted for even after death, in accordance with the Muslim belief in the afterlife. (4) Privacy is a moral value highly influenced by religion. It is defined in religious texts and by the cultural norms that have been largely shaped by the interpretation of the Islamic faith in this region.

This research offers new insights into the ways Qataris and Saudis conceptualize and enact privacy and honor. We also present situations in which privacy and honor are challenged or compromised. The discourse of privacy and honor on Twitter reveals the unique perspectives and methods citizens in this region use to mindfully negotiate these values and communicate them to others. Thus, these two studies captures daily definitions of privacy in the online community, some of which may be impossible to accurately capture through traditional survey methods. That said, we believe that there is an opportunity to enrich this study by including more courtiers from the region (e.g., Kuwait, UAE, Bahrain and Oman,) and additional qualitative data.

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[4] https://genderize.io/

Privacy and honor are closely connected in the context of the GCC. Our three comprehensive mixed-method analyses of Twitter communications together with the interview data, further highlight the multifaceted nature of these ever-evolving—but traditionally entrenched—values that have multiple life spans. Future work will involve more contextually grounded understandings of values and value enactment, and how these actions impact the use of technology and design. In line with [18,33,40,43], we call for more research on cross-cultural value tensions, as this is crucial for the development of privacy-aware systems that speak to a global audience.

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