UNIVERSITY OF SOUTHAMPTON

Faculty of Physical and Applied Science

School of Electronics and Computer Science

Social Media Acceptance and Use under Risk: A Cross-Cultural Study of the Impact of Antisocial Behaviour on the Use of Twitter

by

Nora AlMuhanna

Thesis for the degree of Doctor of Philosophy in Computer Science

February 2017

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF PHYSICAL SCIENCES AND ENGINEERING

Electronics and Computer Science

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SOCIAL MEDIA ACCEPTANCE AND USE UNDER RISK: A CROSS-CULTURAL STUDY OF THE IMPACT OF ANTISOCIAL BEHAVIOUR ON THE USE OF TWITTER

By Nora Mohammad AlMuhanna

The problem of online antisocial behaviour is increasingly attracting public attention and is compromising the quality of online communities. Previous research into online hostility has looked at different aspects of the problem, such as definitions, classification, or specific case studies in different cyberspaces; however, the impact of antisocial behaviour on social media users remain unclear. The purpose of this research, therefore, is to investigate the impact of antisocial behaviour on social media users, specifically on Twitter (as one of the controversial cyberspaces in which antisocial behaviour is common). Furthermore, since culture plays an important role in how people use social media and interact with each other, the study investigates the impact within one western and one non-western culture, namely the Anglophone and the Saudi Arabian cultures. One approach to understanding how people use a certain technology is through technology acceptance models and theories. Hence, this study proposes a new model, called the Technology Acceptance and Use under Risk (TAUR) model, which is based on the Unified Theory of Acceptance and Use of Technology (UTAUT). The TAUR model integrates the perception of antisocial behaviour as a risk factor with other factors drawn from sociology. The model is derived from the literature and has been validated through expert reviews using semi-structured interviews. The study follows a sequential mixed methods design that gathers qualitative and quantitative data in an ordered sequence. The first phase, which included interviews with twelve experts from different disciplines, lent support to the TAUR model and inspired improvements. The second phase included a large-scale quantitative study that gathered data from 740 participants through an online questionnaire; the model was then assessed

using Structural Equation Modelling (SEM) for the two different cultures. Lastly, the results were further explained through semi-structured follow-up interviews with 20 participants from both cultures. The results demonstrated that the TAUR model achieved a good fit with the data. The main finding was that the perception of antisocial behaviour does impose limitations on Twitter use, as the evidence obtained from the quantitative analysis shows that it has a negative interaction with the other factors influencing Twitter use. The subsequent qualitative analysis also supported the results by explaining how Twitter use is being restricted by perceptions of antisocial behaviour. The study also shows that performance expectancy from Twitter is a major influence on its use, despite the problem of antisocial behaviour. The research contributes to the body of knowledge in the fields of technology acceptance research, social media, and cross-cultural research theoretically, methodologically, and practically. It also demonstrates that the perceived risk of antisocial behaviour online has an effect on social media use.

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DECLARATION OF AUTHORSHIP

I, Nora AlMuhanna, declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Social Media Acceptance and Use under Risk: A Cross-Cultural Study of the Impact of Antisocial Behaviour on the Use of Twitter.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. Parts of this work have been published as:

   AlMuhanna, Nora, Hall, Wendy, Millard, David E. "Modeling Twitter Acceptance and Use under the Risk of Antisocial Behaviour", WebSci '16, ACM, May 22-25, 2016, Hannover, Germany.

Signed: .....

Date: .....

Acknowledgements

First and foremost, all praise be to Allah for giving me the strength to complete this work. May he help me to pursue this path and help others with what I have learnt.

I owe my sincere gratitude to my supervisors Prof. Dame Wendy Hall and Dr. David Millard for their enthusiastic supervision, invaluable effort, and continued guidance throughout the course of my PhD. I would not have been able to complete it without their kind support and supervision.

I would also like to thank my examiners, Dr. Gary Wills and Dr. Lisa Harris, for their insightful comments and guidance that helped in improving this work.

My gratitude extends to Jane Morgan for her kind support and help in the past years and to Dr. John Schulz for his support and insightful comments in statistical analysis. I am also very grateful to all those who agreed to take part in the research.

I acknowledge the intellectual environment provided by the University of Southampton and its Electronics and Computer Science Department. My acknowledgment also extends to the government of Saudi Arabia and to King Saud University, who have given me the financial support for my PhD.

I am incredibly grateful to my dear parents for their unconditional love and support throughout my life which has brought me to where I am now. And I would also like to express my sincere gratitude to my siblings, and to my in-laws for their love, encouragement, and prayers that have helped me along the way.

Most of all, I would like to express my profound gratitude to my dear husband Ahmad, for his support, patience, continued encouragement and love throughout — I would never have achieved my dreams without him. And finally, I must thank my beloved daughters, Linda and Laura, for being such a welcome distraction during my studies and for bringing love and joy to my life.

List of Abbreviations

UTAUT	Unified Theory of Acceptance and Use of Technology
TAUR	Technology Acceptance and Use under Risk
SNSs	Social Networking Sites
CMC	Computer Mediated Communication
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behaviour
TAM	Technology Acceptance Model
DOI	Diffusion of innovations
MPCU	Model of Personal Computer Utilization
SPI	Self-Provided Information
OPI	Others' Provided Information
PE	Performance Expectancy
EE	Effort Expectancy
SI	Social Influence
FC	Facilitating Conditions
SP	Self-Presentation
PSP	Protective Self-Presentations
PAB	Perception of Antisocial Behaviour
PU	Perceived Usefulness
OE	Outcome Expectations
PEU	Perceived Ease of Use
PBC	Perceived Behavioural Control
SN	Subjective Norm
CI	Community Identification
SEM	Structural Equation Modelling
AVE	Average Variance Extracted
CR	Critical Ratio

Chapter 1: Introduction

The development of the Web is one of the most technologically and socially significant advances of the late twentieth and early twenty-first centuries. From its origins as a web of documents it has evolved into a unique ecosystem encompassing technology and people, and it is growing larger every day. User interactions on the Web greatly increased as Web 2.0 websites became available, allowing everyday users to contribute to the content of the Web (O'Reilly, 2005). Millions of people now use Social Networking Sites (SNSs) to communicate on a daily basis, but despite the huge benefits that SNSs have brought, users sometimes show antisocial behaviour online, which can be disturbing and harmful to online communities. Web science posits that it is crucial to understand the how we use Web technology to interact with each other in order to obtain insights that help in building better systems and addressing problems such as online antisocial behaviour (Berners-Lee et al., 2006).

'Trolling' or 'flaming' are widespread forms of online antisocial behaviour (sometimes also called online hostility, antagonism, hating, or cyberbullying), which can compromise users' enjoyment of online communities. Research into online hostility is multidisciplinary and the problem has been investigated from various different standpoints. Most of the studies which have been published, however, are qualitative and focus on specific case studies within certain cyberspaces, revealing a marked lack of empirical research in this area (Dlala et al., 2014). Some previous examples include studying trolling on Facebook memorial pages (Phillips, 2011), on feminists forums (Herring et al., 2002), or on Wikipedia (Shachaf and Hara, 2010).

Risk refers to the possibility of losing something of value such as social status, or emotional wellbeing (Kungwani, 2014). It also refers to the consequence of action taken regardless of uncertainty (Antunes & Gonzalez, 2015), or to an unwanted event which may or may not happen (Hansson, 2014). The term 'risk' mentioned in this thesis refers to the consequences of perceiving antisocial behaviour while using Twitter; theses may include bad feelings, emotional harm, or the social image being negatively affected. The term 'perception' refers to the interpretation of sensation in order to form a mental representation (Schacter et al., 2011).

Although previous studies of technology acceptance have considered the economic risk factors associated with internet banking, online shopping and other e-services (Im et al., 2008; Martins et al., 2014), it seems that online hostility has been entirely neglected in the literature of technology acceptance and use with regard to online communities. In 2015, for example, a systematic literature review of 38 studies between 2002 and 2014 discussed

empirical studies of online community participation and pointed out that no research had been conducted on online antisocial behaviour. The review also highlighted that some kinds of active participation may be destructive for online communities (Malinen, 2015).

The resilience of online communities and how users cope with online systems, given the risks that they may face, remains unclear and the work in this thesis aims to shed light on this area. To understand how online antisocial behaviour affects online communities on a larger scale, this study derives a new model called Technology Acceptance and Use under Risk (TAUR), which is based on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), and extends it with constructs representing the perception of antisocial behaviour as a risk factor and two additional supporting constructs drawn from sociology; these are strategic self-presentation and protective self-presentation (Goffman, 1959; Rui and Stefanone, 2013). The view of this research is that combining these constructs and integrating them within the UTAUT model will help to gain a better understanding of how antisocial behaviour affects technology use and how individuals react to it and cope with it.

Integrating the perception of antisocial behaviour within a technology acceptance model (the UTAUT in this case) not only allows us to measure its impact empirically, but could also highlight the factors which are most affected by this problem as well as the direction and strength of the effect.

Twitter has been chosen as the target cyberspace for the work reported in this thesis as it is reported to be one of the most problematic platforms with regard to antisocial behaviour (Curtis, 2015; Hern, 2015). Applying the TAUR model to Twitter will not only explain the impact of the risk factor, but will also test the applicability of the UTAUT to social media sites. None of the available studies have fully applied the UTAUT model to Twitter, although two related studies made partial use of it, building a model based on the UTAUT to study microblogging in the workplace (Günther and Krasnova, 2009; Schöndienst and Krasnova, 2011). Another study applied a simplified technology acceptance model which reduced the number of factors (Agrifoglio et al., 2010; Jib et al., 2014). In order to address the lack of research in this area, this study aims to provide insights about the applicability of the UTAUT to Twitter.

The study also aims at to extend its scope by examining different cultures. An early phase of the study that includes a number of expert reviews, suggested that culture should play an important role in the model (covered in Chapter 6), the study therefore targets two different cultures, a western culture comprising the Anglophone countries of the UK, USA and Canada, and the non-western Arabic culture of Saudi Arabia. In 2013, Saudi Arabia had the highest penetration of Twitter worldwide (the UK and the US were in sixth and eighth places

respectively[1]). As Twitter is one of the most widely used platforms in these countries, applying the model to both cultures contributes to technology acceptance research by testing the transferability of the UTAUT to a non-western culture, as it was developed and tested in a western culture. It also highlights the cultural differences in Twitter use and how users in the two cultures perceive the risk of antisocial behaviour online.

1.1 The Rational Behind Choosing Twitter

As mentioned earlier, the impact of online antisocial behaviour on social media use is still not clear, and there is a lack of empirical evidence on how it affects social media use. The use of Twitter in particular needs to be investigated in the context of this problem. The following sections explain the motivation behind choosing Twitter to study the impact of online antisocial behaviour.

1.1.1 What is Twitter and why study it?

Twitter is a microblogging platform where registered users post 140-character messages called 'tweets', and it is one of the most popular social networks on the Web[2]. By the second quarter of 2014, Twitter had 271 million monthly active users with about 500 million tweets sent per day[3]. Due to its popularity, Twitter is used by many government agencies, news media outlets, businesses, popular public figures, educators, marketers, celebrities, and others. Twitter has become embedded in people's lives as they use it for diverse purposes such as complaining about products, breaking news, discussing political issues, sharing celebrity gossip and even describing what they are eating for lunch (Miller, 2009; Sagolla, 2009). It is becoming a global phenomenon that is growing every day, incorporating more users and posts. More importantly, Twitter has become a precious source of open data and digital traces that could give insights about people's behaviour, cultures, moods, consumption patterns, and choices. All of this provides great motivation to study Twitter and researchers have explored its impact within disciplines such as education (Al-Khalifa, 2008; Grosseck & Holotescu, 2008; Mahrt, Weller, & Peters, 2014), crisis communication (Heverin and Zach, 2010; Schultz et al., 2011) and business branding and promotion (Greer and Ferguson, 2011; Jansen and Zhang, 2009; Page, 2012).

[1] Source: http://peerreach.com/. November, 2013. Penetration is defined as the number of monthly active users relative to the total number of internet users in the country.
[2] (Twitter Inc, About us, March, 2015, Retrieved from: http://twitter.com/about)
[3] (Twitter - Statistics & Facts | Statista, March, 2015, Retrieved from:www.statista.com/topics/737/twitter)

1.1.2 Online Antisocial Behaviour on Twitter

According to the annual cyberbullying survey[4] conducted in 2013, Twitter was found to be one of the most likely sources of cyberbullying, among others such as Facebook and Ask.FM. The survey reported that 43% of their sample used Twitter, and of that, 28% had experienced cyberbullying. Another more recent study by the football anti-discrimination organisation, Kick It, revealed that 88% of 134,000 abusive comments against football players happened on Twitter (Conn, 2015). Flaming and trolling on Twitter have become a prominent phenomenon that has driven researchers in computer science and other disciplines to investigate it using different computational techniques and other methods. A number of studies are briefly reviewed here to illustrate the size of the problem on Twitter.

