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An Examination of the Impact of Gender and Culture on Facebook Privacy and Trust in Guam

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ABSTRACT

Facebook, the world's largest social network, allows users to develop a profile containing personal information. Users may choose privacy settings to control information access, but improper settings risk personal exposure. Several US studies examining gender differences in privacy management found that females have more privacy concerns. This study investigates gender differences in Facebook privacy settings among college students in Guam, a US territory whose ethnicity and culture differ from mainland US. Results show that neither gender trusts Facebook nor feels Facebook protects them. Significant differences in number and type of privacy settings indicate females are more security conscious. Gender differences exist in three of Hofstede's five cultural factors, but only Masculinity-Femininity significantly influences perceptions of Facebook Privacy and Facebook Trust. There is also evidence of "privacy paradox" phenomenon. Summarizing for the case in Guam, the findings indicate that culture, in particular Masculinity-Femininity, influences the formation of perceptions regarding both trust in social media and the privacy protection provided by social media, while gender can influence the protective measures actually taken by individuals.

KEYWORDS: Culture, Facebook, Guam, Privacy, Trust, Social Media, Students, Trust

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INTRODUCTION

Facebook is the world's leading social networking site and has grown rapidly since its founding in 2004. According to Facebook, as of December 2017, there were 2.13 billion monthly active users with 1.4 billion being active daily users (Facebook, 2018). Because of this large base of users, social media in general and Facebook, in particular, have provided a rich venue for studies in a wide range of use and user topics. Examples of topics include relationships of social media with student engagement and academic performance (Junco, 2012), academic major (Mathiyalakan et al., 2014), age (Heilman et al., 2014), ethnicity (Gabre & Kumar, 2012; Grasmuck, Martin & Zhao, 2009; Hargittai, 2008; Mathiyalakan et al., 2017), gender issues (Hargittai, 2008; Junco et al., 2010; Mathiyalakan et al., 2016), and privacy (Lewis, Kaufman & Christakis, 2008; Pinchot & Paullet, 2012; Whitcomb & Fiedler, 2010).

Efforts to capitalize on social media investments depend greatly upon people's willingness to share information that will be valuable to third parties. Researchers and site operators are very interested in understanding concerns about privacy since they can substantially reduce user willingness to share and thus reduce the value of social networking sites. Many previous studies have shown that females tend to have more privacy concerns than males and hide or withhold potentially valuable content accordingly (Fogel & Nemad, 2009; Hoy & Milne, 2010; Mohamed & Ahmad, 2012). Among New York residents, such concerns have caused a dramatic decrease in the willingness to allow public access to lists of friends on the Facebook social networking site since 2011 (Dey, Jelveh & Ross, 2012).

Some researchers have found differences in social media use and preferences based on demographics such as ethnicity (Heilman et al., 2013; Heilman et al., 2014; Mathiyalakan et al., 2014; Mathiyalakan et al., 2017), while others have shown that nationality and culture may influence privacy concerns (Tsoi & Chen, 2011; Veltri, Krasnova & Elgarah, 2011). Culture can play an important role in the individuation of information, the communication of psychological attributes, and the quantity of self-descriptive expression (DeAndrea, Shaw & Levine 2010). Culture also plays an important role in technology adoption (Bagchi et al., 2003; Ho, 2012).

Much of the previously cited research has been conducted in US settings. A fewer number of studies have examined Facebook use outside the US (Alhabash et al., 2012) or across different cultures (Cho & Park, 2013). However, as the majority of Facebook users are not from the United States, there is a need to explore issues pertaining to Facebook use in other countries and cultures (Alhabash et al., 2012),

and to examine the applicability of prior findings to ethnicities and cultures that are different from that of the US and Western Europe.

The objective of this research is to investigate the management of privacy settings and assess the impact that gender and culture have on Facebook privacy and trust among Guam students. We choose Guam as the focus for this study because it has its unique cultural background (Ho, 2012). More importantly, a large number of prior studies on Facebook use have ignored cultural aspects. Those studies that have utilized culture as a variable tended to focus on cross-country examinations. This study assesses the impact of cultural differences within a country. In this study, we will use the Hofstede Cultural Dimensions (Hofstede, 2001) as a general measure for studying how different aspect of culture affects the management of privacy setting.

Guam is an unincorporated territory of the United States. Guam, with a population of about 160,000 (vs. 320 million in the US), has an economy based on tourism and US military spending. It has an Internet penetration rate of 69.3% (vs. 87.4% in the US) and a Facebook penetration rate of 61.8% (vs. 59.7% in the US) (Internet World Stats, 2015). Unlike in the US mainland which population groups are mainly Asian Americans, Black/ African Americans, Caucasian/ White, and Hispanics, Guam has an indigenous population, i.e., Chamorro, and Filipino who have been migrating to Guam since the Spanish Colonial Period. Pacific Islanders including Chuukese, Palauan, and Pohnpeian, and students from nearby countries such as China, Taiwan, Korea, and Japan are the other groups of the student population on the higher education institutions there. This setting provides us with an opportunity to investigate the impact of culture on a community/country.

