

**Fake News: Examining the Power of Social Media by
Demographics and National Culture**

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Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke, positioned above a solid horizontal line.

Turki Althiyabi

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Thanksgiving to the Almighty Allah.

This thesis is the product of hard work and hard effort and challenges overcome: it would not have been possible without cooperative efforts and significant support.

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Executive Summary

The purpose of this study is to investigate the influence of demographics and culture on the spread of fake news via social media in Saudi Arabia. Social media has made access to and exchange of news and information in written, verbal and visual form, very convenient and easy. As a result, fake news has been a growing phenomenon. Fake news refers to un-substantiated and un-verified information whose purpose or source has been fabricated. While political marketers have long used the language of fear and persuasion in their messaging, the attention placed on fake news is increasing in intensity throughout the world, from the Arab Spring to the 2016 United States Elections. The country selected for this study is Saudi Arabia as the spread of fake news has led to the government recognising the detrimental effect that fake news can have on the political stability of the country. The Arab Spring was a wake-up call for the Saudi government to realize the impact that social media can have on its citizens. Therefore, the research question of this study is ‘What is the influence of demographics and national culture on the uptake of fake news through social media in Saudi Arabia?’

In addressing this research question, the study drew upon the literatures on technology adoption, specifically, the Technology Acceptance Model (TAM), electronic Word of Mouth (eWom) and national culture. It then involved an online quantitative survey to enable the researcher to gain insights into the factors which lead to the spread of fake news through social media in Saudi Arabia. 107 responses were received from Saudi Arabian social media users. Data was then analysed using Structural Equation Modelling (SEM) with AMOS to determine the most significant factors impacting on the uptake of fake news.

Findings revealed that national culture had both direct and indirect effects but the direct effect was stronger than indirect effects (via electronic Word-of-Mouth (eWom) factors such as comprehensibility). Based on the results, the conclusion is that national culture plays a significant role in the spread of the fake news on social media. In terms of the influence of demographics, evidence was weak. Out of three demographic categories, age had the greatest effect on the uptake of fake news compared to education and gender. This is surprising as popular media has attributed demographic factors, such

as gender and education, to the spread of fake news. It should be reiterated that data was based on Saudi Arabia. Future studies can examine the influence of these factors in other societies.

The study has made an important theoretical contribution. It has extended technology adoption theory by integrating factors from e-Wom (comprehensibility, reliability), demographics (age, gender, education) and culture in understanding the spread of fake news via social media. Additionally, it also offers practical implications in providing evidence to increase awareness and sensitivity on the influence of demographic and cultural factors on the uptake of fake news through social media in Saudi Arabia.

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1.0 Introduction

Social media has drastically changed the way people communicate and keep themselves informed and connected. Social media platforms such as Facebook, Twitter, YouTube and WhatsApp are some of the online media through which people communicate with each other, exchange ideas, news and current events. The reach and penetration of social media platforms are unprecedented as it allows communicating with as many people as one wants at the same instance. Social media platforms are also being used by individuals to air their personal opinions and views on a variety of topics and also to share videos and photos. As a result, user created content may be more preferred than the messages coming from large media companies (Pernisco, 2010). This preference has led to the circulation of unsubstantiated information and news. This research project proposes to look into how social media is being used for dissemination of information, particularly news. Specifically, it will examine how the demographics and culture of a nation aids the spread of such news.

1.1 Problem/Research question/Project Focus:

The problem that this project will investigate is how fake news circulates online through various online social platforms and how this circulation is being aided or influenced by demographics and culture of the country. As such, the research questions will be as follows:

- I. Does demographics of the users of social media aid extensive spread of fake news?
- II. Does culture of the nation play a part in the spread of the fake news online?

1.2 Significance

The use of social media has grown considerably and continues to do so. The proliferation of the internet and smart phones allows millions of people to access the internet for the purposes of entertainment, trade, communication and work. Social media has become a popular internet based platform which is still growing on a daily basis. It has become a preferred source for communicating with friends, family and even strangers (Sponcil & Gitimu, n.d.). Social media allows the posting and sharing of videos and blogs in a real-time basis and its reach is unprecedented. There have been numerous instances of videos or posts on social media being watched, read, liked, shared and re-shared by millions of people worldwide. These videos or posts are said to have gone, in social media parlance, 'viral'. This phenomenon along with the anonymity that the internet provides, turns into a potent concoction which can be used to spread malicious and incorrect news. The lack of proper authentication can cause the spread of misinformation and it does not come as a surprise that many well-meaning users inadvertently contribute to the spread of such news (Wu et al., n.d.). Disinformation has

the ability to cause public anxiety and mislead gullible people to indulge in illegal or harmful activities. Thus, it is imperative to study the phenomena of fake news and how it spreads. The cultural issues and individual motivations can also influence the usage of social media (Sheedy, 2011). Consequently, this project will investigate the usage of social media in Saudi Arabia (otherwise referred to as Saudi) and how it is shaped and influenced by the cultural aspect of that country and its demographics. The impact of social media on Saudi citizens can be gauged from Figure 1 given below:

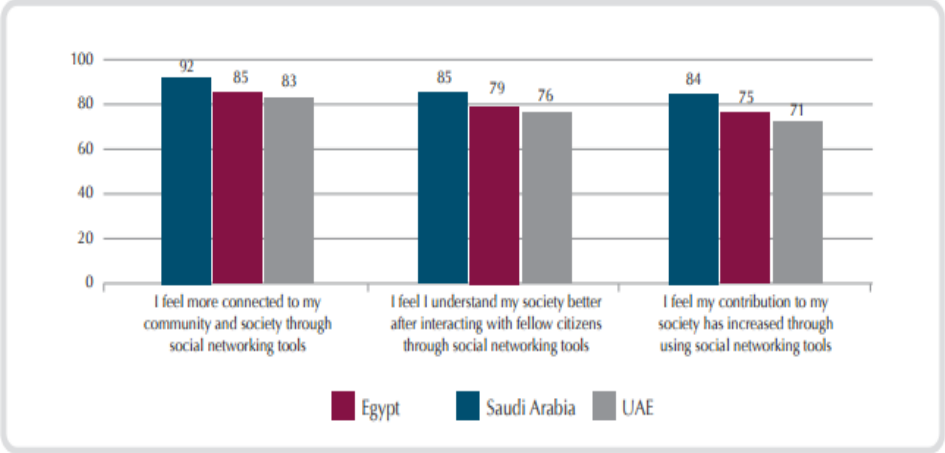


Figure 1: Source Dubai School of Government (July, 2012)

From Figure 1, it is evident that Saudis feel that social media brings them closer to their community. This underlines the important role that social media plays in Saudi Arabia. Dubai School of Government (July, 2012) further states that Saudi Arabia, along with the UAE accounts for 80% of the total users of Facebook in the Gulf region and Saudi alone accounts for 90

million video views on YouTube, which is the highest in the world. What is interesting to note is that 50% of the YouTube users are women. Saudi is an ultra-conservative Muslim country and women are subject to many laws which restrict their freedom. For instance, it was the last country in the world to allow women to drive and there are still many bumps in the road ahead to equity. Social media gives women an opportunity to explore the world and voice their opinion from the safety and comfort of their homes. Guta and Karolak (2015) state that the internet allows women to stay anonymous and this is primarily achieved through using nicknames and not putting up personal pictures online. Social media allows the women of Saudi Arabia the right to express freely in their own space online. Kiefer (2015) states that more than half of the Saudi population is under 35 years of age and social media is their preferred means of communicating with each other. Traditional media is tightly controlled by the government and no views against the government or Islam are tolerated. Social media on the other hand allows for freer expression and thus has found favor with the majority of social media users who use it to express their views. Kiefer (2015) further state that subjects which are taboo are talked about extensively on social media. This is also due to the fact that social media like Facebook include Arabic as one of its interface language, thereby making it accessible to more people (Alamkky, Sahandi & Taylor, 2015). Thus, social media plays a very

significant role among the young community of Saudi Arabia. This significance is at times marred by the spread of malicious false news. Fake news has time and again surfaced on social media in Saudi Arabia and its rapid spread compelled Saudi Arabia's Ministry of Culture and Information to issue a warning that those spreading false rumors could face both prison time and heavy fines (Arab Business.com, 2016). Another instance of fake news was of an imminent coup in Saudi Arabia. It was discovered that this rumor was started by website dedicated to Middle Eastern affairs (Bradley, 2015). Fareed (2016) is of the opinion that those who resend or retweet rumors are equally guilty as the original source of the rumor. This underlines the importance of verifying the source of information before forwarding it to others. Fake news has the potential to cause tremendous harm to the stability of a country. Social media played an important role in the Arab Spring and thus the significance of social media cannot be under-estimated. This reflects the need for the identification of factors which cause fake news to spread.

2.0 Literature Review

2.1 Chapter Overview

This chapter first discusses the term fake news and explains its uptake. It then explores potential factors influencing the spread of fake news from the mass communication, electronic Word-of-Mouth and technology adoption literatures. From these literatures, it proposes a conceptual model and a set of hypotheses.