Younus et al. (2014), for example, employed sentiment analysis techniques to analyse 11,024 tweets during the Pakistan Elections of 2013. The analysis revealed remarkable negative scores caused by the use of negative sentiment words and political attacks within Twitter conversations, and showed that flaming was highly prevalent between almost all pairs of political parties in Pakistan. The same problem in a different context was identified by Galán-García et al. (2014), who also employed machine learning to detect troll profiles on Twitter. They worked on associating fake abusive profiles with a real profile within the same network by analysing the content of the tweets generated by both profiles, and their method was applied to detect and stop a real cyberbullying case in an elementary school.

Moreover, Yamagata et al. (2013) studied Twitter flaming in Japan, drawing examples from real cases of flaming on Twitter that had severe consequences in reality. Also, Xu et al. (2012) identified seven emotions related to bullying on Twitter and applied sentiment analysis through machine learning to 3,001,427 bullying traces. They found that half of the emotions were fear, followed by sadness, anger and relief, while embarrassment, empathy and pride were virtually absent. In addition, for the purpose of multimedia forensics evidence, Bishop (2014a) employed a corpus linguistics approach to identify abusive tweets made against famous women and public figures over three years.

Twitter trolling has also been a leading topic in the media, where hundreds of news articles have appeared on the subject. In February 2015, The Guardian published an article stating how the Twitter CEO was frustrated with the trolling situation on Twitter, showing how deep the problem has become. He stated that Twitter was losing core users because of this problem and that the situation is embarrassing and needs to be controlled (Hern, 2015). It was also reported that many celebrities and public figures stopped their Twitter accounts because of abuse (Cohen,

[4] The survey was conducted in the period between 28th August - 10th September 2013, with total sample size of 10,008 young people aged 13-22. (67% from the UK, 17% from the USA, 12% from Australia and 4% were from other countries.)(*The Annual Cyber Bullying Survey: Cyber Bullying Statistics*, 2013) Available online: http://www.ditchthelabel.org/annual-cyber-bullying-survey-cyber-bullying-statistics/

2015). One of many examples is the blogger Jack Monroe who posted a tweet on his Twitter account saying "*There's been a lot of kindness & I'm very thankful but the hate/vitriol is suffocating and don't feel this is a safe place to be. Sorry.*" (McVeigh, 2015). Later in August 2016[5], Twitter announced the release of a new 'quality' filter to help its users to filter out abusive tweets; however, it is not yet known yet if this filter is actually effective or not. To conclude, despite the fact that Twitter has successfully been used for many different purposes, as a social network it has a problem with antisocial behaviour and this needs to be investigated.

1.2 Research Purpose and Questions

This study aims to understand the impact of online antisocial behaviour on Twitter use. The main research question is:

How does the perception of antisocial behaviour affect Twitter use?

As discussed in the previous sections, technology acceptance and use theories and models have rarely considered risk or negative factors, and online hostility in particular has never been included as a risk factor within any model. In addition, the literature on online hostility lacks empirical studies to explain the impact of antisocial behaviour in technology use. This research therefore aims to fill these gaps by proposing the TAUR model, which extends the UTAUT to include the perceived risk of antisocial behaviour, and applying it to Twitter. The investigation will be further extended to be cross-cultural, as this will add more value to the findings by showing the role of cultural differences in the context of the given problem and within the proposed model.

In order to answer the research question, a detailed review of the literature around online antisocial behaviour and technology use was conducted, and then the UTAUT model was chosen as a base model in addition to other constructs drawn from sociology, namely self-presentation, and protective self-presentation. It was decided to investigate the problem with reference to two different cultures, the Anglophone and the Saudi Arabian. This invited further sub-questions as follows:

a. How can the UTAUT be extended to explain the effect of antisocial behaviour on Twitter?
b. How do self-presentation and protective self-presentation affect the factors of the proposed model?
c. Does the original relationship in the UTAUT model hold for the proposed model with regard to Twitter?
d. Is the proposed model transferable to the Saudi culture? And what are the cultural differences between the Anglophone countries and Saudi Arabia?

---

5 "New Ways to Control Your Experience on Twitter", Twitter Blog, August, 2016. Retrieved from: https://blog.twitter.com/2016/new-ways-to-control-your-experience-on-twitter.

Figure 1.1 shows a broad overview of the research phases followed in this study in order to answer the research questions.

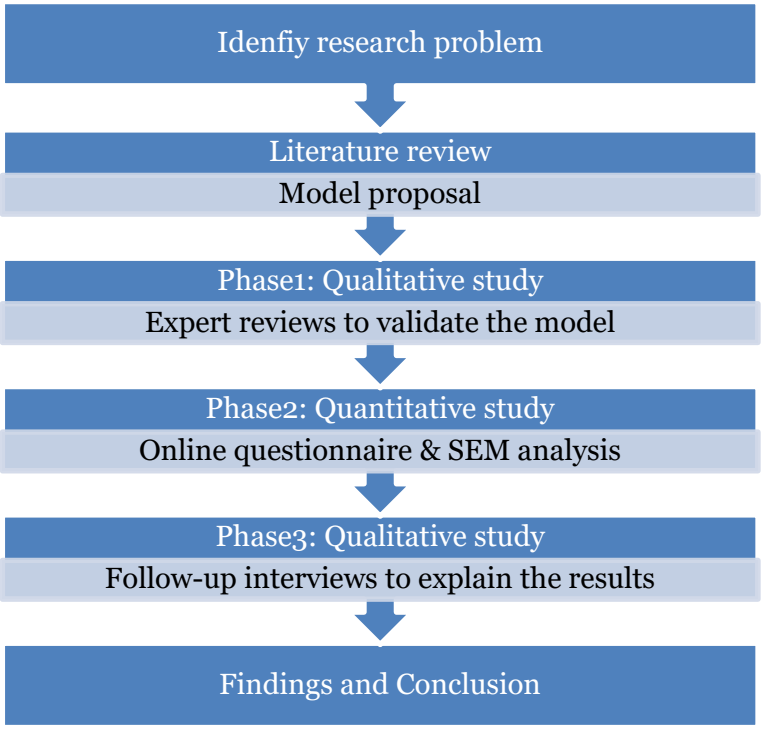

Figure 1.1 Broad overview of the research process.

1.3 Research Contribution

This study adds to the body of knowledge on technology acceptance and online antisocial behaviour in the following ways:

- It proposes a new model called Technology Acceptance and Use under Risk (TAUR), which is extended from the UTAUT model and incorporates the risk of antisocial behaviour on technology use. It also integrates the concepts of self-presentation within the new model.
- It evaluates the model empirically using Structural Equation Modelling in two different cultures, the Anglophone and the Saudi.
- It provides a further validation of the UTAUT base model by testing its viability on Twitter and on a non-western culture.
- It provides empirical evidence for the impact of antisocial behaviour on Twitter use, and further explains this evidence in a subsequent qualitative study.
- It identifies and explains cultural differences in Twitter use between Anglophone and Saudi cultures.

1.4 Structure of the Report

The remainder of the thesis is structured as follows:

Chapter 2 presents basic background knowledge on the topic of online antisocial behaviour and lays out the definitions of the related terms used to describe online hostility, placing them into a historical context. Then, it reviews previous studies in the literature and attempts to group and classify them, highlighting those areas and cyberspaces that have received more attention than others, and identifying the gaps in the literature concerning online hostility.

Chapter 3 reviews the most common technology acceptance theories and models, explaining the evolution of each and the different factors they use. The chapter then presents the different cultural frameworks, explaining the commonly used ones and how the concept of culture is being tackled within technology acceptance research.

Chapter 4 discusses research methods and gives a detailed description of the overall design of the research in this thesis. The study uses sequential mixed methods, which are carried out in three phases: an expert review interview, an online questionnaire, and a follow-up interview. These phases are dealt with in greater detail in subsequent chapters.

Chapter 5 presents the proposed model by this study, describing how it was drawn from the literature and then extended based on the UTAUT. The model constructs are then described in more detail and the model is illustrated at the end of the chapter.

Chapter 6 presents the first phase of this study, which is mainly qualitative, and in which experts in the field were interviewed to validate the initial proposed model. The design of the interviews is explained, followed by the results and discussion.

Chapter 7 presents the design, analysis, and results of the second phase of the study, which is the online questionnaire. It starts by describing the design and the pilot, and then goes on to discuss the statistical analysis using Structural Equation Modelling.

Chapter 8 presents the design and results of the final phase of the study, which is the follow-up interviews. It describes the design process as well as the qualitative, thematic analysis which is used.

Chapter 9 provides a more detailed discussion of the results obtained from the previous phases and draws conclusions from the findings.

Chapter 10 summarises the overall research and concludes the study by presenting the research contributions, limitations, future work, and implications and recommendations.

Chapter 2: Background and Literature Review

This chapter provides the essential background knowledge of the topic of antisocial behaviour on the Web and reviews the literature around it. It first looks at online antisocial behaviour, its definitions and how it evolved from the early days of the Web until now. Then, it reviews how scholars from different disciplines have tackled this problem in order to discover the areas that have received the least attention. After that, it presents the concepts related to strategic self-presentation online as an important online behaviour to be integrated in the proposed model which is designed aiming to understand the impact of antisocial behaviour on the different aspects of Twitter use.

2.1 Research into Online Antisocial Behaviour

Antisocial behaviour can be defined as conduct that lacks consideration or causes harm to others (Berger, 2003). In some countries it has a legal definition, for example in the UK it is described in the Crime and Disorder Act as "... an anti-social manner, that is to say, in a manner that caused or was likely to cause harassment, alarm or distress to one or more persons ..." (Crime and Disorder Act, 1998, s1(1)(a)).

Online antisocial behaviour has a relatively long history and has become more prevalent and persistent in recent years, possibly due to the widespread use of online social networks such as Twitter, Facebook, YouTube, and others. Such behaviour was referred to as cyberbullying in the 2000's, but is currently often referred to as Internet trolling, the word 'troll' being one of the fastest spreading computer-related jargon words of the 21st century (Bishop, 2013a). There are many other terms used in the literature to describe online antisocial behaviour, such as flaming, hating, provocation, and antagonism. The term 'flaming' used to be common in the literature and is still used by some authors; however, due to high usage by the media, 'trolling' is now the most frequently used word to describe online antisocial behaviour. As early as 2006 the word 'troll' featured in the "Top 50 Newbie Terms Everyone Needs to Know" in NetLingo, the Internet Dictionary (Jansen, 2006). Table 2.1 gives examples extracted from different newspapers articles about trolling to illustrate how the word is being used in common parlance.

According to the Oxford English Dictionary, the word troll refers to "an ugly cave-dwelling creature depicted as either a giant or a dwarf" in early Scandinavian folklore which originates from Old Norse. It also refers to a fishing practice which is performed by trailing a baited line along behind a boat (Oxford dictionary, n.d.). Some researchers described it as a mythological creature living under a bridge waiting for an opportunity to pounce (Herring et al., 2002).

However, the word 'troll' has a different meaning on the Web which has somehow been distilled from the previous definitions. To troll online is to "make a deliberately offensive or provocative online post with the aim of upsetting someone or eliciting an angry response from them" (Oxford Reference - Dictionary of the Internet," n.d.)

The meaning of the word has been changing since the late 1980's where it was first used in UseNet groups (Schwartz, 2008). Early research in computer mediated communication (CMC) had looked into this phenomenon and described it, but researchers are still trying to define the word academically in a way that could help to classify the actual evolving behaviour.

"Trolling has evolved from ironic solo skit to vicious group hunt."	(Schwartz, New York Times, August, 2008)
"The term 'troll' was described in court as someone who creates new identities on Facebook accounts and then posts numerous offensive comments to upset or provoke a reaction from others."	(BBC, October, 2010)
"Trolling is now the internet pastime of the bored, insecure and antisocial trying to bait members of the community into descending to their level gutter boors. It is bullying and puerile name calling, pure and simple."	(Wright, Sydney Morning Herald, September, 2012)
"I played with trolls as a child. They had big tufty hair and natty outfits. Sadly, the word and the world have moved on. Troll now means, to most people, someone who fires off foul abuse online, relentlessly attacking someone they have taken against."	(Wright, The Telegraph, September, 2012)
"Trolling, the act of posting disruptive or inflammatory comments online in order to provoke fellow readers, has been the focus of much recent attention."	(Chamorro-Premuzic, The Guardian, September 2014)
"To hear people talk about trolls in April 2013 is so different than people talked about it even in 2011"	(Phillips in: Benson, New York Magazine, April, 2013)

Table 2.1 How the media describes 'trolling.'

We can conclude that 'trolling' is a mutated term, or, as Hardaker (2013) described it, as an 'all-encapsulating' term that tends to take its definition from the media, intuition, and online ephemera like *The Troller's FAQ* (1996)[6]. It was used to describe harmless provocation for mutual enjoyment in UseNet groups back in the 1990's, but it is now being used to describe more aggressive and harmful behaviour online that is meant to upset others solely for the troll's enjoyment. In general, the phenomenon of abusive trolling,

6 Andrew, 1996. The Troller's FAQ. http://www.altairiv.demon.co.uk/afaq/posts/trollfaq.html

cyberbullying and antisocial online behaviour has significantly increased with the rise of online social networks that have facilitated interaction between users.