This paper is organized into six sections. Next, section two reviews prior research including a discussion of Facebook use in international context and the role of culture. Section three describes the research methodology. Section four presents the results of data analysis. Section five deals with the implications of our findings. Finally, section six provides conclusions, study limitations, and suggestions for future research.

PRIOR RESEARCH

Facebook use

In Facebook, a user can develop a profile by providing personal information, interests, photos/videos and "likes." The user can then choose settings that control

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who may view this information. One such setting allows a user to identify another Facebook user as a "Friend," which does not necessarily correspond to a real life friend, but an online acquaintance. A user may collect hundreds or even thousands of "Friends" and interact with them through posts, chats, email, and feedback, or even playing games offered by Facebook. A user may also join groups or form associations for information sharing (Ellison, Steinfield and Lampe, 2007). This allows Facebook to be used as a vehicle for the quick dissemination of information and coordination of plans and activities, as was seen in the Arab Spring uprisings in the Middle East (Huang, 2011).

Facebook may be used for many purposes or activities such as socialization, academics, work, identity presentation, entertainment, alleviating boredom and passing time, playing games, content construction, and productivity. Facebook use for socialization has received the greatest attention from researchers. While the terms may be different across researchers, socialization activities may be grouped into those activities involving existing contacts and friends, and those activities designed to acquire new online and offline contacts and friends. For example, Abbas and Mesch (2015) noted that commonly cited uses of Facebook are for nurturing or maintaining existing relationships and seeking new ones.

Prior research also suggested that Facebook could help college students to form and maintain social capital (Ellison, Steinfield & Lampe, 2007), and in particular, briding, bonding and mainntaince with each other. Facebook use also helps to improve psychological well-being for users who have low self-esteem and low life satisfaction. In addition, a strong link was also found between Facebook use and maintaining high school connections, leading the authors to hypothesize that Facebook helps in maintaining relationships as people move between various offline communities. Hew (2011) and Pempek, Yevdokiya and Calvert (2009) added support to this view of maintaining social capital by finding that Facebook users tend to spend their time socializing with others based on preexisting relationships.

The rapid growth of social networks can provide a unique opportunity to enhance academic learning experiences and impact students' academic careers in a variety of ways. Instructors can use social media to enhance students' class room experience and involvement by using it as a communicating, collaborating and resource sharing tool. However, this remains an unrealized potential in many academic environments since Facebook has not made big inroads into classrooms as a resource for learning (Sanchez et. al., 2014). To effectively design instruction to benefit learning, it is important to get a clear understanding of students' use and attitudes towards this technology. Prior research suggests that using Facebook for

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educational advantage may not be a priority nor advantageous for many students. Using undergraduate and graduates students of a large public US Midwestern university, Kirschner and Karpinski (2010) examined the relationship between Facebook use and academic performance. They found that Facebook users have a lower GPA and study fewer hours than non-Facebook users. Akyildiz and Argan (2011) examined Facebook usage among college students in Turkey and found that their predominant uses of Facebook tend to be having fun, contacting friends, and following the news as opposed to conducting educational and school-related work. Hew (2011) also found little support for Facebook's educational value.

While enhancing the educational experience may not be a predominant theme among Facebook users, there is some research that indicates it can be useful. Studies have shown that if properly designed and utilized, benefits may accrue. For example, Jackson (2012) found that new students who joined a university-sponsored Facebook group providing pre-enrollment contact and integration information had higher retention rates than the new students who didn't join. Additionally, Duncan and Barczyk (2014) found that students tended to have favorable impressions of Facebook for classroom use and, surprisingly, older students thought it provided a greater social learning experience than their younger counterparts. Ainin et al. (2015) examined the impact of the Facebook use of Malaysian public university students. They use two constructs for socialization, social acceptance and acculturation (a measure dealing with adaptation to new cultural contexts). They found that while social acceptance influences Facebook usage, acculturation is not significantly related to Facebook use. In a departure from other studies, they also found a significant positive relationship between Facebook usage intensity and academic performance.

Using mainly 18 and 19 year old students enrolled at the University of Illinois, Chicago, Hargittai (2008) examined the impact of gender, ethnicity, and parental education on social network use. Hispanic students used MySpace (a popular site in 2008, but now revamped) significantly more than White students while Asians and Asian American students were significantly less likely to use MySpace. Students whose parents had less schooling were more likely to use MySpace while students whose parents had higher levels of schooling were more likely to use Facebook. Hargittai's research also showed that students who lived with their parents were significantly less likely to use Facebook than other students. Based on her findings, Hargittai states that "unequal participation based on user background suggests that differential adoption of such services may be contributing to digital inequality" (p.291). Other researchers echo this view on the existence of digital inequality. For example, based on their literature review, Nadkarni and Hofmann

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(2012) found that females and ethnic minorities use Facebook more than males and Caucasians.