2.2 Definition of fake news

The term fake news has been defined differently by various authors. Research carried out by Moran, Seaman, and Tinti-Kane (2011) described the term fake news as a news story that has no basis of facts and reality but is present and disseminated on the social media. The definition can be analyzed in terms of fabrication and deception of source and purpose. Fake news can reduce the chance of coverage of the actual incidents or news. Conversely, news can be sensationalized and skewed to favor the narrative of advertisers, marketers or politicians.

In terms of politics, examples about presidential election reports have been quoted. These fake news or fake advertisement are shared from hitherto and opaque unknown outlets on social media (Eid, 2011). The fake news reporters even directly attack the brand quality, the company's reputation or the political situation: for instance, "FBI Director Comey, Just Put a Trump

Sign on His Front Lawn” (Petrosky, 2011, p. 4) and “FBI Agent Suspected in Hillary Email Leak Found Dead in Apparent Murder-Suicide” (Petrosky, 2011, p. 21).

These stories have been masquerading as real stories. The writers do not provide them as satire, advertorial or opinion pieces, rather as real news reports. Additionally, they present some of these reports under the guise of professional organizations with the logos and insignia designed to mirror conventional outlets (Alshehri, 2016). According to Cohen’s (2018) article on rising fake news in Middle East, providing people with fake information in the Media is usually used in the region as a political instrument to make people believe in specific interests. However, most of the time the content of such news is pirated from or transformed from the organizations of real news into fake news (Allcott & Gentzkow, 2017).

2.3 Uptake of Fake News

Some instances of fake news, particularly by authoritarian governments have been designed to intimidate the press, shut down and silence any dissent (Meyrowitz, 1986; Hoyt, 2012). In several countries, especially Middle Eastern nations, there are concerted efforts to grade certain social media websites as tattlers, intended to spread “fake news” as they do not agree with their stance of presenting so-called fake branding as well as fake political and democratic issues on social media (Bucy, 2003; Al-Sukkar, 2005).

Fake news has come into the spotlight due to the influence, some have claimed, in the decision making of the people. There has been commentary on the willingness of some people to trust fake news and use social media as an essential wellspring of news (Alamkky, Sahandi & Taylor, 2015). Furthermore, if fake news stories are being accepted when individuals read them, then it can potentially alter the way some individuals see the world.

Social media has played a significant role in the Arab Spring. It was used to organize protesters. In addition to this, Arabs are also using social media to express their views and as a space for engaging in civic activities. Primarily, the significance of social media for the communication with the outer world is necessary during uprisings. Social media platforms such as Facebook, Twitter and other media resources offer different ways of communicating, discussing and framing Arab-American dynamics with the audience and pose a serious threat to the other significant outlets.

Furthermore, there are fears about 'filter bubbles' of web-based social networking, which distorts individuals' comprehension of the world. Facebook's news is attained from clients' past activities. It analyses and anticipates which stories users may be interested in. At an extreme level, this creates a filter bubble, in which clients are presented news that reaffirms their inclinations. The risk here is that filter bubbles advance misperceptions by concealing the truth (Zuiderveen Borgesius et al., 2016).

In October 2016, Canadian writer and self-depicted 'liberal women's activist', Sue Gardner chose to investigate the filter bubble impact by making a persona with characteristics that differed from her own in order to see the impact on news stories that Facebook sent to her. This alias, "Xalay", was a 16-year-old from South Africa who used to work at a mobile company in client administrations department. She was given no friends on Facebook and was not allowed to follow or comment on anyone, rather what Xalay was appointed to do was to "like" the pages to increase their rating. After Xalay "liked" them, her news feed began to load with stories, recordings and images that individuals from those pages were sharing, which incorporated the fake news of famous leaders and their better halves having murdered over 44 individuals since the 1970s. The victims were homosexual in a mystery association with their party members and were alleged to have dreadful diseases. It was claimed that a large number of seats from the parliament were already marked for these politicians and other Democratic candidates.

Yang and Lin (2014) noticed that around 20% of what appeared in the newsfeed was reality based, while 80% was false. Responding to this, the author expressed his belief that the picture created in the media held nothing common with the real world he lives in. Balance and objectivity assume an imperative part in news-casting incorporating into the newsrooms of

prejudiced productions. Choices on the quality of a news story and the confirmation and sources behind it are decided upon target criteria. These criteria would not be conceivable without a high level of agreement among social media about what constitutes target principles of good news coverage (Pernisco, 2010). Despite this ideal, the editor's code of some news agencies can reflect flexibility of expression and incorporates a privilege 'to entertain, be satirical, shock, to challenge, to be biased and to inform. It goes ahead to make it clear that certainties must be precise: 'social media, while being allowed to customize or editorialize, should recognize unmistakably between facts, conjecture, and comment.'

2.4 Mass Communication and electronic Word-of-Mouth (eWom)

The literature on mass communication and more specifically the stream of electronic word-of-mouth (eWom) can offer useful insights on the dynamics of fake news uptake through social media. Within this, researchers have begun to explore the interaction between socio-cultural factors and the willingness to adopt various e-Wom messages (Cheung & Lee, 2012; Cheung et al., 2008; Teng et al., 2017). Insights from the eWom literature will be further elaborated through this section.

2.4.1 Fake news mainstream on social media

BuzzFeed sent repercussions over the prevailing press when it published an assessment demonstrating that the effect of top-performing fake news stories on Facebook created more engagement than the top stories from authentic news outlets (Sheedy, 2011). These few fake news stories alone produced 8.7 million engagements, generating publicizing incomes. These stories fill the Google AdSense records of fake news administrators (and obviously, to Facebook and Google themselves). This implied sponsors' revenue had supported and compensated scams, piracy and frauds as opposed to the genuine news. This competed with and dwarfed timely genuine news which was required the most. Neither side of the political partition had a restraining infrastructure on creating and sharing fake news, however, it evidently has been more widely circulated among social media users. Polling by IPSOS for BuzzFeed demonstrated a high possibility of conviction rates among supporters who saw the fake news (Baym, & Jones, 2012).

2.4.2 Gaps, disconnects, and news deserts on social media

Fake news has emerged to some extent in light of the havoc and the level of perception of the local news in various countries. National news associations may be dependent on their local offshoots and other local news counterparts. However, when a news association loses a solid local news availability, it may resort to other forms of news which may not be verified at the local

level (Ellison, 2007). Particularly among small or rural communities, the local daily paper or local radio station bolstered typical community life. The uptake of fake news may have been a result of the lack of sufficient localized news. Philip Napoli, an educator of community approach at Duke University, argues that the interruption of local media has brought about "news deserts" prevailing in different communities, basically in lower wage territories, a pattern particularly experienced in African regions (Campbell, Martin, & Fabos, 2011). Thus, there is a strong association between the growing phenomenon of fake news and the news deserts as well as disengagement with predominant media (Van Dijck, 2013).

Many have underestimated the ascent of political fake news. For instance, Campell, Martin and Fabos (2011) provide the example of CNN, a news network that reflects industrial, educated regions and not localized news. As a result, national networks failed to capture the extent of disengagement in local communities. Marty Baron, the Washington Post's official manager, told *Politico* that he thinks, they ought to have identified the profundity of grievance and uneasiness in America's average workers, a long time ago (Newman, 2011). Furthermore, Isaac Lee, Univision's head of news and entertainment stated that the population of some spots, like for example Staten Island was sad about them, and in order to recover the trust it's important to be nearer to people. This is not to imply that there are relatively

few fantastic local daily papers in other competing countries. In fact, where they exist, many of these have been at the cutting edge of exposing fake news. A review by Lee (2013) found that the local daily paper continues to be a staple for local media communities in many areas. Yet, they are retrenching and as the creators of "The Shattered Mirror" that nowadays, the wellsprings of assessment are multiplying while in the reality on what these circumstances based are shrinking. Despite the fact that it is a current wonder and the proof so far is impressionistic, the digital disturbance of conventional media in the Middle East and Africa has every possibility of taking a role in bringing the major technological gaps in the market and crevices in comprehension (Lee, & Chyi, 2014), in which fake news is being incorporated and becoming stronger.

2.4.3 Duopoly

Facebook and Google are two key leaders in the online world. In February 2009, for instance, Facebook had about four million users. The popularity of social media and growth of awareness of this websites among the Middle Eastern population is supported also by the growing number of iPhones and Smartphones sold in the region (Buchta, Fabel, De Clercq & Hall, 2009, pp.11-12).

This promotion income has been deemed a driver of the fake news industry (Marchi, 2012). BuzzFeed found that more than 100 professional news sites

were being controlled by a solitary town in Macedonia, making outlandish stories that produced hundreds of thousands of shares each. "The Macedonians composed a sensationalized feature, and rapidly presented it on their site to attempt to create a stir (Goldschmidt & Boum, 2015). The more individuals navigate from Facebook, the more cash they earn through the confirmation of the audience who run with the content of these web page. The data in the websites does not demonstrate the true facts, yet, individuals will still add information, and then re-disseminate it. (Khondker, 2011).