2.1.1 Definitions and Related Terms

Online hostility has been addressed using different terms in the literature, such as flaming, trolling and provocation. Jane (2012) has discussed the disconnect between the representation of what she calls 'e-bile' in the media and in the academic literature. Her use of the term e-bile encompasses trolling, flaming, cyberbullying and other forms of online hostility, which she defines as "the extravagant invective, the sexualized threats of violence, and the recreational nastiness that have come to constitute a dominant tenor of Internet". She asserts that online hostility is becoming more prevalent and is getting uglier (Jane, 2012). This shows how online antisocial behaviour is problematic in general regardless of the terminology used to describe it. However, we have to look at the literature to understand how different researchers have defined their terms in order to broaden our understanding of the phenomenon and to obtain more insight into the evolution of this behaviour.

Defining trolling and other terms related to online hostility can be difficult and very controversial (Lange, 2006; O'Sullivan & Flanagin, 2003). Academic definitions of trolling are somehow scarce, Hopkinson (2013) states that while the phenomenon of trolling is discussed frequently in the media, it has remained on the side-lines of academic research. In this section, we first place the term 'troll' in its historical context, looking at early works that discussed it academically in the 1990's. We then overview academic definitions of trolling as well as other related terms, and compare and contrast these where possible. Table 2.2 lists definitions of trolling, flaming and cyberbullying, and in the following paragraphs we examine the existing literature that has attempted to describe or define online trolling.

One of the earliest discussions of trolling is found in Tepper (1997), who explained how trolling can demonstrate group membership, since those who rise to the troll's bait are the novice out-group members, while in-group members recognise trolls more easily and are less likely to fall into the trap of replying to their comments.

Donath (1999) was perhaps the first to explain trolling practices in more detail academically by defining it in the context of Usenet discussion newsgroups. She described trolling as a game of identity deception, where the troll tries to participate in a legitimate way by seeming to share the group's interests and concerns. She explains trolling behaviour as damaging and disruptive to newsgroup discussions and to community trust. In an ongoing discussion on Usenet newsgroups, Donath quoted a user who is trying to point out that another user is actually a troll:

> "*Are you familiar with fishing? Trolling is where you set your fishing lines in the water and then slowly go back and forth dragging the bait and hoping for a bite. Trolling on the Net is the same concept - someone baits a post and then waits for the bite on the line and then enjoys the ensuing fight*" (Donath, 1999).

Dahlberg (2001), in his research on how the Web enhances the public sphere, investigated several factors including lack of respectful listening to others as well as the difficulty of verifying identity and information put forward. In his work, the terms 'flaming' and 'trolling' were used to define different but intersecting behaviours. He described flaming to be "antithetical to respectful listening", and this has been attributed by some observers to the 'disinhibiting effects' of computer mediated communication, and he elaborates on Donath's definition of a troll (Donath, 1999) by explaining that "after developing their false identity and becoming accepted within a group, the troll sets about disrupting proceedings while trying to maintain his or her cover".

In Herring et al. (2002), trolling was defined as "luring others into pointless and time consuming discussions" by beginning with a message that is "intentionally incorrect but not overly controversial." Similarly, Turner et al. (2005) define trolling as causing disruption within a newsgroup by asking provocative questions.

Later, in 2010, Shachaf and Hara defined trolling by combining Donath's (1999) and Herring et al.'s (2002) definitions. Morissey (2010) has also extended these two definitions of trolling thus: "trolling is an utterer producing an intentionally false or incorrect utterance with high-order intention (the plan) to elicit from recipient a particular response, generally negative or violent (with some exceptions)."

Since 2011, trolling definitions have been specifically related to malicious intent, harm, and discomfort, rather than simply referring to deception or provocation (Bergstrom, 2011; Buckels et al., 2014; Hardaker, 2013). Bergstrom says that to troll is "to have negative intents, to wish harm or at least discomfort upon one's audience," and elaborates that "to be trolled is to be made a victim, to be caught along in the undertow and be the butt of someone else's joke" (Bergstrom, 2011).

From a linguistics point of view, Hardaker (2010) proposed a working definition of trolling based on analysing a large corpus of CMC, taking examples from 172-million-word user conversations in UseNet news-groups. The definition is:

> "*A troller is a CMC user who constructs the pseudo-identity of sincerely wishing to be part of the group in question, including professing, or conveying ostensibly sincere intentions, but whose real intention(s) is/are to cause disruption and/or to trigger or exacerbate conflict for its own sake. Trolling can be:*

1) *frustrated if users interpret trolling intent, but are not provoked into responding,*
2) *thwarted if users interpret trolling intent, but curtail or neutralise its success,*
3) *failed if users do not interpret trolling intent to troll and are not provoked, or*
4) *successful if users are provoked into responding sincerely.*

Finally, users can mock troll. That is, they may undertake behaviour that appears to be trolling, but that actually aims to enhance or increase affect, or group cohesion." (Hardaker, 2010).

Later in 2013, Hardaker studied trolling strategies in order to discover more about trolling behaviour, and then redefined trolling as:

> *"the deliberate (perceived) use of impoliteness/aggression, deception and/or manipulation in CMC to create a context conducive to triggering or antagonising conflict, typically for amusement's sake"* (Hardaker, 2013).

Similar to Hardaker's definition but without specifying the motive, Buckels et al. (2014), who studied trolls' personalities, defined trolling as "the practice of behaving in a deceptive, destructive, or disruptive manner in a social setting on the Internet with no apparent instrumental purpose".

Moving to the term 'flaming', this was defined by O'Sullivan and Flanagin (2003) as "hostile and aggressive interactions via text-based computer mediated communication", and Moor (2007) has described it as "displaying hostility by insulting, swearing or using otherwise offensive language".

The term 'flaming' is very controversial in the literature (Lange, 2006; O'Sullivan & Flanagin, 2003). For example, Lange (2006) argues that the term is overused and may have no theoretical value at all. She disagrees with O'Sullivan and Flanagin (2003) that the solution lies in finding a more precise definition for flaming, and advocates abandoning the term 'flaming' itself because "retaining the term in scholarly research smuggles in certain theoretical assumptions that may or may not be true." She argues that labelling messages as flames might engage researchers unknowingly in a moral categorization task that takes sides. However, she explains that the term is still being used in the literature as an 'inside' term used by social scientists and other online researchers in the technical community to indicate their understanding of the characteristics of online interaction.

Looking at the different definitions of flaming and recent definitions of trolling, it can be seen that they intersect in describing hostile provocative behaviour and researchers sometimes conflate the two terms; see Baker (2006) for an example. Moreover, Karppi (2013) tends to merge the term trolling with flaming to describe behaviour that insults,

provokes or rebukes other users, as the case in the media, where many terms are used synonymously. He argues that although some authors differentiate the terms conceptually by linking trolling to personal enjoyment and flaming to emotional distress, the two affect the social order with similar intensities. To other researchers, although flaming is aggressive and manipulative, it differs from trolling in that it is not deceptive (Hardaker, 2013). Additionally, while the ultimate goal of a troll is usually his or her own enjoyment, this differs in the case of flamers, who aim to win the argument by using sometimes harsh, offensive language (Turner et al., 2005). For Herring et al. (2002), trolling and flaming also have different meanings. For these authors, flaming comprises sending a message that is intended to insult, provoke or rebuke others and differs from trolling in that it aims to incite readers, while the stereotypical troll's goal is to draw in naive or vulnerable readers or 'newbies'. Like Karppi (2013), our study tends to merge the two terms as the term 'troll' is now frequently used to describe more hostile actions. However, it is important to classify trolling behaviour, for example, we can distinguish between flame-bait trolling, transgressive trolling, kudos trolling and harmless trolling (Bishop, 2013a).

The literature is rich with studies relating to cyberbullying, which is defined as "electronic forms of peer harassment" (Strom & Strom, 2008), or "bullying via electronic communication tools" (Li, 2007), and there is a clear similarity between the essence of the actions invested in trolling, flaming, and cyberbullying in terms of its antagonistic nature and the fact that both are considered as forms of antisocial behaviour; however, the literature of cyberbullying differs from trolling or flaming since it was mostly studied in regard to the online behaviour of adolescents and school students (Betts, 2016; Dillon & Bushman, 2015; Li, 2007; Liebenberg, 2016; Mahon, 2008; Nadkarni & Hofmann, 2012; Smith et al., 2006; Strom & Strom, 2008). Cyberbullying usually includes 'peers' and occurs within groups with a common relationship, such as students from the same school or any other common venue. It usually involves people who are known to each other despite the fact that the bully can choose to hide his or her identity (Whittaker & Kowalski, 2015). Trolling, on the other hand, is often performed by someone without a clear relationship to the intended recipient and is mainly done to provoke a reaction, with the enjoyment coming afterwards[7,8]. Another difference is that unlike trolling, cyberbullying is also described as a repetitive behaviour towards the same victim (Dooley et al., 2010; Smith et al., 2008). Thus, cyberbullying as a collective behaviour among adolescents is out of the scope of this work.

Finally, agreeing on a precise definition of trolling can be very challenging and controversial. The term has evolved to describe different behaviours in many different contexts across the Web, and is now becoming an umbrella word covering many other terms

[7] ("Trolling vs Bullying," ThinkUKnow.org.au newsletter, vol 3, issue 10.)
[8] (McDunnigan, Science - Opposing Views)

and behaviours as well. McCosker (2013) argues that it is possible to draw a broader concept of 'provocation' from the different terms used to describe online hostility like trolling, flaming, or hating. Whelan (2013) states that we are not in a position to make any judgment about the term because we still don't know what trolling really is. Moreover, Hopkinson (2013) clarifies that the term is fuzzy and means different things to different people, that it is applied broadly to describe different forms of negative online behaviour, and that users' definitions of trolling may vary depending on the context. By reviewing the literature one can see that it is clearly difficult to define online hostility. However, Jane (2015) suggests that one of the solutions to the challenges of researching the area is to relax the definition of flaming or trolling. It can be also argued that investigating this problem in the different available contexts around the Web is crucial to gaining a better understanding and building up the knowledge base around the topic, as more empirical research could give insights into the different issues involved.

Figure 2.1 Word cloud created using the academic definitions of online hostility listed in table 2.2

Citation	Term	Definition
(Herring et al., 2002)	Troll/Trolling	"Luring others into pointless and time consuming discussions."
(Turner et al., 2005)		"A Troll is someone who mostly initiates threads with seemingly legitimate questions or conversation starters. However, the ultimate goal of a Troll is to draw unwitting others into useless discussions"
(Shin, 2008)		"A troll is a person who interrupts communications on the Internet, and often seen as problematic or even criminals."
(Morissey, 2010)		"trolling is an utterer producing an intentionally false or incorrect utterance with high order intention [the plan] to elicit from recipient a particular response, generally negative or violent"
(Lanier, 2010)		A troll is "an anonymous person who is abusive in an online environment"
(Bergstrom, 2011)		To troll is to have negative intents, to wish harm or at least discomfort upon one's audience.
(Phillips, 2011)		"RIP trolling — in which online instigators post abusive comments and images onto pages created for and dedicated to the deceased"
(Bishop, 2013b)		Technically means "sending of provocative messages via a communications platform for the entertainment of oneself, others, or both"
(Hardaker, 2013)		"Trolling is the deliberate (perceived) use of impoliteness/aggression, deception and/or manipulation in CMC to create a context conducive to triggering or antagonising conflict, typically for amusement's sake."
(Buckels et al., 2014)		"Online trolling is the practice of behaving in a deceptive, destructive, or disruptive manner in a social setting on the Internet with no apparent instrumental purpose."
(Aiken & Waller, 2000)	Flaming	"Comments intended to offend others. While somewhat subjective, at the extreme flaming includes obscenities and other inappropriate comments"
(Kaufer, 2000)		"Computer-mediated communication designed to intimidate the interlocutor by withholding the expected courtesies of polite communication. Sometimes the withholding of respect takes the form of direct aggressiveness against the interlocutor"
(O'Sullivan & Flanagin, 2003)		"hostile and aggressive interactions via text-based computer mediated communication"
(Turner et al., 2005)		"Flame Warriors violate the open spirit of conversation and the acceptance of communion with harsh, negative debate. The primary goal of a Flame warrior is to "win" an argument"
(Moor, 2007)		"Flaming defined as displaying hostility by insulting, swearing or using otherwise offensive language"
(Li, 2007)	Cyberbullying	"Bullying via electronic communication tools."
(Smith et al., 2008)		"an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself."
(Strom & Strom, 2008)		"Electronic forms of peer harassment… Involves using an electronic medium to threaten or harm others. E-mail, chat rooms, cell phones, instant messaging, pagers, text messaging, and online voting booths are tools use d to inflict humiliation, fear, and a sense of helplessness."
(Whittaker & Kowalski, 2015)		"When we say cyberbullied, we mean bullied through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone. "

Table 2.2 Online hostility related terms and definitions.