Privacy and trust in Facebook use

Researchers have found that students spend at least 30 minutes per session on Facebook, and that they tend to spend their time socializing with others based on preexisting relationships (Akyildiz & Argan, 2011; Pempek, Yermolayeva & Calvert, 2009). Perhaps it is the perception of relationship maintenance that leads to findings suggesting students expose themselves to significant privacy risks through their disclosure of private information in Facebook and through their Facebook activity (Hew, 2011; Whitcomb & Fiedler, 2010).

A number of privacy controls within Facebook can be used to block access to specific information, but if Facebook users don't specify proper privacy settings their information and Facebook usage patterns can become available to all Facebook users. Facebook has been criticized for having a default privacy settling which has a higher level of information disclosure (Pinchot & Paullet, 2012). Using data collected from a mid-Atlantic university, Pinchot and Paullet (2012) showed the information sharing habits of college students and noted that they shared a large amount of personal data, which could lead to a possible consequence of compromising their online accounts if these Facebook data fell into the "wrong hands." On a positive note, Lewis, Kaufman and Christakis (2008) found a greater likelihood for private profiles among students whose friends and roommates also had private profiles, and among those who had a higher level of online activity. They also found that women are more likely to have private profiles than men.

By default, Facebook "Likes" are publicly available information. Kosinski, Stillwell and Graepel (2013) used a logistic linear regression model dimensionality reduction preprocessing to find out that highly sensitive personal attributes can be predicted by analyzing Facebook "Likes". These attributes include ethnicity, religious and political views, sexual orientation, intelligence, happiness, use of additive substances, age, parental separation, and gender. They noted that this predictive ability could be used positively as for improving the design of products and services, or negatively for applying the conclusion to large numbers of people without their individual knowledge or consent.

Tuunainnen, Pitkanen and Hovi (2009) examined attitudes toward privacy among Facebook users in Finland. They found that a majority of their respondents disclose a considerable amount of information such as hometown, date of birth, profile picture etc. The more active a user, the greater the information disclosure. They

also discovered that users always have a misunderstanding on the information sharing/disclosure process in Facebook: The information that they disclose is actually not the information that they think they are disclosing; and that Facebook privacy policy and terms of use were either not known by the users or were not well understood.

Whitcomb and Fiedler (2010), by using YouTube videos showing incidents of personal information disclosure of college students which lead to privacy risk, studied the relationship between induced emotions and perceived Facebook privacy. They found that the respondents were generally willing to expose themselves, but that female subject perceptions of risk were greater than the male subjects. This issue of gender differences in Facebook privacy has also been examined by other researchers. For example, Nosko et al. (2013) examined the use of privacy settings and information disclosure within the context of different types of media (online vs. paper and pencil) by Canadian students. They found that media had an impact on information disclosure as respondents disclosed more information when they were constructing a profile for another person. Interestingly, females used more privacy settings and disclosed less private information when compared to males.

Facebook Use in an international context

Vasalou, Joinson and Courvoisier (2010) examined the impact of experience with the site and culture on the motivations for using Facebook. Their sample consisted of respondents from the US, UK, Italy, Greece, and France. They found that experience with the site and the culture determine the motivations for using for Facebook. They did not find any difference between the US and the four countries for social searching (seeking out offline contacts). However, they did find that when compared to US users, social browsing (seeking out new contacts) was more important to French and Italian users. They also found that irrespective of cultural differences, social searching remains the primary motivation for Facebook use.

Kim, Sohn and Choi (2011) examined the motives for using social networks by students in the US and Korea. They found that students in both countries exhibit similar reasons for using social network sites (such as seeking friends, social support, entertainment, information, and convenience) but place differing weights on attribute importance. They identified two key differences between the two sets of students. First, Korean students put more weight on getting social support from their existing network while the US students place greater importance on entertainment. Second, the US students have larger networks than Korean students. Cho and Park (2013) also reported a similar finding. Using semi-structured

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interviews, they examined how the different cultural environments in South Korea and the US influence the way social network (Facebook and MySpace) users form and use relationships, and their self-information disclosing behavior. They found that US respondents had more friends on their list, but Koreans' friends tended to be primarily close or familiar offline friends. Not surprisingly, the Korean respondents expressed discomfort and embarrassment in providing their friend list. They also found that US respondents' extent of information disclosure could lead to their identification.

Akyildiz and Argan (2011) examined Facebook usage among college students in Turkey and found that more than 90% of the students have a Facebook account; they logged in to Facebook several times a day, had 101-300 friends, and spent 15-30 minutes daily on Facebook-related activities. Their predominant uses of Facebook tend to be for having fun, contacting friends, and following the news as opposed to conducting educational and school related work. Studies of students in other countries have supported an average use time of at least 30 minutes per session while finding little support for Facebook's educational value (Akyildiz & Argan, 2011).

Hew and Cheung (2012) examined the motivation for using Facebook by Singaporean students ranging in age from 15 to 23. They found that the students used Facebook primarily for maintaining relationships with existing friends such as current or former schoolmates. The respondents also use Facebook for entertainment and for venting their emotions. None of the respondents indicated that they use Facebook for academic purposes. About half the students did not have any misgivings about accepting total strangers as friends.