The framework works exceptionally well for fake news administrators and is severely adaptive for genuine news distributors (Yang, & Lin, 2014). The fake news administrators are not writers in any important sense, rather the fake news administrator acts without respect for precision but works in ways that push, specifically, the spread of emotive (especially furious) content over the network. The Facebook framework remunerates those fake newsmakers who achieve the greatest uptake. Paul Horner, one fake news administrators, revealed to The Washington Post that he was making \$10,000 a month from fake news through Google AdSense. Macedonian youngsters revealed to BuzzFeed that they were making as much as \$3,000 every day when they get hits of likes on Facebook. Fake news is monetized and shared inadvertently through the support of social media platforms such as Google and Facebook that are profiting (Alshehri, 2016). In October 2017, Facebook

is now being investigated for advertisement income associated with Russian advertisements purchased during the 2016 United States presidential campaign. Indeed, governments are now catching up by investigating the effects of Facebook's and Google's imposing business models on the autonomy and viability of various types of media content (Newman, 2011).

2.4.4 Role of publisher

As there are growing calls for these online platforms to be more accountable, Facebook and Google have attempted to address the issue of fake news. In a blog entry, Google said it had restricted over 200 sites that distort themselves from its AdSense publicizing network forever. Facebook has reported that its inclining rundown will comprise of themes being secured by a few distributors (Baym, & Jones, 2012). Facebook will likewise stop modifying drifting records to take into account every client's 'close to home' interests. Instead, everybody situated in the same area will see the same drifting records, which presently show up in the US, UK, Africa, Saudi Arabia and the Middle East. A year ago, Facebook indicated that it will counsel outside news associations like The Associated Press and ABC News about the reality of the articles that client reports as being false. Many have been unimpressed by these measures. The New York Times depicted Google's bans as a drop in the container which fails to track the two million distributors that utilize AdSense (Marchi, 2012).

The Facebook-Google reaction to the fake news has not been adequate in solving and addressing the issues. They fail to realize that they are now media organizations and have some obligations for the content that it disseminates (Khondker, 2011). Talking before the House of Lords Communications Committee's Children and the Internet Inquiry, relate Dr Akil Awan, a teacher of psychological oppression, political brutality and current history at Royal Holloway, University of London, stated that review of scandalous newspapers has demonstrated that action was planned in consideration of the PCC or IPSO, because a number of readers are getting news and then shaping their opinion under the light of self-created stories. (Goldschmidt, & Boum, 2015)

It is the ideal opportunity for a thorough audit of the administrative status of Facebook and Google. Such an audit should strive to inspect what extra obligations can be placed on their shoulder, without making any new administrative weights or more extensive liabilities for the conventional media or setting any new confinements on its distributing opportunities (Khondker, 2011).

2.4.5. Comprehensibility

A key factor that has emerged from the eWOM literature is comprehensibility. Jung (2010) defined comprehensibility as something that mainly focuses on the meaning, and in order to achieve it, it's important to consider such factors, like “grammatical, cultural, socio-linguistic, and pragmatic aspects” (Jung, 2010, p. 141). It refers to the extent of the thoroughness of the message. Messages are intended to induce by influencing both convictions and states of mind (Sichtmann, 2007). Components of the message including content, source, logical attributes and channel can impact influence (Allen, et al., 2000). For instance, when potential customers look at data from online audit destinations concerning a specific settlement property, they may form impressions about the survey content (Sichtmann, 2007), including convictions about whether the audits are helpful, instructive, or exact. Some may be influenced by observations about the message source, including reliability, believability, and the beneficiary's convictions about the source's aim to convince (Cheung, & Lee, 2012). In addition to the e-Wom literature generally including factors such as comprehensibility, the technology adoption literature may also provide potential factors that aid understanding of the uptake of fake news.

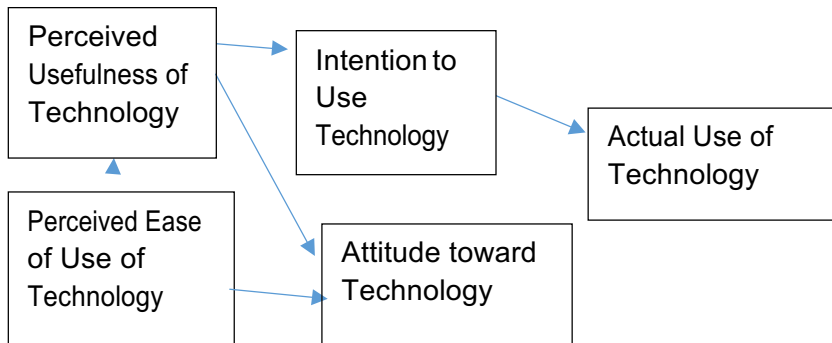
2.5 Theoretical bases of the uptake of fake news

2.5.1 Technology Acceptance Model (TAM)

The technology adoption literature has been previously extended with the inclusion of socio-cultural factors in a number of contexts for instance in electronic education (Karim & Rampersad, 2017), e-government (Alzharani, 2014), workplaces (Glass & Li, 2010), consumer and online social networks (Hartzel et al., 2016) contexts, albeit not in the context of the spread of fake news.

Rauniar et al. (2014) performed the empirical study on Technology acceptance model on the sample of Facebook website.

Figure 2: Technology Acceptance Model (Rauniar et al., 2014)



Using the TAM demonstrated in Figure 2, Raunair et al. (2014) confirmed the following hypotheses:

- The ease of use of social media websites is related to perceived usefulness;
- Number of users is related to the perceived usefulness;
- Social media capabilities are related to the perceived usefulness;

- Perceived playfulness is related to the perceived benefit.

Thus, by confirmation of the abovementioned hypotheses, the authors concluded that trustworthiness and perceived usefulness in social media are related and determine users' behavior.

TAM explains acceptance by users of getting information from social media by its perceived ease, perceived usefulness, and attitude that determines the intention of using social media as a source of information. The last one is the key factor in creation utilization model of technology. The ease of use is explained regarding news by such tools like comments and sharing, so once users get the information they are able to discuss the information with other users and get their opinion in real time. Usefulness is explained by using some technical skills when using social media website, for example, students are interested in new technologies, and social media website let them manage the content without a huge effort. (Al-rahmi & Othman 2013).

2.5.2 UTUAT

Venkatesh et al. (2003) are the creators of The Unified theory of Acceptance and Use of Technology (UTAUT) with the help of the synthesizing model for presenting the model for the acceptance of individual models that are merged for the integrated models.

The model informs the factors and the understanding for the acceptance of innovative technologies. In addition to this, the stability, validity and viability in the adoption of model have been validated in different contexts. The UTAUT is a model that incorporates factors from all the past models and has been widely tried in the utilization of innovation in various parts. Technology adoption models such as UTAUT have also been integrated with a range of demographic and socio-cultural factors as discussed next.

2.6 Demographic and Socio-cultural factors

2.6.1 Education

The literature provides mixed findings on the impact of education on the spread of fake news via social media. In the United States Election in 2016, the common sentiment was the uneducated disenfranchised were responsible for the uptake of fake news (Allcott & Gentzkow, 2017). On the other hand, protesters in the Egyptian Tahrir Square protests in 2011 were well educated with 60.3% of them with a college or university degree and 9.6% reported as having a postgraduate degree (Tufekci & Wilson, 2012). We therefore need additional research to address this contradiction on the impact of education on the spread of fake news.

Islamic nations watch moral issues associated with innovation from the point of view of Islam, for instance, the Islamic Body on the Ethics of Science and Technology, which was made by the Ministries of Higher Education and

Scientific Research of Islamic Countries. It coordinates and makes conclusions about moral issues including online security, from the point of view of Islam (Yang, & Lin, 2014). Likewise, Muslims tend to follow accepted rules that originate from Islamic instruction contrasted with those that radiate from different sources. Given the primary influence of Islamic instruction, the impact of education on the acceptance of fake news is in need of further investigation.

2.6.2 Age

The Arab Spring has been synonymous with the social media savviness of young people as social media use is concentrated disproportionately among the youth (Xenos et al., 2014). 83% of adults using social media are in the 18-29 age range (Hartzel et al., 2016). Many studies have emerged that have examined the impact of age on political engagement via social media (Bode, 2012; Conroy et al., 2012; Gil de Zúñiga et al., 2012; Vitak et al., 2011). These studies have generally focused on the power of social media to reduce political inequality based on age. Additionally, Park (2015) argued that young people are more receptive and react more emotionally to negative political news on twitter. Some studies have focused on the how social media has been a leveler for age in political participation particularly in terms of the election results in the USA (Barack Obama's 2012 Election results), UK, Australia and Sweden (Holt et al., 2013; Xenos et al., 2014). Within the

Middle Eastern context, Tufekci and Wilson (2012) examined the role of social media in political protests in Tahrir Square, Egypt. They surveyed 1,200 people in the 2-week period following the protest. They found that the average age of protesters was 28.5 years. Almost half of the protesters had a Facebook profile (52%) and most of them used it for communicating about the protest. 16% of the protesters had a twitter account and 13% used it for communicating about the protest. They call for future research regarding the spread of such news in authoritarian contexts.