2.1.2 Reasons Behind Antisocial Behaviour Online

This section gives a brief description of some of the common reasons behind trolling behaviour discussed in the literature. The most common justification for how people change their normal behaviour online is called: the online disinhibition effect (Suler & Ph, 2004). People say things that they would not normally say face-to-face. Suler lists six factors that interact with each other causing this effect. They include: anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority (Suler & Ph, 2004). Anonymity is one of the key factors that create the disinhibition effect, it leads to loss of self-awareness and a sense of impunity. When anonymous, people are more likely to act in an inhibited way revealing lack of consideration for others online (Sia et al., 2002). This disinhibition effect can possibly lead to antisocial behaviour online (Douglas & McGarty, 2001). Researchers also pointed out that people can troll each other online just for amusement's sake, where their intentions may vary from being harmless and funny to deliberately wanting to cause harm (Hardaker, 2013; Moor et al. , 2010). In addition, psychologists who studied trolls behaviour found that trolling correlated positively with sadism, psychopathy, and Machiavellianism (Buckels et al., 2014).

2.1.3 Previous Work on Online Hostility

Research on online hostility can be difficult, perhaps because it is multidisciplinary in nature. Some researchers have studied the phenomenon from a linguistic point of view (Hardaker, 2010; Hardaker & McGlashan, 2016), others have looked at its physiological and social impact (Buckels et al., 2014; Maltby et al., 2016; van Geel et al., 2014), its criminal and legal aspects (Bishop, 2013a; El Asam & Samara, 2016), and its immorality (Shin, 2008). Furthermore, some have looked into a specific cyberspace and studied a particular problem such as trolling on Facebook memorial pages (Phillips, 2011), trolling on feminist online forums (Herring et al., 2002), YouTube (Lange, 2007; Moor et al., 2010) and other cyberspaces. Others have discussed and argued over definitions and when to label messages as flames (Jane, 2012, 2015; Kaufer, 2000; Lange, 2006; O'Sullivan & Flanagin, 2003; Thompsen & Foulger, 1996), and have described the moral judgment responsibility of the researcher (Lange, 2006).

Early works on flaming within CMC tend to be classified into two opposing points of view. The first is that flaming is highly exaggerated and rarely happens on the Internet (Lea et al., 1992), while the later suggests that it is a common online phenomenon (Thompsen & Foulger, 1996; Wallace, 1999). Jane (2015) classifies online hostility research into three waves. The first wave, in which interest in CMC emerged in the 1980s, mostly discussed technological determinism, yielding two opposing views of CMC: the first framing it as

'rational, efficient and productive' and the other claiming it is 'irrational, deficient and disruptive' due to uninhibited behaviour.

In the second wave, scholars were disparately trying to find a definition and measures for flaming as a result to a 'perceived insufficient consistency' in the previous studies (Jane, 2015). For example, Thompsen & Foulger (1996) tried to measure the degree of 'socio-emotional intensity' required to turn a message into a flame via a controlled experiment in which participants looked at pictographs and rated their perception of messages as flames. Their model has five temporal stages, from divergence of opinion to profane antagonism, and their results suggested that "a message will most clearly be perceived as a flame when it expresses antagonism toward another participant". Kaufer (2000) suggested a systemic solution involving the development of flaming-related phrasal dictionaries: 'regular flame' and 'high flame' dictionaries. Similarly, Turnage (2007) proposed a semantic differential system called the Message Invectives Scale to measure the flames. However, perhaps the most influential piece in that area was by O'Sullivan & Flanagin (2003) who argued that no progress can be made unless specific conceptual and operational definitions of flaming are established. They developed a framework to classify 'true' flames from others using the 'interactional norm cube', which is designed from three perspectives (sender, receiver and third-party observer) along another scale relating to the interpretation of the message content, ranging from highly appropriate to highly inappropriate. A message is considered as a 'true' flame if the sender's intent is to violate norms and both the receiver and a third party observer perceive the message as a violation. Despite the fact that O'Sullivan & Flanagin provided a clear procedure to determine whether a message is flame or not, Jane (2015) argues that given the painful nature of flames, the experience of the targets should be given precedence over the experience of flame authors and outsider observers. In some cases, flame targets may choose not to describe messages as flames either out of shame or fear, and in this situation O'Sullivan & Flanagin's 'intentional cube' will fail to identify a true flame.

The third wave is labelled as 'there's nothing to see here, please move along'. And as the label indicates, Jane (2015) characterises this wave by the lack of effort invested in studying the phenomenon. She argues that scholars in this wave either overlook or ignore flaming, and to support this, she shows how the phenomena of flaming and trolling are largely neglected in major works on Internet studies such as *The Oxford Handbook of Internet Studies* (Dutton, 2013), Springer's *The International Handbook of Internet Research* (Hunsinger, Klastrup, & Allen, 2010), and Wiley-Blackwell's *The Handbook of Internet Studies* (Consalvo & Ess, 2011). Others have also overlooked flaming, for example Lange (2006), who justifies this by asserting the term itself is problematic and that researchers might make mistakes by over coding something as a flame when it is not; however, she agrees that hostile messages have "effects". Jane (2015), in contrast, argues that given the

hostile, gendered nature of contemporary flaming, it is worth taking the risk of over coding messages rather than ignoring them completely. Moor et al. (2010) also supports the fact that despite the debate over the definition, flaming is a real problem that should be investigated.

Despite the controversy over definitions and measurements, scholars from various disciplines have studied the phenomenon in different contexts and in specific cyberspaces. Some of these are shown in Table 2.3. Previous studies are grouped based on their study targets, as some have looked closely into the behaviour of people who show online hostility and described their disturbing actions, others have investigated the motivations or the reasons behind these actions, some have discussed the impact of such behaviour and how to control it, while others have tried to define and classify online hostility to gain more understanding around the topic.

Most previous work on online hostility tends to be qualitative and there is a need for more empirical studies (Cheng et al., 2015; Dlala et al., 2014). However, lately there have been a few attempts to carry out more empirical work in the area. For example, Grothe et al. developed and validated a Questionnaire on Counterproductive Online Behaviour (QOCB) through two consecutive studies. The questionnaire contained forty items covering two higher dimensions: constructiveness and destructiveness. The authors' aim was to characterize the people behind trolling in terms of personality traits, and they found that destructiveness was significantly negatively correlated with all work-related outcomes (Grothe et al., 2016).

Exploring previous works on online hostility sheds light on the research obstacles and allows us to discover the areas that have received less attention. It can be concluded that previous research tends to have a very specific target or provides a detailed description of the problem within a certain cyberspace. Although some studies have investigated the impact of online antisocial behaviour via qualitative methods (Lange, 2007b) which are indeed very rich and informative, there is a lack of empirical evidence on how antisocial behaviour affects online communities or how users build resilience against it. Further empirical research will help in understanding and generalizing research findings, which in turn could assist in many aspects ranging from understanding online behaviour to designing better online systems.

Study target	Cyberspace	Citation
Behaviour	Forums	(Herring et al., 2002)
	YouTube	(Lange, 2007b)
	Facebook	(Karppi, 2013), (Phillips, 2011)
	Wikipedia	(Shachaf & Hara, 2010), (Tkacz, 2013)
	UseNet Groups	(Donath, 1999), (Hardaker, 2013), (Lee, 2005)
	Online magazines	(Binns, 2012)
Motivation	Group support system	(Reinig et al., 1997)
	Facebook	(Phillips, 2011)
	Wikipedia	(Shachaf & Hara, 2010)
	YouTube	(Lange, 2007b), (Moor et al., 2010)
	Group support system	(Alonzo & Aiken, 2004)
	N/A	(Maltby et al., 2016)
Trolling community	Forums	(Wi & Lee, 2014)
	Discussion communities	(Cheng et al., 2015)
Users' perceptions	YouTube	(Lange, 2007b), (Moor et al., 2010)
Definition, typology and understanding	UseNet Groups	(Hardaker, 2010)
	Mass media	(Bishop, 2014b)
	Ads website	(Morissey, 2010)
	Online news papers	(Hopkinson, 2013)
	Reddit	(Merritt, 2012)
	YouTube	(McCosker, 2013)
	Email	(Turnage, 2007)
	N/A	(Bishop, 2012)
	Discussion Communities	(Cheng et al., 2015)
	N/A	(Grothe et al., 2016)
Impact/effect	Email	(Baruch, 2005)
	Twitter	(Kerssies, 2013)
	Online newspapers	(Turner & Hall, 2010)
	Online video games	(Thacker & Griffiths, 2012)
Control	Online magazines	(Binns, 2012)
	Online newspapers	(Turner & Hall, 2010)
	UseNet Groups	(H. Lee, 2005), (Baker, 2006)
	New systems	(Yamagata et al., 2013)
Multimedia forensics / corpus analysis	Twitter	(Bishop, 2014a)
		(Hardaker & McGlashan, 2016)
Classifying hostile messages	Email	(Thompsen & Foulger, 1996)
	Newsgroups	(Kaufer, 2000)
	N/A	(O'Sullivan & Flanagin, 2003)
	Email	(Turnage, 2007)
Trolls identification	News discussion communities	(Cheng et al., 2015)
Legislation	N/A	(Bishop, 2013a)
	N/A	(El Asam & Samara, 2016)

Table 2.3 Summary of some previous work on online antisocial behaviour.

2.2 Strategic Self-Presentation Online

Self-presentation is "the process of controlling how one is perceived by other people" (Leary, 1995) and it plays an important role in people's relationships and interactions. People try to

maintain their desired image by selectively providing information about themselves and carefully supplying this information according to others' feedback (Goffman, 1959). It is also described as a goal-driven behaviour (Leary & Kowalski, 1990), where goals vary from one person to another; users could be seeking social acceptance, material gain, or just maintaining self-esteem. Moreover, Rui and Stefanone (2013) argue that creating and sustaining a positive self-image is more important to those who gain their self-esteem and personal value through these representations.

Nowadays, people can present and promote themselves easily on the Web via Social Networking Sites (SNSs), which allow them to strategically present information about themselves through creating a profile, adding images, or simply posting their thoughts. However, self-presentation on SNSs can be challenging as these sites also allow others from the user's network to provide information, making it hard for a person to control what others might say about them. Situations can arise in which users find themselves unwillingly engaging in conversations that do not support their projected image. In addition, one's network 'friends' or 'followers' may post anything at any time and make it publicly available. Such interactions are known as Others' Provided Information (OPI) and reduce users' control over their SSN profile, which becomes problematic if the information contradicts their strategic self-presented image (Jr & Walther, 2009). Unlike information provided by profile owners themselves, (Self-Provided Information or SPI), OPI cannot be easily manipulated, is more credible, and consequently can greatly impact profile owners' image and how they are perceived by others in their network (Walther & Heide, 2009).

2.2.1 Protective Self-Presentation Strategies

Users have complete control over their own profiles on SSNs and can selectively choose SPI to convey the desired image. However, unwanted OPI can impact this image, and since it cannot be controlled by profile owners, they can tend to engage in 'protective' self-presentation strategies to overcome or minimize this impact. There are several strategies for protective self-presentation discussed in the literature (Arkin, 1981; Leary, 1995), Smock (2010) classified them into two categories, repudiative and subtractive strategies. Repudiative strategies include denying unwanted OPI and providing innocent defence or making compensatory self-presentations. Subtractive strategies, on the other hand, include removing unwanted OPI by deleting unwanted posts or pictures when possible, or trying to disconnect from the undesired content. Moreover, it is also suggested that protective self-presentation strategies include disclosing more self-provided information; however, when the desired self-image is compromised, people may choose not to provide more self-provided information to avoid unpleasant consequences (Rui & Stefanone, 2013).

Goffman (1959) suggested that the main motivation for effective self-presentation is seeking approval or avoiding disapproval, and that this can be achieved through two types of self-presentation. The first is acquisitive, in which people emphasize constructing their image by highlighting the attractive aspects about themselves mainly to seek approval. The second is protective self-presentation, which in contrast mainly aims to avoid disapproval. People therefore tend to express themselves in neutral and conforming ways, using modest self-disclosure to avoid being rejected by others (Arkin, 1981). Arkin also suggests that these two self-presentation types are affected by internal and external factors, for example, personality and audience characteristics respectively.

2.3 Chapter Summary

This chapter presents a review of the literature of online hostility, beginning with definitions and then moving on to examine previous work in this area. It highlights the debate and evolution of the different terms used in the literature to describe online antisocial behaviour, for example, 'trolling', 'flaming', 'cyberbullying' and others. The literature provides some definitions and distinctions between the related terms describing online hostility, however, it also suggests that defining online hostility could be problematic (Hopkinson, 2013; Lange, 2006; Whelan, 2013); nevertheless, in order to move on, researchers need to relax the definition and focus on the impact and other aspects of destructive online behaviour (Jane, 2015).