Using students of a university in Taiwan, Jong et al. (2014) examined the educational value associated with the use of Facebook and compared it with the use of Bulletin Board Services (BBS). They found that 81% of the students discussed course issues in Facebook and such use was considered fourth important (after relationship maintenance, passing time, and entertainment). They also found that Facebook does not satisfy a user's occasional need to review prior communication.

In another study set in Taiwan, Alhabash, Chiang and Huang (2014) examined the relationship among intensity of Facebook use, motivational reactivity, and seven motivations for Facebook use (entertainment, self-expression, medium appeal, information sharing, self-documentation, socialization). They found that participants differed on five of the seven motivation items with entertainment being the highest motivator, suggesting that Facebook and social media are changing from a medium that satisfies socialization needs to a medium of entertainment.

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Role of culture and Facebook use

There have been some studies that have examined how cultural differences affect Facebook use. For example, Qiu, Lin and Leung (2013) examined cross cultural differences between Facebook, which they identify as an individualistic platform, and Renren ("Facebook of China"), a collectivistic platform. They also investigated how users adapt their behavior to match cultural practices on the two platforms. They did find cultural differences between the two platforms. They also found that users who belong to both communities are more benevolent within the confines of Renren and less benevolent when in Facebook, thus adapting and engaging in a switching behavior to match the cultural practices of each platform. Ji et al. (2010) also studied the influence of culture on the use of social network sites using data collected from China, South Korea, and the US, but they did not find a significant result.

Hofstede (1980) defines culture as "the collective programming of the mind which distinguishes the members of one human group from another" (p.112) and identified five cultural dimensions (see Table 1 for definitions of the five dimensions). Hofstede's framework has been used in prior research to examine the impact of national culture across a diverse set technology adoptions such as computers, email, fax and telephone, Internet, pagers, MIS, GDSS, and social networks (Straub, 1994; Watson, 1994; Harvey, 1999; Mejias et al., 1997; Krumbholz et al., 2000; Bagchi et al., 2003; Ho, 2012; Abbas & Mesch, 2015). An example of the use of Hofstede's in an examination by Abbas and Mesch (2015) into the role of culture in perceptions of privacy, trust, and the motivations for using Facebook by Palestinian youth in Israel. They found that three of the dimensions (collectivism, power distance, and uncertainty avoidance) significantly impact the motivation for using Facebook to maintain existing contacts, and that there is a significant positive relationship between collectivism and the use of Facebook for expanding social ties.

This study included Hofstede's dimensions in its student survey. Instead of using Hofstede Culture Dimensions to compare across culture, we use the culture dimensions to explore variations in Facebook use across culture dimensions. It is because prior research has raised a concern on whether it is appropriate to use Hofstede's model to directly compared against two cultures based on the score (Marsden, Maunder & Parker, 2008) of the countries concerned as the score was measured in a particular company, instead of from a random sample from the nations concerned. In addition, as Guam has a mixed cultural environment and with the coexistence of numerous cultures, we decide not to single out a particular set of

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culture (like comparing Chamorro with Filipino) in this study. Thus, we use the Hofstede dimension measures as a general yardstick to study how various culture dimension affects Facebook users' perception and privacy and trust.

Table 1: Cultural Dimensions (Hofstede, 2001)

Dimension	Definition
Power distance	The extent to which the less powerful members of the institutions and organizations with a country expect and accept that power is distributed unequally (p. 98)
Uncertainty avoidance	The extent to which the members of a culture feel threatened by uncertainty or unknown situations (p. 161)
Individualism - Collectivism	It refers to society in which ties between individual are loose (p. 225)
Long Term orientation	It stands for fostering of virtues oriented towards future rewards, in particular, perseverance and thrift (p. 359)
Masculinity - Femininity	It refers to a society which social gender role are clearly distinct (p. 207)

The study objective and research questions

The objective of this research is to investigate the management of privacy settings and to assess the impact of gender and culture dimensions on Facebook privacy and trust among Guam students. In the study, the following five research questions will be examined:

RQ1: Does gender have an impact on culture dimensions?
RQ2: Does gender have an impact on Facebook Privacy?
RQ3: Does gender have an impact on Facebook Trust?
RQ4: Does culture dimension have an impact on Facebook Privacy?
RQ5: Does culture dimension have an impact on Facebook Trust?

METHODOLOGY

Procedure

This survey was administered in Guam to students at the University of Guam, the island's only four-year public university. Respondents were students enrolled in three different undergraduate Management Information System (MIS) courses. One

of the courses is a general education elective available to the entire student body. The other two are core courses in the Business Administration, Computer Information Systems, Criminal Justice, and Public Administration majors. Thus, the students need not be MIS majors.

Previous research has shown that Facebook users are likely to be younger and more highly educated (Duggan & Brenner, 2013). As the study intents to examine privacy and trust issues arising from Facebook use within the higher education setting in Guam, the sampling frame is considered to be to be representative.

Participants

Students in the three MIS classes were asked to participate in a survey. While no financial incentives were offered, students who participated in the survey were given course credit. A total of 281 students took the survey. From these submissions, 221 surveys were found to be complete and usable.