2.6.3 Gender

Within the technology adoption literature, while many studies have suggested that women are less likely to adopt new technology (Allyn, 2003; Li et al., 2004; Shashaani & Khalili, 2001), others have suggested that gender gaps are closing (Rainer Jr et al., 2003; Ray et al., 1999). Aman and Jayroe (2013) argue that online anonymity has empowered Saudi Arabians, with over half of the authors of Saudi blogs being women, particularly pertaining to female social issues. They give examples of popular women blogs such as Farah's Sowaleep, Saudi Eve and Thought in the Kingdom of Lunacy, that challenge male domination. Online female activists have posted petitions to give Saudi women permission to drive (Chaudhry, 2014), a right that has now been granted. Balfaqqeh (2017) provides an analysis of how

anonymity can lead to negative behavior online, particularly against women such as trolling, flaming, lurking and deception. Perpetrators may be less accountable for the consequences of their actions. He goes on to provide a vivid investigation of how language used degree of hostility versus a facilitative approach varies among genders in Saudi Arabia. However, more research is needed on the role of gender on the spread of fake news specifically.

2.6.4 Culture

While prior studies have begun to explore the role of culture on social media adoption, more research is needed to examine this in a Middle Eastern context and also to empirically measure the various dimensions of culture in further depth. For instance, Hartzel et al. (2016) investigated social media use among graduate students in India, China and the United States. However, they argue that future research should further investigate various aspects of culture as defined by Hofstede (1980) such as individualism/collectivism, masculinity/femininity, uncertainty avoidance and long-term versus short-termism. Other studies examined the use of social media for online volunteerism such as responding to natural disasters (Gao et al., 2011) and environmental causes (Mankoff et al., 2007). While some have looked at political engagement for instance the uprisings in Egypt (Attia et al., 2011; Iskander, 2011) and Tunisia (Marzouki et al., 2012), further research is needed to more specifically examine the spread of fake news. Similarly, within the e-WOM literature, Cheung and Lee (Cheung & Lee, 2012) argued that culture,

particularly the degree of collectivism, influences consumers to spread e-WOM in online consumer-online platforms, albeit not in the context of fake news.

2.7 Conceptual Model

This study will integrate the technology adoption and e-Wom literatures to better understand how socio-cultural factors influence the spread of fake news as shown in Figure 3.

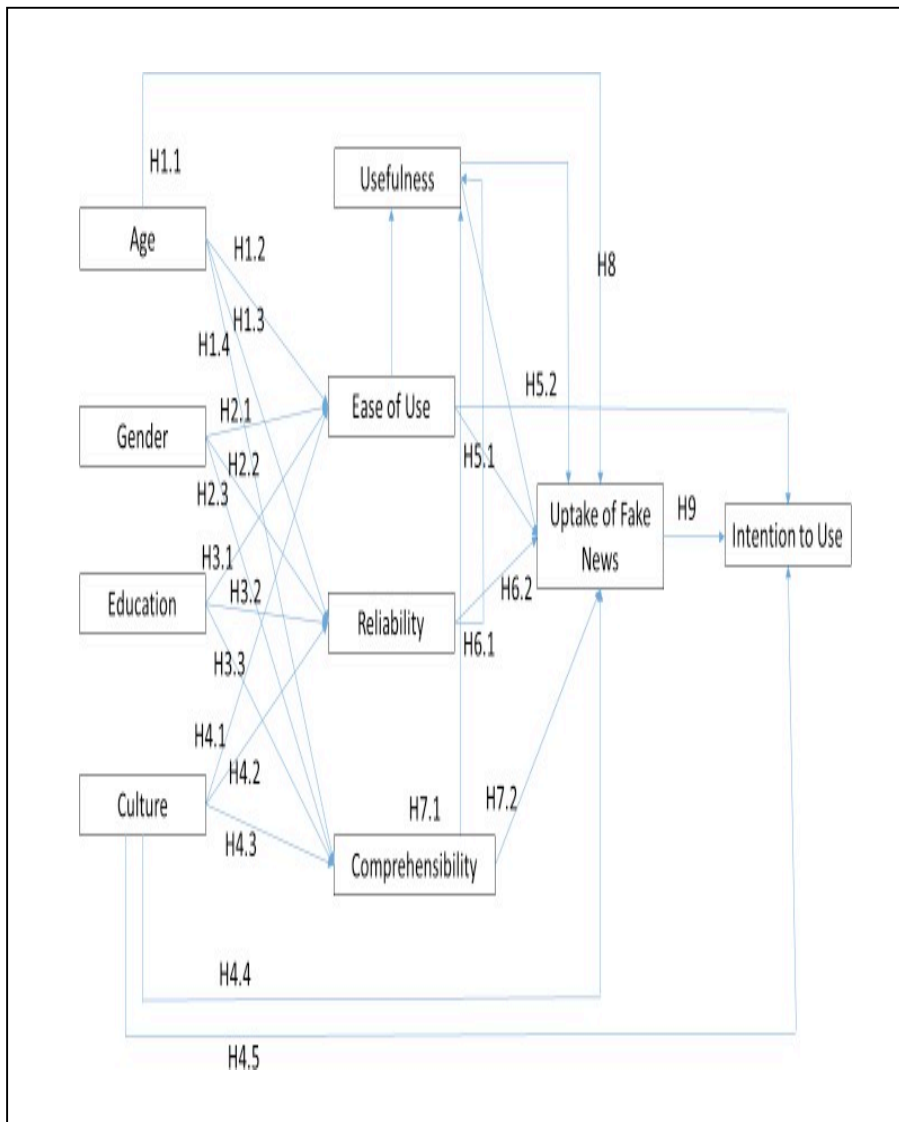


Figure 3: Model 1: Conceptual Model of Factors influences the uptake of fake news

2.8 Hypotheses

Hypothesis	Independent Variable	Dependent Variable
H 1	Age	Comprehensibility
H 2	Gender	Uptake of Fake News
H 2.1	Gender	Comprehensibility
H 3	Education	Uptake of Fake News
H 3.1	Education	Comprehensibility
H 4	Culture	Uptake of Fake News
H4.1	Culture	Intention to Use
H 5	Comprehensibility	Uptake of Fake News
H5.1	Comprehensibility	Usefulness

Table 1. Hypothesis

3.0 Methodology

3.1 Chapter Overview

Quantitative analysis was undertaken for this project to investigate the influence of demographics and culture on the spread of fake news via social media. For this purpose, a questionnaire was prepared and distributed among the target audience through services like survey monkey. Before the questionnaire was prepared and dispatched, the ethics application was developed and permission sought from the target audience to use the information they provide. Cronbach's Alpha was utilized to check the validity of the questionnaire which was based on a Likert scale. Thereafter, having collected the required information, hypotheses were tested using AMOS.

3.2 Survey instrument

A quantitative approach using a questionnaire was selected for this study. It was chosen due to its efficiency in administration and potential for generalizability (Fox & Hun, 2009; Mathers, Fox and Hun, 2009)

Furthermore, the responses from the questionnaire are gathered in a standardized way and thus are more objective than interviews (Milne, n.d.).

The survey questionnaire was comprised of 13 parts. These parts included questions on demographics, culture, individualism/collectivism, power

distance, uncertainty avoidance, adoption of social media, reliability, ease of use, intention to use etc. The survey questionnaire consisted of total of 55 questions. Measurement items for the questionnaire were based upon and adapted from literature. Items for culture were derived from Hofstede (1980), comprehensibility from Teng et al. (2017) and uptake and intention to use from Davis (1989). Constructs in the questionnaire were operationalized using multi-item, 5- point Likert scales, which are straightforward and easy to administer (Kinnear et al., 1993). A multi-item scale is also justified over single item measures as it is more reliable and has less measurement error, distinctions can be made among respondents and it combines specific single measures, and thus, reflects more attributes of a construct (Churchill Jr, 1979).

3.3. Research Ethics

As required by the Flinders University Human Research Ethics Committee, ethics approval was obtained (ethics ID 7751, approval date 26/07/2017). Copies of the ethics information sheet and questionnaire are shown in Appendices A and B).

3.4 The Sample

Mugo (2002) defines sampling as “the act, process, or techniques of selecting a suitable sample or a representative part of a population for the purpose of determining parameters or characteristics of the whole population” (Mugo, 2002, p. 1). Therefore, sampling allows the researchers to gather relevant data from a portion of a population and this data can be used to study the entire population. This is especially helpful when the researcher does not have sufficient time or money to undertake a census (Latham, 2007). These definitions showcase the advantages of using the sampling techniques to collect relevant data. Farooq (2013) states that sampling method is appropriate when the population under study is very large or infinite. As it is practically impossible to conduct census for the entire Saudi population, sampling method was chosen as the appropriate method of data collection. The sample consisted of the WhatsApp group of Saudi Arabians based in Australia. Prior permission was obtained from Ethical Approval of social or behavioral research involving human participants to approach the group for the survey.

3.5 Survey administration

The survey was administered online and was applied to a WhatsApp group of Saudi Arabian students based in Australia. The survey was conducted through SurveyMonkey. After obtaining the requisite permission of the Ethical Approval of Social or Behavioral Research involving human participants, the survey link was posted to the WhatsApp group. This approach to collecting relevant data was used as information collection through this technique was economical and less time consuming as compared to the process of information collection from main land Saudi Arabia. The survey link was posted on the WhatsApp and 104 members out of total of 250 members of the WhatsApp group responded. Thus, the response rate was recorded at approximately 41 percent. Table 1 provides further descriptive data on respondents.