Looking back to previous studies of online antisocial behaviour, we can see that it is broadly multidisciplinary and that most research tends to focus on a certain aspect and sometimes on a certain cyberspace. Thus, there is scope for more research in this area, especially of an empirical nature, since previous studies have tended to be more qualitative.

This chapter also explores the concept of self-presentation, which emerged from the seminal work of Goffman (1959), who described how people exhibit selective behaviours in order to build or reflect a desired image of themselves. Self-presentation has become an important online behaviour due to the spread of social networks that allow users to create profiles and share their ideas and thoughts. This chapter discusses the different strategies that people follow when presenting themselves, it also explains the concept of protective self-presentation, in which people change their behaviour in order to protect their image and avoid rejection by others.

Chapter 3: Theoretical Background of Technology Acceptance Models and Culture

This study proposed a research model to investigate the impact of online antisocial behaviour on technology use, the model is based on the Unified Theory of Technology Acceptance and Use, and it was assessed cross-culturally, therefore, it is essential to review the basic theoretical background to technology acceptance theories and models and the cultural frameworks. This chapter starts by presenting technology acceptance theories and models. After that, it presents an overview of culture and cultural frameworks and how they were integrated with technology acceptance and use research.

3.1 Technology Acceptance Theories and Models

Technology acceptance theories and models are multidisciplinary in nature as they have been developed within different disciplines. These models aim to understand, explain and predict individuals' acceptance and use of a certain technology, and have evolved by inheriting characteristics from and elaborating on each other. Each model is typically introduced based on a previous one, having been developed either to overcome a certain limitation or to include a crucial new factor. Reviewing some of these theories and models will help justify the model used in this research and will also assist in identifying factors that need to be included in this study.

3.1.1 The Theory of Reasoned Action

The Theory of Reasoned Action (TRA) was introduced by Fishbein and Ajzen in 1975. It assumes that humans make rational decisions about their action based on the available information, i.e. people decide whether to perform a behaviour based on their beliefs about the consequences of that particular behaviour. The theory presumes that the individual's behaviour can be predicted from their behavioural intentions, which in turn can be predicted using two determinants: individual's attitude, and the subjective norm. Figure 3.1 depicts the model for this theory.

The behavioural intention is the individual's conscious plan and will to perform a particular behaviour (Conner & Armitage, 1998). The attitude towards the behavioural intention is identified as the individual's positive or negative feelings about performing a particular behaviour, while subjective norm is defined as the individual's "perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein & Ajzen, 1974).

Ajzen and Fishbein provided an instrument to measure the theory constructs which has been tested empirically in many domains (Davis et al., 1989). The TRA has been employed in the Information Systems field, where researchers have utilized it to investigate the different factors influencing behavioural intention towards technology acceptance and use (Compeau & Higgins, 1995; Liker & Sindi, 1997; Ramayah et al., 2009).

The TRA has received some criticism as it includes only two predictors, which is not a sufficient number in many cases (Conner & Armitage, 1998), and it also does not take into consideration impulsive or mindless actions, since it assumes that behaviour is based on conscious decision (Bentler & Speckart, 1979). To overcome this weakness, Azjen proposed a subsequent version, which is the theory of planned behaviour (Ajzen, 1991).

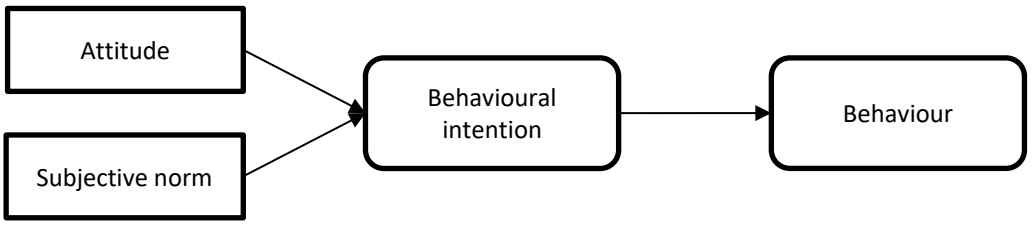

Figure 3.1 The Theory of Reasoned Action model, adapted from Fishbein and Ajzen (1975).

3.1.2 Theory of Planned Behaviour

The theory of Planned Behaviour (TPB) was introduced by Ajzen in 1991 as a successor to the TRA. It was proposed in order to address some of the limitations of the TRA (explained above). In addition to attitude and subjective norm, a new factor of perceived behavioural control was introduced. This is defined as "the sense of self-efficacy or ability to perform the behaviour of interest" (Ajzen, 2005).

As in the TRA, the TPB assumes that a behaviour can be predicted from behavioural intention, which in turn can be predicted using three other constructs: attitude, subjective norm and perceived behavioural control. Figure 3.2 shows the TPB model. The theory explains that individuals intend to perform a certain behaviour based on their behavioural, normative and control beliefs. In other words, individuals' intentions to perform a behaviour arise from their personal judgment of the situation, social pressure and the availability of means or resources. Therefore, the TPB considers an additional constraint influencing behaviour, which may or may not be available (Ajzen, 1991).

Based on a meta-analysis of 16 studies, Ajzen discovered that the predictors of behavioural intention are highly correlated within the TRB, and also that adding in perceived behavioural control increased the prediction accuracy (Ajzen, 1991). The TPB subsequently became one of the most widely used theories to predict behaviour in different domains,

including technology acceptance; for instance, it has been successfully used to predict consumers' behaviours in e-commerce and e-learning (Cheon et al., 2012; George, 2004). However, it has been argued that the TRB is only applicable if individuals are motivated to perform a particular behaviour, which is not always the case when studying consumer adoption behaviour (Taylor & Todd, 1995). Researchers have also found that there are more determinants influencing behavioural intention than those included in the theory (Eagly & Chaiken, 1993).

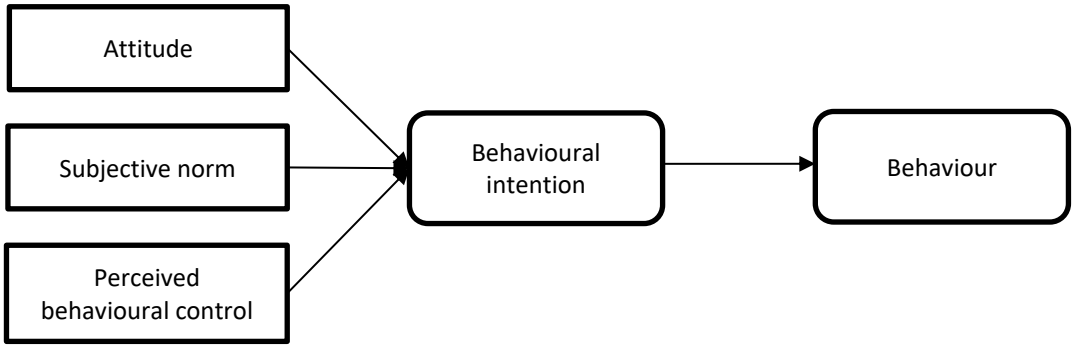

Figure 3.2 Theory of Planned Behaviour model, adopted from Ajzen (1991).

3.1.3 Technology Acceptance Model

Although both the TRA and TPB have been applied to technology acceptance research, they were not specifically developed for that purpose. In order to address this particular area, Davis et al. proposed the Technology Acceptance Model (TAM) in 1989 (Davis et al., 1989). The TAM model extends the TRA by adding two main determinants, first, perceived usefulness, which is the degree to which an individual perceives that using the technology would improve job performance, and second, perceived ease of use, which is the degree to which an individual believes that using a technology would be effort-free (Davis, 1989).

The TAM model is illustrated in Figure 3.3. As in the previous models, the TAM assumes that behaviour is influenced by behavioural intention, which in turn is influenced by attitude. However, attitude is determined by two newly added factors, i.e. perceived usefulness and perceived ease of use. Davis also proposed that other external variables might also influence perceived usefulness and perceived ease of use, and this was later supported by other researchers extending the model (Dishaw & Strong, 1999; Mathieson et al., 2001; Tan et al.,1999).

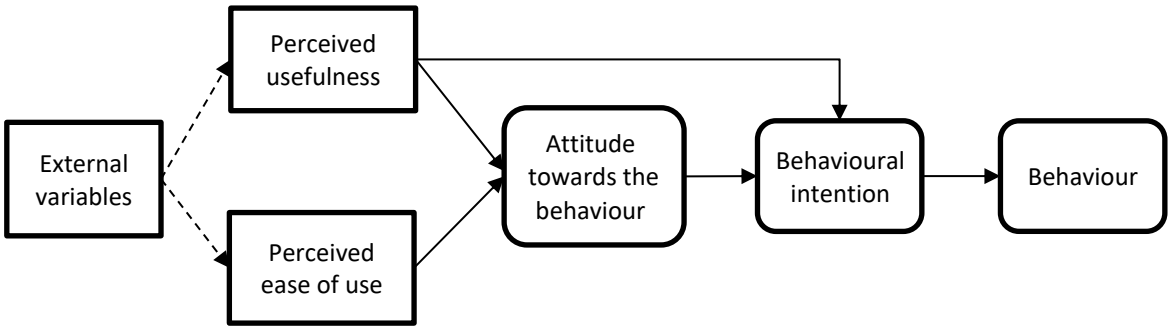

Figure 3.3 Technology Acceptance Model (TAM) (Davis et al., 1989).

The TAM was used to study users' acceptance and use of a wide range of computer systems, including word processors, (Davis, 1989), searching websites (Tan et al., 1999), mobile technology (Chang et al., 2012), spreadsheets (Mathieson, 1991) and others. Perceived Usefulness was found to be the most significant determinant of behavioural intention (Mathieson, 1991). Several researchers conducted meta-analyses of the studies that used the TAM and have confirmed the positive relationships between its constructs (King & He, 2006; Šumak et al., 2011; Yousafzai et al., 2007), However, it was suggested that the TAM determinants alone are not sufficient in predicting behaviour as most of the studies that applied the TAM used one or more additional external variables (Legris et al., 2003). The TAM was later extended by Taylor and Todd by adding two further constructs: subjective norm, and perceived behavioural control. This new model was called the Augmented TAM (A-TAM) (Taylor & Todd, 1995). Figure 3.4 illustrates the A-TAM model.

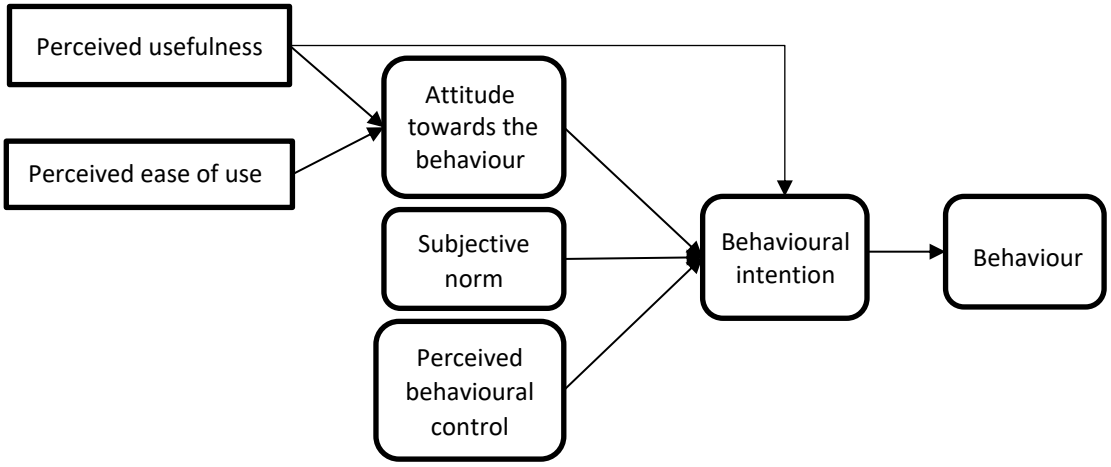

Figure 3.4 Augmented Technology Acceptance Model (A-TAM) (Taylor & Todd, 1995).

Another extension was made to the TAM by Venkatesh and Davis, mainly to consider the theoretical constructs under the social influence and cognitive instrumental processes. The new model is shown in Figure 3.5 and is known as TAM-2. It integrates subjective norm,

voluntariness, and image to cover social influence processes; job relevance, output quality, result demonstrability, and perceived ease of use to cover cognitive instrumental processes (Venkatesh & Davis, 2000).