Measures

The respondents were asked to provide selected demographic and background information such as gender, age, ethnicity, class standing, and academic major. Respondents were also asked if they had a Facebook account. If so, they were then presented with a series of questions regarding their Facebook use. All the respondents had a Facebook account.

Independent variables – demographics

Age is measured as less than 20, 21-22, 23-25, and over 25. Gender is coded as female or male. The respondents were asked to indicate their academic major, which is summarized as Business Major or Non-Business Major. Class standing is coded as Lower (underclassman: Freshman/Sophomore) or Upper (upperclassman: Junior/Senior). Relevant descriptive statistics are shown in Table 2.

Independent variables - measures of Facebook use and privacy

Respondents were asked to provide information about Facebook use-related measures including the year they joined Facebook (Facebook Join Year), their number of Facebook friends (Facebook Friends), and the intensity of their Facebook use (Stay Length). Relevant descriptive statistics are shown in Table 3.

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Respondents also were asked about their Facebook activities related to the maintenance of their privacy. This included questions about changing privacy settings, deleting people from their friend list, un-tagging photos, limiting updates to certain people, deleting others' comments, privacy when posting settings, exposure of phone and email information, and who can send friend requests. Privacy-related results are summarized in Table 4.

Independent variables - cultural values

Cultural values are based on the measures developed by Hofstede (1991). The cultural value questions used in the survey were taken from Hofestede's items as operationalized and validated by Yoo, Donthu and Lenartwicz (1991). In these items, students were asked to indicate their level of agreement with each statement using a 5-point Likert-type scale ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree.".

Power Distance (PD) was measured using five items (see Appendix). The responses were then combined into a single PD scale (α = 0.88; Mean = 2.21; Std. Dev. = 0.84). Uncertainty Avoidance (UA) was measured using six items (see Appendix). The responses were then combined into a single UA scale (α = 0.85; Mean = 3.98; Std. Dev. = 0.60). Individualism - Collectivism (IC) was measured with six items(see Appendix). The responses were then combined into a single IC scale (α = 0.83; Mean = 3.37; Std. Dev. = 0.64). Long term orientation (LT) was measured using six items (see Appendix). The responses were then combined into a single LT scale (α = 0.85; Mean = 4.17; Std. Dev. = 0.61). Masculinity - Femininity (MF) was measured using four items (see Appendix). The responses were then combined into a single MF scale (α = 0.80; Mean = 2.50; Std. Dev. = 0.84).

Dependent variables

The two dependent variables used in this study were drawn from Tuunainnen, Pitkanen and Hovi (2009). The first, on Facebook Privacy (FBP), asked respondents to indicate their extent of agreement with the statement "I feel that the privacy of my personal information is protected by Facebook." The second, on Facebook Trust (FBT), asked respondents to indicate their extent of agreement with the statement "I trust that Facebook will not use my personal information for any other purpose." Responses to both questions were measured on a five-point Likert-type scale where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree."

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RESULTS

Sample characteristics and analysis of gender differences

Table 2 shows the frequency distribution for demographics variables. More than two thirds of the students are female (70.0%). Two thirds (66.0%) are "traditional" students under the age of 22. 71.0% of the students are Business majors. Two thirds (66.0%) of the respondents are upper division (junior and senior) students. Results of a Pearson Chi square test indicate a marginally significant relationship between gender and age ($p = 0.082$), with the males being generally older than the females. No significant relationship exists between gender and the other two variables business major, and class standing.

Table 2: Frequency Distribution for Demographic Variables

Variable		Overall (N = 221)	Female (N = 154)	Male (N = 67)
Age	< 20	86 (38.9%)	64 (41.6%)	22 (32.8%)
	21 – 22	59 (26.7%)	43 (27.9%)	16 (23.9%)
	23 – 25	37 (16.7%)	27 (17.5%)	10 (14.9%)
	> 25	39 (17.7%)	20 (13.0%)	19 (28.4%)
Business major	Yes	158 (71.5%)	113 (73.4%)	45 (67.2%)
	No	63 (28.5%)	41 (26.6%)	22 (32.8%)
Class standing	Lower	75 (33.9%)	55 (35.7%)	20 (29.9%)
	Upper	146 (66.1%)	99 (64.3%)	47 (70.1%)

Table 3 shows statistics related to Facebook use. All respondents have a Facebook account with 82% of the users indicating that they have been Facebook members since 2010. 47% of students indicate that they spend less than 15 minutes on Facebook per visit. Over three quarters of the respondents (77%) have more than 200 Facebook friends, with 35% of the respondents claiming "201 - 500" friends. Results of a Pearson Chi square test indicate that there is no significant relationship between gender and any of the three Facebook variables.