Category	Group/Sub-Group	Respondents	
		<i>n</i>	%
Age	less than 20 years	2	1.9
	21-30 years	58	54.7
	31-40 years	42	39.6
	41-50 years	4	3.8
	51 and above	0	0
Gender	Female	17	16.0
	Male	89	84.0
Education	High School	2	1.9
	Diploma Degree	10	9.4
	Bachelor Degree	49	46.2
	Masters Degree	39	36.8
	Doctorate or above	6	5.7
Most frequently used application	Facebook	13	12.2
	Instagram	7	6.6
	WhatsApp	40	37.8
	Snapchat	17	16.0
	Twitter	29	27.4

Table 2. Descriptive data on respondents

The majority of respondents fell within the age range 21-30 years (58%) with the second highest group in the range 31-40 years (42%). This sample reflects the younger age of the majority of social media users and is therefore reflective of the general social media population but also the broad population under investigation as 51% of population in Saudi Arabia is under the age of 25 years (Hartzel et al., 2016). Most of the respondents were also male, which mirrors the Saudi Arabian society as women are less likely to

provide their opinions in public. Saudi culture is based in the Islamic tradition and the country is one of the most gender segregated in the world (Al-Zarah, 2008). Van Deursen et al. (2015, p. 259) argue that “what people do online increasingly reflects traditional media in society and known economic, social and cultural relationships that exist offline, including inequalities”. They go on to suggest that online activities may also mirror socio-demographic factors such as gender, age and education. The respondents were generally well educated with most having Bachelor and Master Degree qualifications. While this does reflect that nature of the WhatsApp student group, it is also synonymous with the drastic opening up and reforms to the educational system in Saudi Arabia. Karim (2017) discusses how the Saudi Arabian government has started to dramatically reform the education system to bring it to the standards of advanced countries. Education expenditure is 25% of the government’s total spending and university students are paid allowances by the government (Alamri, 2011).

3.6 Data analysis

Following descriptive analysis, statistical analysis was conducted using the software packages SPSS and AMOS, employing analyses such as structural equation modelling (SEM). Various steps were taken in the analysis following Blunch (2012). First, data was screened using checks for

normality. Second, constructs were assessed for reliability and validity. Third, confirmatory factor analysis and hypothesis testing was undertaken to evaluate the significance of each factor. The results of these steps will be explained in Chapter 4.

3.7 Summary

This chapter gave a brief description on the design and application of the research instrument for the validation stage. This chapter gives precise information on the survey phase of the research including the survey instrument design utilized, the sample selected to represent the target audience and research ethics to safeguard the credibility of the data and the data itself as it contains the personal details and views of the respondents. Detailed information on data collection and its administration was also mentioned and concluded with survey evaluation. The next chapter covers the results, including pre-analysis and model testing.

4.0 Analysis of Results

4.1 Chapter Overview

Data was first prepared and screened for normality and kurtosis. Checks for reliability and validity were then undertaken. The model was then tested for fit and hypothesis testing conducted using AMOS.

4.2 Data Preparation and Screening

Table 3: Normality of Data Distribution.

Constructs	Mean	Extreme Values		Kurtosis Value	Std. Deviation
		Minimum	Maximum		
Gender	1.14	1	2	2.27	0.353
Age	2.44	1	4	-0.293	0.588
Education	3.33	1	5	0.44	0.806
National Culture	2.71	1	5	-0.543	0.485
Reliability	2.97	1	5	0.138	0.644
Comprehensibility	2.50	1	5	-0.627	0.666
Uptake of Fake News	2.96	1	5	0.645	0.645
Adoption	2.40	1	5	-0.696	0.548
Intentions of Use	2.86	1	5	-0.614	1.016
Ease of Use	1.99	1	5	0.457	0.921
Usefulness	2.64	1	5	0.262	0.790

Table 3. Normality of Data Distribution

After initial analysis, we did data preparation and screening. The Mean values we have discussed in Table 1. In Table 3 we tested the normality of data distribution based on the “kurtosis” value. This value reflects a “measure that’s used to describe the distribution, or skewness, of observed data around the **mean**, sometimes referred to as the volatility of volatility”. For example, gender’s kurtosis value is 2.27, age has in negative value, uptake of fake of news’s 0.627, etc. These have to be less that the upper limit

of 7 to show that it exhibits acceptable normality (West et al. 1995). Therefore, kurtosis value of all constructs is within the range of -7 and 7, it means that almost all data is normal.

4.3 Reliability and Validity

We checked two different validities (convergent and discriminant validity) and reliability of all eight constructs (See Table 4).

First, we analyzed the convergent and discriminant validity of the seven constructs. Average variance extracted (AVE) for seven instruments was greater than the recommended value of 0.50 (Fornell & Larcker, 1981), but “comprehensibility” has the lowest the validity in this analysis, may be due to small size of this sample, demonstrating satisfactory convergent validity. Discriminant validity was established since the AVE for each construct was greater than any squared correlations (Campbell & Fiske, 1959; See Table 4.

Table 4: Convergent and Discriminant Validity

Variables	National Culture	Uptake of Fake News	Compre.	Adoption	Intention	Useful.	Ease of Use	Reliability	α
National Culture	0.529								0.92
Uptake of Fake News	0.021	0.502							0.86
Comprehensibility	0.143	0.108	0.424						0.79
Adoption	0.111	0.012	0.039	0.522					0.81
Intention to Use	0.00053	0.177	0.033	0.123	0.525				0.77
Usefulness	0.065	0.231	0.235	-0.0032	0.153	0.50			0.80
Ease of Use	0.008	0.204	0.119	0.000	0.0002	0.065	0.527		0.70
Reliability	0.085	0.209	0.062	-0.0013	0.142	0.187	0.0004	0.502	0.89

Table 4. Convergent and Discriminant Validity

Notes: The bold values on the diagonal represent convergent validities (AVE). Values in the columns are the squared inter item correlations (discriminant validities when compared to the AVEs).

Bold values in the last column present Cronbach's alpha internal consistency reliability estimates.

Finally, the eight constructs showed high internal consistency and reliability (See Table 4), with cronbach alpha values of 0.92 for national culture, 0.86 for uptake of fake news, 0.79 for comprehensibility, 0.81 for adoption of technology, 0.77 for intention of use, 0.80 for usefulness, 0.70 for ease of use, and 0.89 for reliability (See Table – 4), all greater than the recommended value of 0.7 (Nunnally 1978).

Table 5: Showing factor loadings for each item

Variables	Standardized Loadings	Variables	Standardized Loadings
CULTURE1	.688	RELIBILTY6	.661
CULTURE2	.562	RELIBILTY7	.728
CULTURE3	.734	RELIBILTY8	.662
CULTURE4	.732	COMPRE1	.671
CULTURE5	.814	COMPRE2	.578
CULTURE6	.705	COMPRE3	.626
CULTURE7	.721	COMPRE4	.697
CULTURE8	.763	COMPRE5	.676
CULTURE9	.696	CLARITY1	.674
CULTURE10	.648	CLARITY2	.697
CULTURE11	.684	EASE_USE1	.705
CULTURE12	.670	EASE_USE2	.746
CULTURE13	.653	USEFULNESS1	.735
CULTURE14	.693	USEFULNESS2	.656

CULTURE1 5	.756	USEFULNESS3	.711
CULTURE1 6	.794	USEFULNESS4	.706
CULTURE1 7	.707	UPTAKE1	.686
CULTURE1 8	.645	UPTAKE2	.714
ADOPTION 1	.710	UPTAKE3	.730
ADOPTION 2	.694	UPTAKE4	.760
ADOPTION 3	.754	UPTAKE5	.636
ADOPTION 4	.731	UPTAKE6	.717
RELBLTY1	.641	INTENTION1	.731
RELIBLTY2	.772	INTENTION2	.749
RELIBLTY3	.787	INTENTION3	.692
RELIBLTY4	.736	<i>NOTE: These are standardized Factor loadings of Each item.</i>	
RELIBLTY5	.667		

Table 5. Showing factor loadings for each item

Regarding construct reliability and convergent validity, item loadings exceeded the threshold of 0.5 (Steenkamp & van Tijn, 1991). All items have good factor loadings, the minimum loading is 0.562 and Maximum is 0.814 (See Table 5). Based on these factor loadings we follow the method of Korchia (2010) on an excel file.

Table 6. Hypothesis Support

Hypothesis	Independent Variable	Dependent Variable	P Value	Support
H 1	Age	Comprehensibility	0.000	NO
H 2	Gender	Uptake of Fake News	0.005	NO
H 2.1	Gender	Comprehensibility	0.05	NO
H 3	Education	Uptake of Fake News	0.02	NO
H 3.1	Education	Comprehensibility	0.002	YES
H 4	Culture	Uptake of Fake News	0.000	YES
H4.1	Culture	Intention to Use	0.007	YES
H 5	Comprehensibility	Uptake of Fake News	0.000	YES
H5.1	Comprehensibility	Usefulness	0.001	NO

Table 6. Hypothesis Support

P-value stands for the probability value in testing of hypothesis. The P value is important to consider in order to understand if it's more or less extreme than it was observed in the fact. The smaller is the index of P-value, as higher is significance of the data (Moore, 2007).