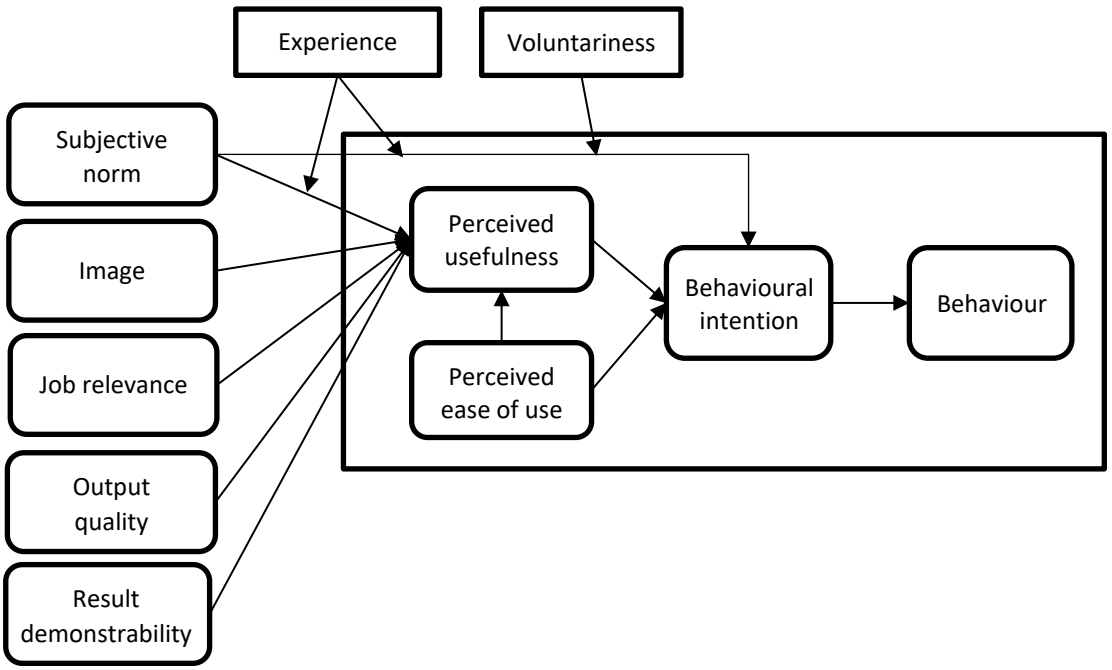

Figure 3.5 Technology Acceptance Model 2 (TAM-2) (Venkatesh & Davis, 2000).

3.1.4 Diffusion of Innovations Theory

The diffusion of innovations (DOI) theory postulates how and why new ideas and technology spread. It is described as "the process by which innovation is communicated through certain channels over time among members of social system" (Rogers, 1995). As shown in Figure 3.6, the theory gives five determinants of new technology adoption, which are defined by Rogers (1995) as follows:

- The relative advantage: *The degree to which an innovation is perceived as better than the idea it supersedes.*
- Compatibility: *The degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters.*
- Complexity: *The degree to which an innovation is perceived as relatively difficult to understand and use.*
- Observability: *The degree to which the results of an innovation are visible to others.*
- Trialability: *The degree to which an innovation may be experimented with on a limited basis.*

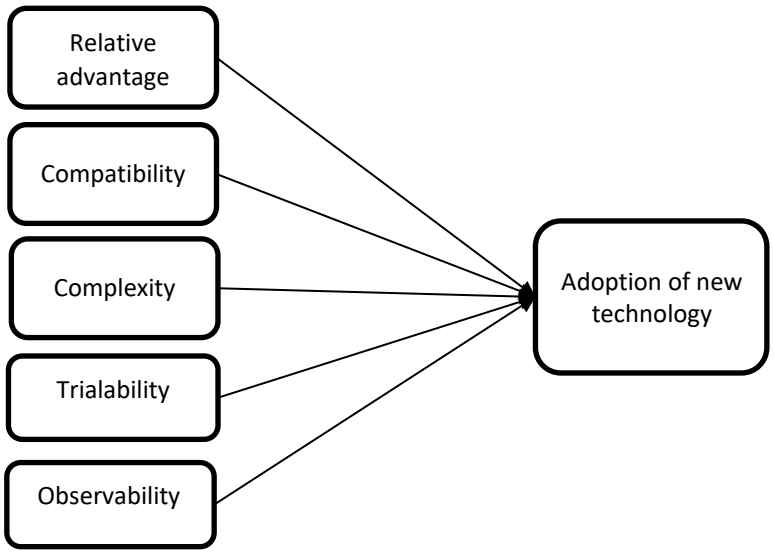

Figure 3.6 The developed model of the Diffusion Of Innovation theory by Rogers (1995).

The theoretical model of DOI was applied in the field of technology acceptance and use to predict usage behaviour with different technologies and information systems (Dedrick & West, 2003; Mustonen-Ollila & Lyytinen, 2003; Wonglimpiyarat & Yuberk, 2005). However, some studies have contended that the constructs suggested by the DOI theory alone may be inadequate to predict individual acceptance of new technologies. These studies have added other constructs, such as trustworthiness and time, and others have combined the DOI with the TAM (Carter & Bélanger, 2005; Carter & Weerakkody, 2008).

3.1.5 Model of PC Utilization

The Model of Personal Computer Utilization (MPCU) was developed by Thompson et al. in 1991. They conducted an initial test of their model using a subset of Triandis' framework of behaviour (Triandis, 1980). Their model postulates that utilization of a PC would be influenced by individuals' feelings toward using PCs (affect), social norms, habits, the perceived consequences, and the facilitating conditions. The perceived consequences are divided into near-term and long-term consequences, such as planning for the future. The near-term consequences are composed of complexity and job fit. This model was later extended by Thompson et al. to consider the role of experience in personal computer usage. In the newer model, experience had a direct, indirect, or moderating influence. Figure 3.7 depicts the proposed conceptual model (Thompson et al., 1994).

The MPCU has been applied in much research, although often modified or extended with more constructs. For example, Al-Khaldi and Wallace investigated PC utilization behaviours in Saudi Arabia with MPCU among knowledge workers (1999). Cheung et al., studied Internet usage in working environments using a modified model of MPCU (2000).

Similarly, Chang & Cheung used a revised model of MPCU to analyse behavioural intention in Internet usage (2001).

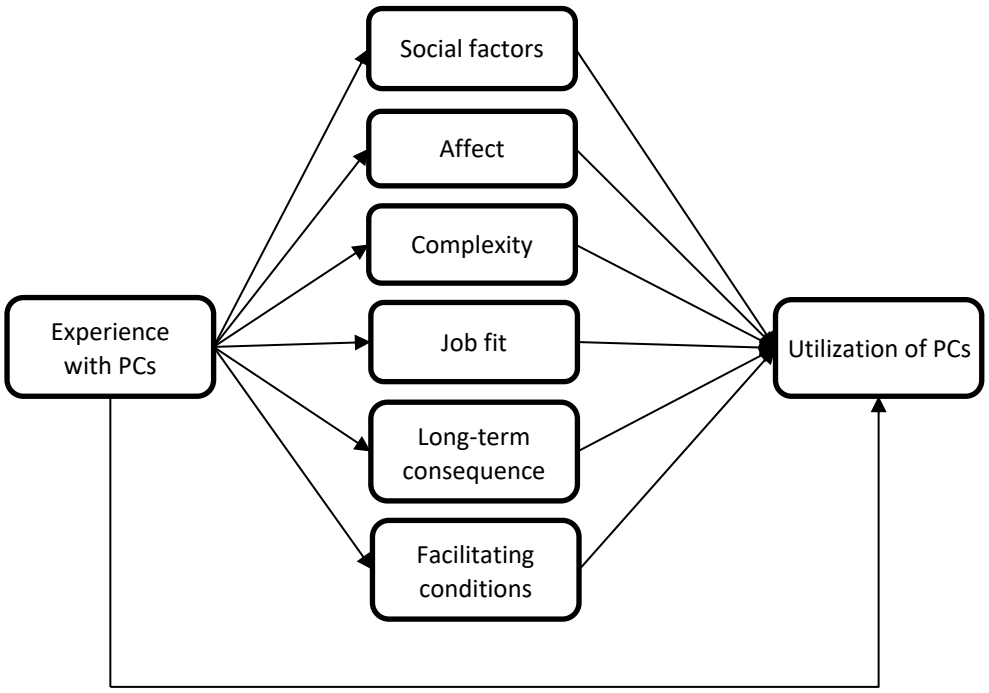

Figure 3.7 Factors Influencing the Utilization of Personal Computers from Thompson et al. (1994)

3.1.6 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by Venkatesh et al. (2003) and integrates technology acceptance theories from other influential theories in information science, psychology, and sociology, forming a unified model that incorporates factors affecting user behaviour towards IT systems. The eight theories and models are: The Acceptance Technology Model (TAM), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Motivational Model (MM), the Model Combining the Technology Acceptance Model and Theory of Planned Behaviour (C-TAM-TPB), the Model of PC Utilization (MPCU), the Diffusion of Innovations Theory (DOI), and Social Cognitive Theory (SCT). Table 3.1 shows the constructs of each model, with the adapted constructs of UTAUT in the last row.

UTAUT postulates that four factors (performance expectancy, effort expectancy, social influence, and facilitating conditions) affect the user's decision regarding an information system. These main factors are then described in terms of sub-factors or constructs that are adapted, tested and verified from the previous eight models. They are defined as:

- Performance expectancy (PE): the extent to which an individual believes that using a particular system would improve his or her job performance.

- Effort expectancy (EE): the extent to which an individual believes that using a particular system will be effort free.
- Social influence (SI): the extent to which an individual perceives that others believe he or she should or should not use a particular system.
- Facilitating conditions (FC): the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of a particular system.

PE, EE and SI significantly affect the intention towards using the system; while FC is a direct antecedent of use (see Figure 3.8). It is also suggested that four moderating factors impact the four key constructs on usage intention and behaviour, and these are: gender, age, experience, and voluntariness of use.

Since the UTAUT emerged from combining and testing the previous prominent theories and models, it has become a popular theoretical choice in researching information technology acceptance and use. Many studies have confirmed the relationships with the UTAUT model (Al-Gahtani et al., 2007; Im et al., 2011; Meyer & Dibbern, 2010; Müller & Stocker, 2011; Sundaravej, 2010). Thus, the UTAUT is considered to be a sound choice among researchers. However, many studies that adapted the UTAUT made only partial use of it and only a few have actually fully used the theory. Some have used it in combination with other external factors to support the target situation being studied (Williams et al., 2011), others argued that UTAUT is not necessarily robust when applied in non-western cultures (Simeonova et al., 2010), while yet others have successfully applied it to different cultures and found that it was a robust tool (Im et al., 2011; Oshlyansky et al., 2007). This discrepancy might be related to the validity of the instrument designed and translation among different countries, as it is considered as a crucial step in cross-cultural studies (Hui & Triandis, 1985).

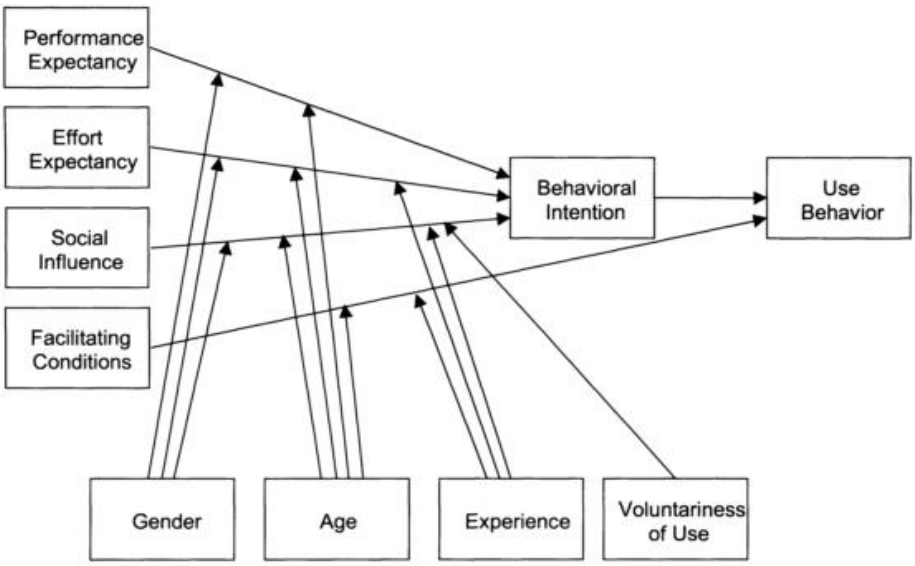

Figure 3.8 UTAUT model (Venkatesh et al., 2003).