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Table 3: Frequency Distribution for Facebook Use

Variable		Overall (N = 221)	Female (N = 154)	Male (N = 67)
Facebook join year	2014	1 (0.5%)	1 (0.6%)	0 (0.0%)
	2013	4 (1.8%)	3 (1.9%)	1 (1.5%)
	2012	8 (3.6%)	6 (3.9%)	2 (3.0%)
	2011	26 (11.8%)	19 (12.4%)	7 (10.4%)
	2010	53 (24.0%)	36 (23.4%)	17 (25.4%)
	2009	61 (27.6%)	46 (29.9%)	15 (22.4%)
	2008 or earlier	68 (30.7%)	43 (27.9%)	25 (37.3%)
Stay length per visit	< 15 min	104 (47.1%)	73 (47.4%)	31(46.3)
	15 - 29 min	51 (23.1%)	33 (21.4%)	18 (26.8%)
	30 - 59 min	33 (14.9%)	22 (14.3%)	11 (16.4%)
	1 hr - < 3hr	23 (10.4%)	20 (13.0%)	3 (4.5%)
	> 3 hr	10 (4.5%)	6 (3.9%)	4 (6.0%)
Facebook friends	less than 25	1 (0.5%)	1 (0.6%)	0 (0.0%)
	25 – 50	9 (4.1%)	3 (1.9%)	6 (9.0%)
	51 – 100	8 (3.6%)	5 (3.2%)	3 (4.5%)
	101 – 200	32 (14.5%)	23 (14.9%)	9 (13.4%)
	201 – 500	79 (35.7%)	58 (37.7%)	21 (31.3%)
	501 – 1,000	58 (26.2%)	37 (24.1%)	21 (31.3%)
	> 1,000	34 (15.4%)	27 (17.6%)	7 (10.5%)

Gender differences in privacy settings and management

Table 4 shows statistics related to Facebook privacy settings and management. Females differ significantly from males in terms of deleting people from friends list ($p = 0.045$), un-tagging photos ($p = 0.013$), and the type of privacy control used ($p = 0.004$).

Table 4: Privacy Settings & Management

	Total	Female (N = 154)	Male (N = 67)	Chi Square Result
Do you change privacy settings in Facebook?				
Yes	84.6%	88.3%	76.1%	p > 0.05
No	14.5%	11.0%	22.4%	
Don't know	0.9%	0.6%	1.5%	
Do you delete people from the friend list?				
Yes	75.1%	79.9%	64.2%	**p = 0.045**
No	24.0%	19.5%	34.3%	
Don't know	0.9%	0.6%	1.5%	
Do you un-tag photos?				
Yes	68.8%	74.0%	56.7%	**p = 0.013**
No	29.4%	25.3%	38.8%	
Don't know	1.8%	0.6%	4.5%	
Do you limit certain updates to certain people?				
Yes	74.2%	77.9%	65.7%	p > 0.05
No	21.7%	18.8%	28.4%	
Don't know	4.1%	3.2%	6.0%	
Do you delete others' comments?				
Yes	60.2%	63.0%	53.7%	p > 0.05
No	38.5%	35.7%	44.8%	
Don't know	1.4%	1.3%	1.5%	
What do you have as the "control privacy when you post" setting?				
Public	6.8%	3.2%	14.9%	**p = 0.004**
Friends	65.2%	68.2%	58.2%	
Custom	24.9%	26.6%	20.9%	
Don't know	3.2%	1.90%	6.0%	
Who can look you up using phone number or email address?				
Friends	57.0%	58.4%	53.7%	p > 0.05
Friends of friends	9.0%	7.1%	13.4%	
Everyone	16.3%	16.9%	14.9%	
Don't know	17.6%	17.5%	17.9%	
Who can send you friend requests?				
Friends	20.8%	20.8%	20.9%	p > 0.05
Friends of friends	56.6%	56.5%	56.7%	
Don't know	22.6%	22.7%	22.4%	

Gender differences in culture, Facebook privacy, and Facebook trust

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Table 5 presents means (standard deviations) and results of statistical testing for the cultural factors (Power Distance, Uncertainty Avoidance, Individualism-Collectivism, Long Term Orientation, and Masculinity-Femininity) and the two dependent variables (Facebook Privacy and Facebook Trust). For three of the five cultural factors (Power Distance, Individualism-Collectivism, and Masculinity-Femininity), mean scores for males are statistically significantly greater than for females.

No significant difference exists between genders in terms of the two dependent variables, Facebook Privacy and Facebook Trust. It should be noted that for both Facebook Privacy and Facebook Trust, the means are 3 or lower, indicating that the students do not believe that Facebook protects their information, nor that Facebook in not using their information for other purposes.