Dahiru (2008) in the research on the P-Value discussed that the number of P-Value, when P is < or > than 0.05 is still discussable issue in the statistical community, however, the researchers use to state $P < 0.05$ as significant, while this number can varies in different research papers, and in this case author of research has mention the number that can be considered significant or not.

Table 5.1 demonstrates that all the collected data can be considered significant ($P \leq 0.05$). Besides significance of the data, current research discusses if the data is supported or not regarding every hypothesis.

We developed hypotheses for our study (See Table 6). We analysed the p-value and determined whether each hypothesis was supported or not. The first (H1) is not supported. The value is significant as well. Furthermore, gender is also not supported on the uptake of fake news. Similarly, all other hypotheses are presented in the Table 6.

Based on the literature, we developed a hypothesis model (See Model -1), in this model there are two independent variables such as national culture and demographics (gender, age and education). This model suggests that demographic variables have a direct effect on the uptake of fake news and via mediators as well. Mediators are ease of use, reliability, and comprehensibility. Additionally, national culture also has a direct effect on the uptake of fake news and indirect effects through previously mentioned three mediators (See Model – 1). It means that national culture leads to develop or enhance comprehensibility, reliability and ease of use (mediators) of social media that ultimately affect the uptake of fake news on social media. Furthermore, national culture also has direct effect on the uptake of fake news (See Model -1). The second independent variable (demographic, such as gender, age and education) has a direct effect on the uptake of fake news on social media (See Model – 1). In the model (Model – 1), the mediator “ease of use” has a direct effect on the uptake of fake news and has an indirect effect via usefulness as mediator. Ease of use has a direct effect on intention to use, and also has an indirect effect through the uptake of fake news. In this model, we have two independent variables (See Model – 2, See Table 7).

Analyzing the data by using the application AMOS, we obtained the model fit summaries of different models, as results show that model -1 which is our study’s hypothesis model has a chi-square (X^2) of 1972.171, and Degree of

freedom (Df) is 1100, difference chi-square value (χ^2/df) is 1.757 which is lower than recommended which is good value, GFI .362 which is lower than recommended value (should be more than 0.9), NFI .260 also lower value than recommended value (should be more than 0.9), CFI is .400 which is also not a good value (Should be greater than 0.9), and RMSEA value is 0.086 which is slightly greater than recommended value (Should be less than 0,05), see Table – 6. Overall this model is not as such good model and by increasing the sample size of study, it could enhance the values of the model fit indices.

Table 6: Model Fit of Models

Models	Description of Model	Model Fit Indices						
		χ^2	Df	χ^2/df	GFI	NFI	CFI	RMSEA
Model 1: 8 Factors Model	Hypothesis Model	1972.171	1100	1.757	.362	.260	.400	0.086
Model 2: 6 Factors Model	Alternative Model-1	1460.907	843	1.733	.606	.260	.424	0.084
Model 3: 6 Factors Model	Alternative Model-2	1463.976	845	1.733	.602	.259	.423	0.084
Model 4: 5 Factors Model	Alternative Model-3	914.619	551	1.660	.646	.467	.534	0.080

Table 7. Model Fit of Models

We developed alternative models, for our study to obtain best suitable model for the further analysis of this study. In the alternative models, first we just removed the two factors / constructs from the actual model (See Model – 2: 6 factors Model). No other changes were made. $\chi^2 = 1460.907$ just lower than hypothesis model, $df = 843$, chi-square difference (χ^2/df) = 1.733 which is also up to recommended value (should be Lower than 2), GFI = .606, NFI = .260, CFI = .424, and RMSEA = 0.084 (See Table – 6), this model is much better than the actual model.

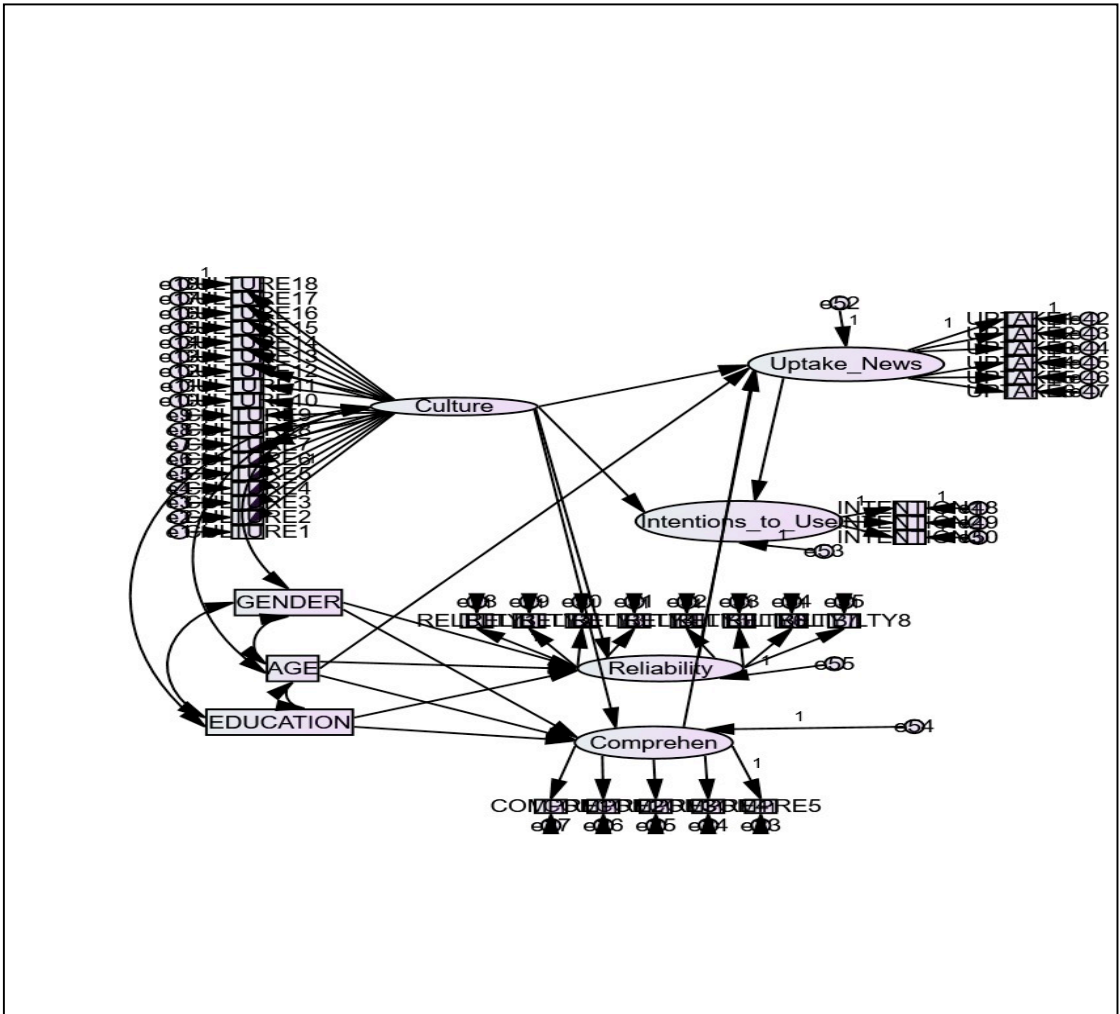
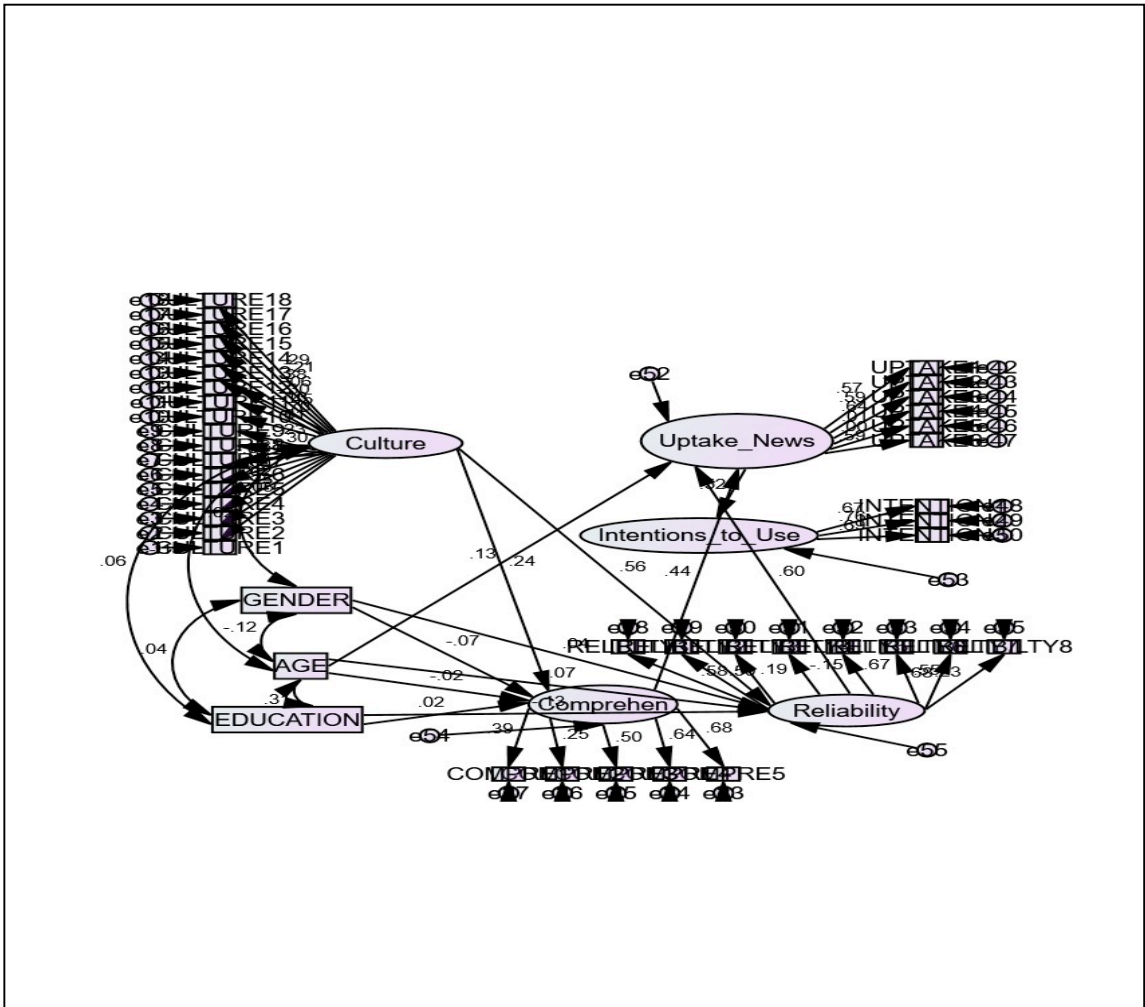