Theories / Models	Factors
Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1974)	• Attitude • Subjective norm
Theory of Planned Behaviour (TPB) (Ajzen, 1991)	• Attitude • Subjective norm • Perceived behavioural control
Technology Acceptance Model (TAM) (Davis, 1989)	• Perceived usefulness • Perceived ease of use
Model of PC Utilization (MPCU) (Thompson et al., 1991)	• Job-Fit • Complexity • Social factors • Affect • Long-term outcomes • Facilitating conditions
Motivational Model (MM) (Davis, 1992)	• Extrinsic motivation • Intrinsic motivation
Combined TAM and TPB (C-TAM-TPB) (Taylor & Todd, 1995)	• Perceived usefulness • Perceived ease of use • Subjective norm • Attitude • Perceived behavioural control
Diffusion of Innovations Theory (DOI) (Rogers, 1995)	• Relative advantage • Compatibility • Complexity • Observability • Trialability
Social Cognitive Theory (SCT) (Bandura, 1999; Compeau et al., 1999)	• Support • Self-efficacy • Encouragement by others • Affect • Anxiety • Others' use • Performance outcome expectations • Personal outcome expectations
Technology Acceptance Model 2 (TAM2) (Venkatesh & Davis, 2000)	• Perceived usefulness • Perceived ease of use • Subjective norm • Image • Experience • Voluntariness • Output quality • Job relevance • Result demonstrability

Unified Theory of Acceptance and Use of Technology Model (UTAUT) (Venkatesh et al., 2003)	• Performance Expectancy
	  ○ Perceived usefulness
	  ○ Extrinsic motivation
	  ○ Job-fit
	  ○ Relative advantage
	  ○ Outcome expectations
	• Effort Expectancy
	  ○ Perceived ease of use
	  ○ Complexity
	  ○ Ease of use
	• Social Influence
	  ○ Subjective norm
	  ○ Social factors
	  ○ Image
	• Facilitating Conditions
	  ○ Perceived behavioural control
	  ○ Facilitating conditions
	  ○ Compatibility

Table 3.1 Summary of the factors in technology acceptance theories and models.

3.2 Culture in Technology Acceptance Research

3.2.1 The Different Cultural Frameworks

The notion of culture has long attracted researchers' attention and by 1994 hundreds of definitions of culture existed (Ferraro, 1997). However, despite this, social scientists tend not to embrace a specific definition and this has possibly led to the treatment of culture as a moderator in most research (Lonner & Adamopoulos, 1997). As individuals, we are all unique; nevertheless, individuals share similar values and experiences with those who are living with them in the same society.

One of the simplest definitions of culture is given by Samovar et al. (2009). They explained that culture mainly refers to shared values, attitudes, norms, beliefs, behaviours, and material objects. In a more simplified way culture is "the rule of living and functioning in a society" (Samovar et al., 2009).

Researchers have studied culture aiming to understand its influence, and in so doing have developed different competing frameworks. These frameworks have attempted to classify the different cultures of the world in order to understand them (Hall & Hall, 1987; Hofstedee, 1997; Schwartz, 1994; Trompenaars & Hampden-Turner, 1998). Most cultural frameworks try to generate a universal set of dimensions or values of culture. Some build or elaborate on previous frameworks and so there is often overlap between them. Table 3.2 summarizes the cultural dimensions of the most well-known frameworks and notes the resemblances (Zakour, 2008). It has been argued that although the available cultural frameworks have tried to identify a universal set of values or dimensions, they cannot possibly be comprehensive or universal (Lonner & Adamopoulos, 1997).

The most referred-to cultural frameworks are Hofstede's Cultural Dimensions (Hofstede, 1997), and Schwartz's Cultural Values Orientations (Schwartz, 1994). Most IT/IS researchers have used Hofstede's cultural dimensions to invistigate culture influence (Merchant, 2007). Hofstede developed his cultural dimensions by examining the psychological characteristics of employees from different cultural groups at IBM within 40 countries. The employees were asked about their preferences and attitudes, and, based on the patterns in the given answers, Hofstede abstracted what he argued were cultural dimensions (Hofstede, 1997). Table 3.3 lists the definitions and measured traits associated with these dimensions (Shaules, 2007).

Cultural Dimensions	Contributor
Power Distance	Hofstede (1997)
Individualism/Collectivism	
Masculinity/ Femininity	
Uncertainty Avoidance	
Long- Term Orientation	
Confucian Work Dynamism	Chinese Cultural Connection (1987)
Conservatism	Schwartz (1994)
Intellectual Autonomy	
Affective Autonomy	
Hierarchy	
Egalitarianism	
Mastery	
Harmony	
Universalism/Particularism	Trompenaars & Hampden-Turner (1998)
Individualism/Communitarianism	
Neutral/ Emotional	
Specific/Diffused	
Achievement/Ascription	
Attitude to Time	
Attitude to Environment	
Communication Context	Hall & Hall (1987)
Perception of space	
Monochronic/ Polychronic	
Nature of people	Kluckhohn & Strodtbeck (1961)
Person's relationship to nature	
Person's relationship to other people	
Primary mode of activity	
Perception of space	
Person's temporal orientation	

Table 3.2 Overview of widely used cultural dimensions. Source: (Zakour, 2008).

Despite the many attempts to use Hofstede's cultral dimensions in IS research, Ford et al. argued that it only gives the researchers a 'handle' on the complicated notion of culture and allows them to analyze group differences (Ford et al. 2003). Another critiscim of Hofstede's cultural dimensions is that they cannot be generalized, as they were established based on a homogenous corporate culture across national boundaries and this might have confounded national differences (Shackleton & Ali, 1990). Moreover, most of Hofstede's dimensions focus on work-related values, which makes it diffcult to measure human values relevant to other life domains. Therefore, Hofstede's framework is not suitable for linking individuals' value orientations to their behaviour or opinions (Schwartz, 2003).

Dimension	Definition	Measured Traits associated
Power Distance	How cultures handle inequality; the emotional distance between those of differing status	(1) Employee fear of expressing disagreement (2) Superiors have autocratic or paternalistic style (3) Preference for autocratic or paternalistic style
Individualism/ Collectivism	Individualism: ties between individuals are loose, one looks after oneself. Collectivism: ties are integrated into strong, cohesive in-groups	*Individualist:* (1) Personal time (2) Freedom (3) Challenge *Collectivist:* (1) Training (2) Physical conditions (3) Use of skills
Masculinity/ Femininity	The extent to which a society displays stereotypical male and female values. Masculinity: assertive, competitive, tough Femininity: nurturance, focus on relationships and living environment.	*Masculinity:* (1) Earnings (2) Recognition (3) Advancement (4) Challenge *Femininity:* (1) Good relationships (2) Corporation (3) Desirable living area (4) Employment Security
Uncertainty avoidance	The extent to which one feels threatened by uncertainty or the unknown	(1) Level of job stress (2) Rule orientation (3) Desire for job stability
Confucian dynamism	Long term (dynamic) or short term (static) orientation as related to virtue.	*Long term orientation:* (1) Persistence (2) Hierarchy (3) Thrift (4) Sense of shame *Short term orientation:* (1) Personal steadiness (2) Protecting "face" (3) Respect for tradition (4) Reciprocation of favour

Table 3.3 Hofstede's dimensions: definitions and measuring traits. Source: Shaules (2007).

Schwartz's Cultural Values Orientations came about as a result of conducteding large scale survey studies and presenting a detailed theoretical framework for cultural value orientations across nations,. This is known as the Schwartz Value Survey (Schwartz & Sagie, 2000; Schwartz, 1992; Schwartz, 1994; Schwartz & Bardi, 2001).

In the surveys, participants from different countries were asked to rank the relative importance of 56 different value types as a guiding principles in their lives. Schwartz

identified the universal values in the content of individuals' values, and then derived ten distinct individual motivational types of values and organized them into two broad dimensions, conservation vs. openness to change and self-transcendence vs. self-enhancement.

Schwartz (1994) also found seven value types on the cultural level among the nations sampled. These were later summarized as three dimensions: embededness vs. autonomy; hierarchy vs. egalitarianism; and mastery vs. harmony (Smith & Shwartz, 1997). Table 3.4 summarizes the seven cultural value orientations.

One of the strong points of Schwartz's framework is that it carefully considers previous studies on culture and builds on them, and it is derived theoretically, whereas Hofstede's was derived empirically (Ng et al., 2007). Moreover, Schwartz argues that his framework is more comprehensive than Hofstede's cultural dimensions, since Hofstede's four dimensions are included within Schwartz's set of value orientations (Schwartz, 2006). Nevetheless, within IS research most studies have made use of Hofstede's framework rather than Schwartz's (Merchant, 2007).

3.2.2 Research on Technology Acceptance in Different Cultures

Technology acceptance theories and models were developed and tested in western cultures, and this raises concerns about their applicability and questions their explanatory power when applied to other non-western cultures (Straub et al., 1997). This concern has driven researchers to investigate the applicability of the different technology acceptance models in different cultures. Table 3.5 summarizes most of the existing studies which have been conducted cross-culturally or in non-western cultures, and are ordered by the year of publication.

There are relatively few studies which have integrated cultural frameworks within technology acceptance research (Merchant, 2007). Instead, most focus on either (1) examining the applicability of technology acceptance models in less developed countries (AbuShanab & Pearson, 2007; Al-Gahtani et al., 2007; Anandarajan et al., 2000; Loch et al., 2003; Rose & Straub, 1998) or (2) investigating the transferability of technology acceptance models within cultures, typically between western and non-western (McCoy et al., 2007; Merchant, 2007; Oshlyansky et al., 2007; Simeonova et al., 2010; Srite, 2006; Straub et al., 1997; Venkatesh & Xiaojun, 2010). This could be justified by the complexity of technology acceptance research as a multidisciplinary topic pertaining to technical, psychological, and other social contexts (Day, 2006). Thus, introducing culture in terms of

Value Type	Descriptions
Conservatism	The person is viewed as embedded in a collective, finding meaning in life largely through social relationships, though identifying with the group and participating in its shared way of life. A cultural emphasis on maintenance of the status quo, propriety, and restraint of actions or inclinations that might disrupt the solidarity group or the traditional order (e.g. social order, respect for tradition, family security, and self-discipline).
Autonomy: Intellectual & Affective	The person is an autonomous, bounded entity and finds meaning in his/her own uniqueness, who seek to express his/her own internal attributes (preferences, traits, feelings) and is encouraged to do so. Schwartz distinguishes between two types of autonomy: Intellectual Autonomy emphasizes independent ideas and rights of the individual to pursue his/her own intellectual directions (e.g. curiosity, broadmindedness, and creativity). Affective Autonomy emphasizes the individual's independent pursuit of affectively positive experience (e.g. pleasure, exciting life, varied life).
Hierarchy	In high hierarchical cultures, differential allocation of fixed roles and of resources is the legitimate, desirable way to regulate interdependencies. People are socialized to comply with the obligations and rules and sanctioned if they do not. A cultural emphasis on the legitimacy of an unequal distribution of power, roles and resources (e.g. social power, authority, humility, wealth).
Egalitarianism	In high egalitarianism cultures, individuals are portrayed as moral equals, who share basic interests and who are socialized to transcend selfish interests, cooperate voluntarily with others, and show concern for everyone's welfare (e.g. equality, social justice, freedom, responsibility, honesty).
Mastery	In high mastery cultures, people actively seek to master and change the natural and social world, to assert control and exploit it in order to further personal or group interest. A cultural emphasis on getting ahead through active self-assertion (e.g. ambition, success, daring, competence).
Harmony	High harmony cultures accept the world as it is, trying to preserve rather than change or exploit. The culture emphasis is fitting harmoniously in the environment (e.g. unity with nature, protecting the environment, world of beauty).

Table 3.4 Schwartz's cultural orientation value types and description. Source: Smith and Shwartz (1997).

dimensions and values frameworks might make it even more complex. As noted from the table, only a few studies actually make use of Hofstede's cultural dimensions (McCoy et al., 2007; Merchant, 2007; Straub et al., 1997). Some refer to it only to explain their results (Al-Gahtani et al., 2007; Anandarajan et al., 2000; Mao & Palvia, 2006), while most of them do not use it at all.

The outcomes of the previous studies regarding applicability and transferability can be classified into the following points: (1) some studies could not establish that technology acceptance models developed in western countries are fully transferable or applicable to other countries (e.g. Anandarajan et al., (2000), McCoy et al. (2007), and Simeonova et al. (2010)), some also found that they are not fully applicable even in some western countries, such as France (Merchant, 2007); (2) other studies could actually establish the transferability and applicability of technology acceptance models, however, they also found that different factors have relatively different importance in different countries. For example, the effects of effort expectancy on behavioural intention were greater in the US compared to Korea, which implies that within the US sample, users' decision-making on whether to adapt the technology is more affected by how easy the technology is, compared to the case in the Korean sample.

3.3 Chapter Summary

This chapter presents and discusses the well-known technology acceptance theories and models, mostly the models that were integrated to develop the UTAUT model. This review helps us to obtain a better understanding of what constitutes a relativley comprehensive model. Some models lack the breadth needed to consider them sufficient or complete as they do not include some of the important factors. The TAM model, for example, presents a very limited set of constructs, which has driven most researchers applying the TAM to add more external variables in most cases. UTAUT, on the other hand, is considered to be more comprehensive as it is able to explain more of the variance in use intentions than any of the preceding models. This research aims to extend the UTAUT to allow for better understanding of technology use under risk; the proposed research model is explained in detail later in Chapter five.