Table 5: Results of Statistical Testing on Gender Differences in Attitude Toward Facebook & Culture

	Sample	Female (N = 154)	Male (N = 67)	t-test
Power distance	2.21	2.12	2.41	t = - 2.376
	(0.84)	(0.81)	(0.87)	(**p = 0.018**)
Uncertainty	3.98	4.02	3.89	t = 1.588
avoidance	(0.60)	(0.56)	(0.59)	(p > 0.05)
Individualism-	3.37	3.31	3.50	t = -2.026
collectivism	(0.64)	(0.63)	(0.64)	(**p = 0.044**)
Long term orientation	4.17	4.21	4.08	t = 1.382
	(0.61)	(0.59)	(0.65)	(p > 0.05)
Masculinity-	2.50	2.37	2.79	t = -3.581
femininity	(0.84)	(0.85)	(0.74)	(**p < 0.001**)
Facebook privacy	2.83	2.75	3.00	t = - 1.807
	(0.94)	(0.92)	(0.95)	(p > 0.05)
Facebook trust	2.85	2.81	2.94	t = - 0.917
	(0.96)	(0.90)	(1.09)	(p > 0.05)

Results of regression analysis

Step-wise linear regression is used in two models to examine the impact of the independent variables on the two dependent variables, Facebook Privacy and

Facebook Trust. The non-continuous variables (Gender and Class Standing) were introduced into the regression analysis as dummy variables.

Model 1, shown in the 2nd, 3rd and 4th columns of Table 6, regresses the independent variables against Facebook Privacy. A significant positive relationship exists between the number of Facebook Friends and Facebook Privacy. This implies that students with more Facebook friends tend to be more concerned about their privacy. The results also show a significant positive relationship between Masculinity-Femininity (MF) and Facebook Privacy. Masculinity-Femininity refers to a society in which social gender role are clearly distinct, and those with higher MF scores tend to more closely identify with traditional gender roles. The positive relationship between MF and Privacy indicates that those with a stronger sense of gender identity tend to believe that Facebook does protect their information and privacy.

Model 2, shown in the 5th, 6th and 7th columns of Table 6, regresses the independent variables against Facebook Trust. In this model, the only significant relationship that exists is between the cultural factor Masculinity-Femininity and Facebook Trust. The positive relationship between MF and Trust indicates that those with a stronger sense of gender identity tend to have greater trust that Facebook not use or share their information for other purposes.

Table 6: Step-wise Linear Regression: Privacy and Trust

Variable	Model 1 – Facebook Privacy			Model 2 – Facebook Trust		
	B	SE	Beta	B	SE	Beta
Standing (lower division)						
Facebook Friends	0.106	0.049	0.142 *			
Gender (female)						
Power distance						
Uncertainty avoidance						
Individualism-collectivism						
Long term orientation						
Masculinity-femininity	0.258	0.073	0.232 **	0.320	0.074	0.281 **
Adj R^2			0.060			0.75
F-value			8.052 **			18.775 **

Notes:
(1) * $p \leq 0.05$; ** $p \leq 0.001$
(2) B: Unstandardized coefficient; SE: Standard error; Beta: Standardized coefficient

DISCUSSION

This study extends prior research on the examination of issues related to Facebook privacy and trust among a diverse student population. The intent is to gain a better understanding of the impact of gender differences and culture on Facebook privacy and trust. As opposed to the bulk of prior research that has been conducted at mainland US and European institutions, the focus here is on Guam. Guam is an unincorporated US territory located in the Pacific Ocean. It has a US military base and a substantial number of US military personnel. The two largest ethnic groups are Chamorro (indigenous) and Filipino, the descendants of migrants from the Philippines. Data for the study was collected from a survey administered to students attending classes in the business school at the University of Guam.

The results show significant differences between the two genders in terms of the privacy settings and privacy management issues that were examined. The differences were found in items dealing with the deleting of people from friends lists ($p = 0.045$), un-tagging photos ($p = 0.013$), and the type of privacy control used ($p = 0.004$). Thus, we find that females are more privacy conscious than males. This is consistent with previous literature (Fogel & Nehmad, 2009; Mohamed & Ahmad, 2012).

RQ1: Does gender have an impact on culture dimensions?
Yes. Statistically significant differences in mean scores between genders are found for three of the five cultural factors (Power Distance, Individualism-Collectivism, and Masculinity-Femininity), with the average male score being greater. Thus, gender does have an impact on culture.

RQ2: Does gender have an impact on Facebook Privacy?
RQ3: Does gender have an impact on Facebook Trust?
No. There are no significant differences between the two genders in terms of the two dependent variables, Facebook Privacy and Facebook Trust. It must be noted that in all cases, the average mean scores are 3 or lower. This indicates that, generally, these students do not agree that Facebook protects their information nor that Facebook can be trusted not to use their information for any other purposes.

RQ4: Does culture dimensions have an impact on Facebook Privacy?
RQ5: Does culture dimensions have an impact on Facebook Trust?
Yes. Masculinity-Femininity significantly influences both Facebook Privacy and Facebook Trust. According to Hofstede (1991), higher Masculinity-Femininity scores indicate attributes such as a competitiveness, assertiveness, and heroism, with a preference for personal success and achievement. Students who exhibit "masculine" attributes may seek to establish more "online" friends in an attempt to showcase their achievements to a larger circle, or my correlate success and achievement with larger sets of online friends. So, even though it seems that they may be aware of the risks associated with Facebook use and its potential for information disclosure, these individuals may be disregarding privacy and their lack of trust in Facebook in favor of a larger audience. This mismatch between privacy concerns and information disclosure behavior, referred to as the "privacy paradox" (Kokolakis, 2017; Jordaan & Heerden, 2017), is consistent with the research of Hofstra et al. (2016) who found that more popular Dutch adolescents are likely to publicly display their profile, i.e. disclose more information, than less popular adolescents. To sum up, the group of students who are actually in need of further training and briefing on the importance of protecting their online privacy are those students who are more "masculine" in their mindset.