Figure 4: Model 2: Model Usefulness and Ease to Use

Model 2: An Alternative Model after removing to constructs; Usefulness and Ease to Use

Model – 4 (Alternative Model – 3): in this model we omitted more constructs and retained 5 constructs (including gender, age, and education as a one construct) and it has very good fit indices than other models (See Table 6), $X^2 = 914.619$, $df = 551$, $X^2/df = 1.660$, $GFI = 0.646$, $NFI = 0.467$, $CFI = 0.534$ and $RMSEA = 0.080$, although this model is not as such good with fitness indices but it is much better and possible better

model for this study, as we performed chi-square difference Test between Model 1



and Model 4, results showed that Model 4 is better than Model 1 (Korchia, 2010).

Figure 5: Model 3: Model National Culture on Uptake of Fake News

Model 3: An Alternative Model after removing the Direct Effect of National Culture on Uptake of Fake News

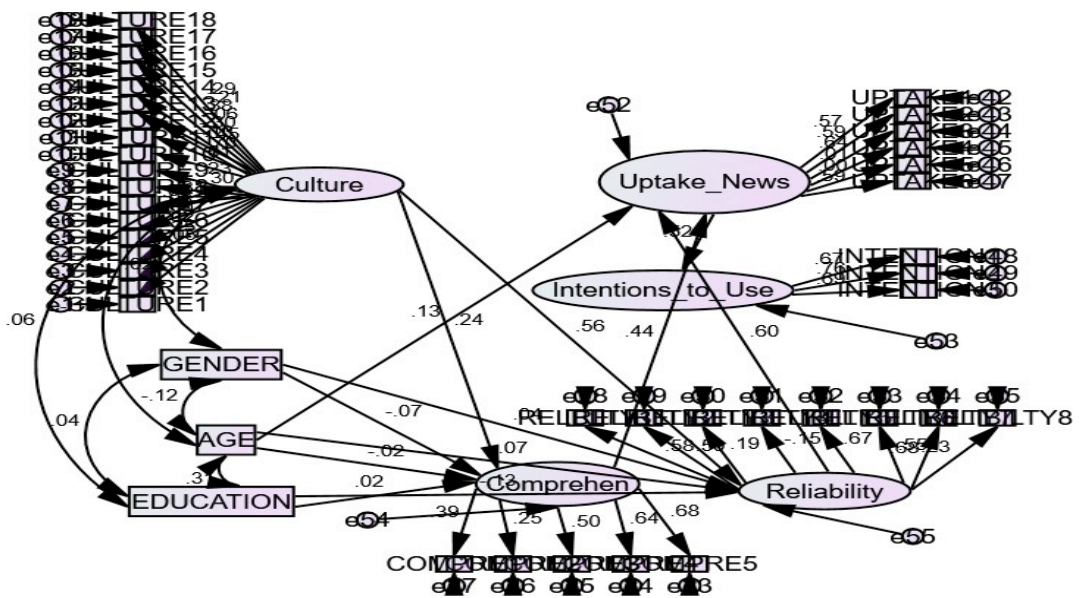


Figure 6: Model 4: Model of National Culture on Uptake of Fake News

Model 4: An Alternative Model after removing Direct effect of National Culture on Uptake of Fake News, all Effects of Education, direct effect of Gender on Comprehensibility, a construct Reliability, and direct effect of Gender on Uptake of Fake News

4.5 CFA: Confirmatory Factor Analysis

Direct effects and indirect effects of independent variables on dependent variable

As we have discussed previously, we selected an alternative model (See Model -4) for the further analysis via performing the analysis of direct and indirect effects by using AMOS. The analysis showed there are indirect effects of demographics on the uptake of fake news via mediators. First, age's direct effect on the uptake of fake new is 0.202 (See Table 7). The indirect effect of age on the uptake of fake news through comprehensibility (mediator) is negative (-0.001), The first hypothesis is accepted that age affects the uptake of fake news positively. The direct effect of age on comprehensibility is 0.000, therefore we cannot reject our null hypothesis: *"age positively influences comprehensibility"* (Hypothesis 1.1). Second, "gender" is direct influencer of the uptake of fake news. The direct effect of gender on uptake of fake news is 0.009 which is a positive but weaker effect (See Table 7). There is no indirect effect of "gender" on the uptake of fake news (See Model – 3). Thus, we accept our hypothesis 2.

Third, education showed negative effects in all models. Based on our analysis we may say that education is negatively correlated to the uptake of fake news. It means that as education is going upward, uptake of fake news

will be reduced. Therefore, we do not reject our null hypothesis. Fourth, the second independent variable (national culture) has a positive direct effect on both mediators, on comprehensibility it has $.587^{**}$ (See Table 7), this effect is significant. There is no direct effect of national culture on the uptake of fake news and intention to use. Whereas indirect effects of national culture on both variables, uptake of fake news and intentions to use are 0.316 and 0.178, respectively (See Table 7), which are significantly positive. Thus, we may argue that national culture has positive influences on both variables. Based on these results, we accept our alternative hypothesis.

Table 7: Direct and indirect effects of independent on dependent variables.

Independent Variable	Mediator	Dependent Variables									
		Uptake of Fake News					Intention to Use				
	Comprehensibility	Direct Effects	Indirect Effects	Total Effects	Remarks	Proportion mediation	Direct Effects	Indirect Effects	Total Effects	Remarks	Proportion mediation
National Culture	0.587	-	0.316	0.316	Full Mediation	100%	-	0.178	0.178	Full Mediation	100%
Age	-0.001	0.102	0.033	0.135	Partial Mediation	24%	-	0.083	0.083	Full Mediation	100%
Gender	-	-	0.009	0.009	No Mediation	0%	-	-0.001	-0.001	No Mediation	0%
Education	0.024	-	-0.066	-0.066	No Mediation	0%	-	-0.034	-0.034	No Mediation	0%
Comprehensibility		0.545	-	0.545	No Mediation	0%	-	0.226	0.226	Full Mediation	100%
Uptake of Fake news		-	-	-	-		0.564	-	0.564	No Mediation	0%

Table 8. Direct and indirect effects of independent on dependent variables.

Comprehensibility has a direct effect on the uptake of fake news which is 0.545** (See Table 7), as hypothesis 8 suggested: “*comprehensibility positively influences the uptake of fake news*”. Thus, we accept our alternative hypothesis. In addition, comprehensibility also has an indirect effect on intentions to use through the “uptake of fake news” which is 0.307 (See Table 7). There is no mediation between comprehensibility and the uptake of fake news, but there is a full mediation between comprehensibility and intention to use (See Model – 3). Uptake of fake news has a significant positive direct effect (0.564*) on “intentions to use” (See Table 7).

5.0 Conclusion

This research studies the influence of the social media on the spread of false news since the social media is a major source of information dissemination in this era. There are certain important factors that might contribute towards the fake dissemination of news through social media. The study particularly addressed these factors to investigate their role in the spread of fake news using social media. The factors under consideration by this research include demographics, culture, education, age and gender in Saudi Arabia. The research adopted quantitative research methods to investigate the relationship between fake news dissemination and the abovementioned factors. The research performed statistical analysis to understand such relationship by using AMOS. The results indicate that the demographic factor specifically age possesses a strong influence on the uptake of fake news compared to other factors including education and gender. However, education is also an important factor that can decrease dissemination of fake news to a great extent since by increasing education an individual will not follow or spread fake news without any conformation regarding the source of the news. The statistical analysis showed that the other important factor i.e. culture plays pivotal role in spreading fake news through social media.

5.1 Revisiting the research aims and research questions

The research aimed to identify the elements in the society that are directly and indirectly contributing towards fake news update through the social media networking sites.

As an answer to the first research question: *Does demographics of the users of social media aid extensive spread of fake news?* There is some evidence, although weak. Out of three demographics' categories only age has a greater effect on the uptake of fake news compared to the other two, education and gender. It is obvious that by increasing education there will be

a reduced uptake of fake news. Overall, demographics do not have a major role in the uptake of fake news, although age has the strongest influence.

Regarding the second research question: *Does culture of the nation play a part in spread of the fake news online?* Results show that national culture has a strong and significant indirect effect but the direct effect is not there. Based on the results, we may conclude that national culture plays a significant role in spread of fake news on social media through comprehensibility and the adoption of technology.

5.2 Research Contributions

The research provides both theoretical and practical implications as discussed in this section.

5.2.1 Theoretical contribution

The research makes an important theoretical contribution to the literature in informing understanding of the impact of culture and demographics on the adoption of fake news. It does so by first integrating the technology adoption and electronic Word-of-Mouth literatures. It then conducted a quantitative approach to investigate the relationships between potential factors and the uptake of fake news, using an online quantitative survey via social media and then confirmatory factor analysis via structural equation modelling with AMOS.

5.2.2 Implications for Practice

The study offers important implications to individuals, governments and social media companies. For individuals, it raises sensitivity that age and education may lead to increased critique of news stories online. Within families and communities, more educated members have a greater responsibility in curtailing the gullibility of others towards fake news. For governments such as those in Saudi Arabia with rigid website filtering systems (Chaudhry, 2014), the study sheds light that such systems are not applicable to various demographics within the country and can alienate the rising tech-savvy population. There needs to be a

strengthened discourse around freedom of speech while taking into account various cultural sensitivities, to maximize the harmony and potential of its citizens. For social media platforms facing increased scrutiny internationally over their responsibility in curbing fake news, the study highlights that there are certain demographics in some societies that may be more prone to spreading fake news.

5.3 Research Limitations and areas for future research

While the research offers useful insights, there are limitations and directions for future research. The research was limited to a Saudi Arabian context and therefore, future research would be helpful in examining the impact of sociocultural factors in other societies. The fake news phenomenon spans not only other Arabic countries but also Western countries and thus investigation in multiple societies will provide other useful insights. In addition to cross-country comparisons, intra-country analysis between rural and urban communities may also provide interesting findings. Furthermore, future research can also compare the uptake of fake news among different groups within a society such as immigrants and natives. This more nuanced analysis may uncover differences and similarities between groups and common trends may serve in strengthening theory development.

5.3 Final remarks

By integrating the technology adoption and eWom literatures, this study has provided an important theoretical contribution in informing understanding of the impact of culture and demographics on the adoption of fake news. It raises awareness that popular stereotypes based on education and gender of those being susceptible to fake news may not always be true in all societies, as age and culture can have a stronger influence as noted from the Saudi Arabian context.

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Appendices

Appendix A: Information Sheet



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INFORMATION SHEET

**Title: Fake News:
Examining the power of social media by demographics and national culture**

Researchers:

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Description of the study:

The study investigates the impact of cultural and demographic factors on the uptake of fake news in Saudi Arabia. Social media has made access to and exchange of news and information in written, verbal and visual form, very convenient and easy. The features of sharing information on social media, has given unprecedented impetus to the spread of information. There have been many instances of un-substantiated and un-verified information and news being spread through various social media platforms. This project seeks to study the extent to which demographic and cultural factors in Saudi Arabia influence the uptake of fake news.

Purpose of the study:

The purpose of this study is to investigate the spread of fake news via the social media and how the uptake of fake news is influenced by cultural and demographic variables.

What will I be asked to do?

You are invited to complete a questionnaire about the factors influencing the uptake of fake news. The survey will take about 10 minutes.

What benefit will I gain from being involved in this study?

Note that the participants may not have direct benefit from participating, however their responses will contribute to greater awareness of the situation. This will lead to greater critique of the integrity and authenticity of information received through social media. You

inspiring
achievement

may become more attune to questioning the reliability of sources of information, and therefore your awareness may be enhanced via this research.

Will I be identifiable by being involved in this study?

Be assured that any information provided will be anonymous and will be treated in the strictest confidence. None of the participants will be individually identifiable in future publications.

Are there any risks or discomforts if I am involved?

No, there are no risks and this study will result in no disadvantage to you.

How do I agree to participate?

You can participate by completing the online questionnaire. You are, of course, free to decline to answer particular questions.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7715). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

Survey on the uptake of Fake News: The influence of culture and demographics

This survey explores the influence of culture and demographics on the uptake of fake news. Please select your answer for each of the following questions.

DEMOGRAPHICS		• Male			• Female	
1. Your Gender						
2. Your Age		Less than 20 or 20	21-30	31-40	41-50	51 and above
3. Your Educational Level		High School	Diploma Degree	Bachelor Degree	Masters Degree	Doctorate or above
CULTURE						
Masculinity/ Femininity						
4. Given the separation of males and females in society, social media provides a useful platform to facilitate non-face-to-face communication.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
5. It is preferable to have a man in high level position rather than a woman	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
6. Men usually solve problems with logical analysis; women usually solve problems with intuition	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
7. Solving problems usually requires an active forcible approach which is typical of men	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Individualism/ Collectivism						
8. Individual views are not as important as community beliefs	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
9. Community success is more important than	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	

individual success

Power Distance

10. Political leaders should be careful not to ask the opinions of citizens too frequently, otherwise the leader might appear to be weak and incompetent	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
11. Leaders should make most decisions without consulting the masses	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
12. In general, the leaders, not the citizens should have the last word.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
13. Citizens should not question their leader's decisions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
14. Leaders should not ask subordinates for advice, because they might appear less powerful	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
15. Decision making power should stay with leaders and not be delegated to others	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Uncertainty Avoidance

16. It is important to have rules spelled out in detail so that people always know what they are expected to do	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
17. Rules and regulation are important because they inform citizens what the society expects of them	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
18. Living in a structured environment is better than living (rules and	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

regulations) in an unstructured environment

19. People should avoid making changes when their outcomes are uncertain

20. Order and structure are very important in a society

21. It is better to live in a society with specific rules and regulations as opposed to a more flexible society

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

ADOPTION

22. How long you have been using computers?

23. Do you use social media?

24. Select the application you use most frequently

25. I have encountered fake news on social media

Under 3years	3-5 years	More than 5 years		
• Yes	• No			
Facebook	Instagram	Whatsapp	SnapChat	Twitter
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

RELIABILITY

26. Do you think that social media is a reliable source of information

27. Social media provides accurate information.

28. In my point of view, social media is the medium through which news spread at high rate

29. Fake news are spread mostly by social media

30. Information provided through social media is correct.

31. People who provide comments on social

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

media are trustworthy					
32. Social Media platforms can be trusted for authenticity of the news	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
33. I verify the source of the news available on social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

COMPREHENSIBILITY

34. People form opinions about others based upon posts shared by others	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
35. Opinions of people change by using social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
36. News that I receive through social media has sufficient breadth and depth.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
37. News received through social media covers my needs	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
38. People perceive positively about political figure if presented in optimistic way	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

CLARITY

39. Social media contains different videos and posts providing clear messages about political figures	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
40. The images portrayed on social media have several long term implications for people	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

EASE OF USE

41. In this age, social media is provides an easy platform to access source of	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
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information					
42. Rumors travel fast through social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
USEFULNESS					
43. News received through social media is valuable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
44. News received through social media is informative	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
45. News received through social media is helpful	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
UPTAKE OF FAKE NEWS					
46. The images portrayed on social media have several long term implications for people	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
47. I am likely to accept news that I receive on social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
48. I am influenced by views, videos and comments made on social media.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
49. I believe whatever is presented on social media is true	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
50. I believe most of the content presented on social media is fake	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
51. Social media guides or misguides people about political entities	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
52. My personal beliefs are shaped by social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
INTENTION TO USE					
53. I share news of interest that I receive on social media	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
54. I recommend news stories, videos and links that I receive on social media to others	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

55. I follow views and comments that are made on social media

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

Thanks for your valuable input to this research.

Appendix C – Final Ethics Approval

FINAL APPROVAL NOTICE

Project No.:

Project Title:

Principal Researcher:

Email:

Approval Date:

Ethics Approval Expiry Date:

The above proposed project has been **approved** on the basis of the information contained in the application, its attachments and the information subsequently provided.