CONCLUSION, STUDY LIMITATIONS & FUTURE RESEARCH DIRECTIONS

Prior studies have examined privacy management differences between the two genders and have noted that females have more privacy concerns than males. This study extends the examination of Facebook use among diverse student populations in an attempt to gain a better understanding of Facebook usage patterns and Facebook privacy and trust among students who are ethnically and culturally different from mainland USA. Data for the study was collected from a survey administered to students attending classes in the business school at a university in Guam. A large number of prior research on Facebook has ignored the cultural aspects of Facebook use. Those studies that utilized culture as a variable tend to focus on examining across countries. This is one of the few studies to assess the impact of gender and culture within a country.

This study finds a significant difference between males and females in terms of the number and type of privacy settings used, with females being more privacy conscious. Also, for three of the five cultural factors (Power Distance, Individualism-Collectivism, and Masculinity-Femininity), significant differences exist between the two genders. No significant difference between the genders in-

terms of the two dependent variables, Facebook Privacy and Facebook Trust. Our respondents generally do not feel that Facebook protects their information and they do not trust Facebook in using their information for any other purposes. Finally, of the five cultural dimensions, only Masculinity-Femininity significantly influences both Facebook Privacy and Facebook Trust. To sum up, for the case on Guam, we noted that gender type plays a role in influencing a person to take up protective measure by oneself, and yet culture, in particular, Masculinity-Femininity plays a significant role in influencing a person's formation perceived trust on a social media and his/her perceived privacy protection provided by the social media. So, summarizing for the case in Guam, the findings indicate that culture, in particular Masculinity-Femininity, influences the formation of perceptions regarding both the trust in social media and the privacy protection provided by social media, while gender can influence the protective measures actually taken by individuals.

Like all other academic studies that use students, there are weaknesses in this study. The use of a convenience sample may limit the applicability of the findings in the larger population. This study was set in Guam, a country with a population of less than 200,000. This may limit the generalizability of our results to countries of similar size, ethnicity, and technology infrastructure. A greater sample size with other data collection methods such as interviewing is needed for greater generalization. The profile of our respondents, such as ethnicity and the fact that they were students in a business school, may also limit generalizability. The results are obtained from a time-specific "snap shot" of user attitudes and behavior. Longitudinal studies with a diverse set of students are needed to support generalization.

Although this study has some limitations, the results that are interesting and expand the knowledge of the impact of gender and culture on Facebook privacy and trust. This includes insights into why and how people from different genders and cultural groups view privacy and trust as it pertains to Facebook. Future research should focus on examining whether gender differences lead to differences in Facebook usage for socialization and academics, identity representation and management, and continued use of Facebook. Another avenue of research is the examination of changes in use and attitudes as a user progresses from a novice to an expert in Facebook and the potential differences between different age groups. Research should also focus on extending the current research with different ethnicities and cultures, both within a country as well as across countries.

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APPENDIX

Measures

Power distance (Yoo, Donthu & Lenartwicz, 1991)

1. People in higher positions should make most decisions without consulting people in lower positions.
2. People in higher positions should not ask the opinions of people in lower positions too frequently.
3. People in higher positions should avoid social interaction with people in lower positions.
4. People in lower positions should not disagree with decisions by people in higher positions.
5. People in higher positions should not delegate important tasks to people in lower positions.

Uncertainty Avoidance (Yoo, Donthu & Lenartwicz, 1991)

1. It is important to have instructions spelled out in detail so that I always know what I'm expected to do.
2. It is important to closely follow instructions and procedures
3. Rules and regulations are important because they inform me of what is expected of me.
4. Standardized work procedures are helpful.
5. Instructions for operations are important.
6. I always know what I'm expected to do.

Individualism - Collectivism (Yoo, Donthu & Lenartwicz, 1991)

1. Individuals should sacrifice self-interest for the group.

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2. Individuals should stick with the group even through difficulties.
3. Group welfare is more important than individual rewards.
4. Group success is more important than individual success.
5. Individuals should only pursue their goals after considering the welfare of the group.
6. Group loyalty should be encouraged even if individual goals suffer.

Long term Orientation (Yoo, Donthu & Lenartwicz, 1991)

1. Careful management of money
2. Going on resolutely in spite of opposition
3. Personal steadiness and stability
4. Long-term planning
5. Giving up today's fun for success in the future
6. Working hard for success in the future.

Masculinity - Femininity (Yoo, Donthu & Lenartwicz, 1991)

1. It is more important for men to have a professional career than for women.
2. Men usually solve problems with logical analysis; women usually solve problems with intuition.
3. Solving difficult problems usually requires an active, forcible approach, which is typical of men.
4. There are some jobs that a man always does better than a woman.