The concept of culture is also introduced in this chapter, along with the well-known cultural frameworks used by researchers. A review of cross-cultural studies on technology acceptance is also presented, and it is concluded that culture does not affect technology acceptance and use directly, instead it highlights the difference in the relative importance of some factors within different cultures. In addition, the main focus of previous cross-cultural studies was to investigate the applicability and transferability of technology acceptance models from western cultures (in which they were developed) to non-western cultures.

Study	Targeted technology	Model	Countries	Cultural framework used	Result regarding transferability
Straub et al. (1997)	E-mail	TAM	Japan, Switzerland, US	Hofstede (1997)	Not fully transferable
Rose & Straub (1998)	Personal computers	TAM	Jordan, Saudi Arabia, Lebanon, Egypt, Sudan	None	Transferable
Anandarajan, et al. (2000)	Microcomputers	TAM	Nigeria	Explained using Hofstede (1997)	Partially applicable
Loch et al. (2003)	Diffusion of the Internet	Derived model	Egypt	None	Applicable
Mao & Palvia (2006)	E-mail	TRA, DOI and TAM	China	Explained using Hofstede (1997)	Applicable
Srite (2006)	Computers	Extended TAM	US and China	Hofstede (1997)	Transferable
Al-Gahtani et al. (2007)	Desktop computer	UTAUT	Saudi Arabia	Explained using Hofstede (1997)	Partially applicable
McCoy et al. (2007)	Online teaching techniques	TAM	US and other countries	Hofstede (1997)	Not fully transferable
Merchant (2007)	Company system	TAM	US, France and China	Harrison (1975)	Not fully transferable
Oshlyansky et al. (2007)	Website acceptance	UTAUT	US, UK, Czech, Greece, South Africa, Saudi Arabia, New Zealand, Malaysia, India	None	Transferable
AbuShanab & Pearson (2007)	Internet Bancking	UTAUT	Jordan	None	Applicable
Venkatesh & Xiaojun (2010)	Company system	UTAUT	U.S. and China	None	Transferable
Simeonova et al. (2010)	Virtual Learning Environments	UTAUT	Jordan, Russia, and UK	None	Not transferable
Im et al. (2011)	Mp3 player and Internet banking	UTAUT	Korea and US	None	Transferable
Nassuora (2012)	Mobile learning	Modified UTAUT	Saudi Arabia	None	Partially applicable
Alshehri and Drew (2012)	E-government services	Extended UTAUT	Saudi Arabia	None	Partially applicable

Table 3.5 Summary of previous cross-cultural studies.

Chapter 4: Research Methodology

This chapter briefly describes the different research methods and then presents a detailed description of the research design and methods followed in the research. The study has three phases; each is described briefly to give a context for the whole research design. In the next chapters, the design of each study will be presented in turn along with its results.

4.1 Research Methods

Research methods generally fall into three categories: quantitative, qualitative and mixed methods. The choice of which research method to select depends on the nature of the data to be collected and the research questions (Creswell, 2009).

Quantitative research strategy is defined as "a research strategy that emphasises quantification in the collection and analysis of data" (Bryman & Bell, 2015). Quantitative research tests a theory or an observable phenomenon by statistically examining the relationship between variables. The variables can be measured numerically using many different instruments such as surveys or experiments. Questionnaires are one of the most widely used tools for gathering quantitative data. They may include closed questions which are useful for gathering demographic information and opinions. Questionnaires are easier to distribute among a large number of respondents compared to other data collection methods (Brace, 2013).

Statistical analysis of quantitative data can be either descriptive or inferential. Descriptive statistics describe the variables in terms of measures such as means and standard deviations. With inferential statistics, conclusions can be drawn by comparing groups of variables to test hypotheses. The quantitative research final report usually follows a similar structure that includes the introduction, literature and theory, methods, results, and discussion (Creswell, 2008).

Qualitative research aims to shed light on a specific research problem or a phenomenon in the context of individuals rather than from theories. It usually provides deeper understanding of people's opinions, attitudes and decisions compared to quantitative methods (Anderson, 2010). This kind of research may be done by observation, interviews, documents and audio-visual data. Therefore, the collected data and the results are not numerical. The qualitative research final report usually has a flexible structure compared to the quantitative report, since the focus is on the importance of interpreting the complexity of studied situation (Creswell, 2007).

Mixed methods research combines both qualitative and quantitative methods. By combining the two methods, the mixed research method benefits from the strengths of both methods and minimises their weaknesses. It also provides better understanding of the research problem (Creswell and Plano, 2007; Johnson and Onwuegbuzie, 2004). The use of mixed methods research is useful for several reasons. Firstly, it provides triangulation, by allowing confirmation of the findings using different methods. Secondly, it can provide complementary findings, as the findings from one method can elaborate the findings of the other (Johnson & Onwuegbuzie, 2004). Furthermore, Denscombe (2008) suggested that using mixed methods can increase the accuracy of the data, provide a more complete picture, and they allow the researcher to develop the analysis and build on the obtained data. Thus, mixed research methods has become a popular choice for many researchers and has been adopted widely in Information Systems research (Peng et al. , 2011).

4.1.1 Mixed Methods Design Approaches

This study has adopted the mixed methods approach to investigate the research problem. Several strategies and designs may be followed in the mixed methods approach. They include different kinds of strategies where the investigation could be quantitative or qualitative, as in parallel (or concurrent) mixed methods design, or in sequential mixed methods design (Cohen, Manion, & Morrison, 2011). Table 4.1 presents a number of reasons for choosing a mixed methods approach, along with the expected outcome and the recommended design method (Creswell, 2013). The following subsection reviews some of the commonly used mixed methods strategies in the literature.

Reasons for Choosing Mixed Methods	Expected Outcomes	Recommended Mixed Methods Design
Comparing different perspectives drawn from quantitative and qualitative data	The merged result of the two databases shows how the data converges or diverges	Convergent parallel mixed methods design
Explaining quantitative results with qualitative data	A more in-depth understanding of the quantitative results (often cultural relevance)	Explanatory sequential mixed methods design
Developing better measurement instruments	Better measurement instruments for a sample	Exploratory sequential mixed methods design

Table 4.1 Reasons for choosing mixed methods design. Source: (Creswell 2013).

4.1.1.1 Triangulation

Triangulation is a common method in mixed methods research. It involves studying an object from different points of view or using different methods. It also increases the validity of empirical research and provides a broader picture (Denzin, 1978). Triangulating both qualitative and quantitative methods is very useful because, despite the fact that qualitative data are broader and richer in nature, they are less precise than quantitative data (Runeson & Höst, 2009). Different classifications of triangulation methods can be found in the literature. Creswell (2009) classified them into 'concurrent', 'concurrent nested' and 'concurrent transformative' triangulation, depending on the relative importance of the qualitative or quantitative data, these are explained in Table 4.2. Another classification of triangulation was given by Denzin (1978), as: (1) data triangulation or source triangulation, in which more than one data source is used to collect data; (2) investigator triangulation, where findings of different investigators contribute to the study; (3) theory triangulation, in which the researcher tries to obtain multiple perspectives using different theories in the same dataset; and finally, (4) methodological triangulation, which uses different research methods to answer the research question.

Mixed-methods design	Characteristics
Concurrent designs	
Concurrent triangulation design	In this design, both quantitative and qualitative methods are used simultaneously in one phase, with the aim of confirming, cross-validating or corroborating findings within a single study. Both components are considered equally important.
Concurrent nested design	This design contains one data collection phase, during which both quantitative and qualitative data are collected simultaneously. However, one method (either quantitative or qualitative) must take the dominant position, and the other method should be embedded/nested within the dominant method to address a different question or to seek information at a different level.
Concurrent transformative design	This design combines the features of both concurrent triangulation and concurrent nested designs. Specifically, it may involve a triangulation of quantitative and qualitative components that are equally important. It is then also embedded with a supplementary method to further explore the issue. However, all data are collected at the same time in one data collection phase.

Table 4.2 Types of trangulation mixed methods designs (source: Peng et al., 2011).

4.1.1.2 Sequential Mixed Methods Research Approach

With mixed methods research, the sequential approach involves conducting the research in different phases. The literature can be presented in each phase in a way that helps to establish a foundation for the research questions (Creswell, 2009). Each phase of the sequential approach builds on the results of the previous phase. There are different types of sequential approaches, depending on the nature of the investigation and the order of applying the different research methods (Creswell 2009; Flick 2009; Miles & Huberman 1994). For example, the researcher can start with qualitative data collection and analysis, followed by quantitative data collection and analysis, or vice versa. Miles & Huberman (1994) presented four ways to integrate both quantitative and qualitative approaches in one design in which two of them follow a sequential design (See Figure 4.1.) These are: (1) running both approaches in parallel; (2) continuous observation combined with several waves of surveys related to the observation; (3) starting with a qualitative approach (a semi-structured interview) which is followed by a questionnaire. The results are deepened and assessed in the third qualitative phase; (4) starting with a survey after which a complementary field study is conducted to deepen the results. Another experimental intervention in the field is subsequently conducted to test the results of the first two steps.

Creswell also classified the different approaches of sequential approaches into three types as presented in Table 4.3 below. They include 'Sequential explanatory' design, 'Sequential exploratory' design and 'Sequential transformative' design. With these three types, the order in which the researcher collects the quantitative and qualitative data is different, as is the main purpose of the study (Creswell, 2009).

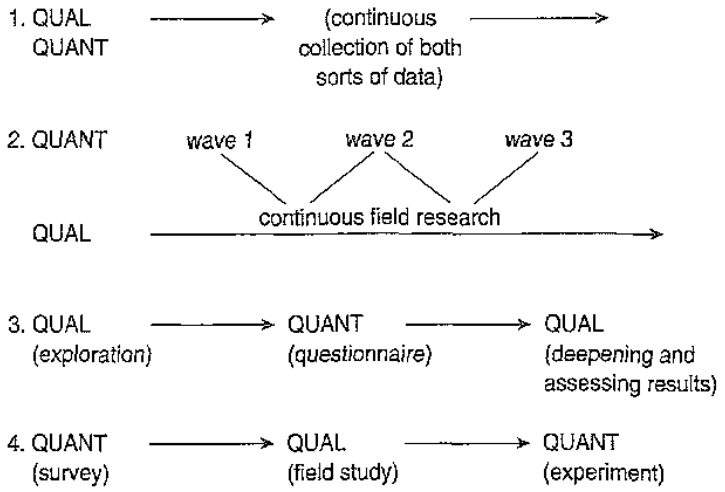

Figure 4.1 Integration of qualitative and quantitative research approaches. Source: Miles and Huberman (1994).

Mixed-methods design	Characteristics
Sequential designs	
Sequential explanatory design	This design contains two phases and is characterised by the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. Priority is given to the quantitative part. The purpose of this design is to use qualitative results to further explore and explain the findings of a primarily quantitative study.
Sequential exploratory design	This design is characterised by an initial phase of qualitative data collection and analysis. This qualitative component is then followed by a phase of quantitative data collection and analysis, with the aim of increasing the generality of the findings. In this design, priority is given to the qualitative aspect of the study.
Sequential transformative design	This design contains two distinct data collection phases (both quantitative and qualitative). Either method may be used first when collecting data, and priority can be given to either the quantitative or the qualitative phase, or both can be addressed if sufficient resources are available.

Table 4.3 Types of sequential mixed methods designs (source: Peng et al., 2011).

4.2 Selected Research Method

This research applied the mixed methods approach in which both quantitative and qualitative data were sequentially collected and analysed. The reason behind this choice was that, as suggested in the literature, collecting different types of data offers a broader understanding of a research problem than either quantitative or qualitative data alone (Creswell, 2009; Flick, 2009). This study aimed to answer the following research question: how does the perception of antisocial behaviour online affect Twitter use? To answer this question, the literature on online antisocial behaviour was reviewed. This helped to identify the gaps in previous studies. It was found that no empirical studies had considered the impact of antisocial behaviour on technology acceptance and use. Therefore, a further review of prominent technology acceptance models was made. Consequently, this study proposed a new model, derived from the literature review and the available theoretical models. It utilised the Unified Theory of Acceptance and Use of Technology (UTAUT) model and customised it by adding new constructs. Hence, model validation was crucial to improve the validity of this research. Mixed methods were adopted through use of a sequential approach and of triangulation within the phases.

The sequential design of this study had three phases. In the first phase, the proposed model was validated through a qualitative study, which was an expert review through semi-structured interviews. As suggested in the literature, expert reviews help in validating the

model and in guiding the design of the following quantitative phase (Flick, 2009). The second phase was quantitative in which an online questionnaire was designed, piloted and conducted. It was then analysed using the Structural Equation Modelling (SEM) statistical technique which enabled the researcher to assess the *Goodness of the model Fit* and to assess the research hypotheses (Hair et al., 2010). Following the quantitative phase, a third qualitative phase was designed. It aimed to deepen the understanding and explain the results obtained from the previous phase: since both results can be complementary to each other, this can lead to a better discussion and a fuller picture (Flick, 2009; Miles & Huberman, 1994). The design of this research followed the recommended strategies in the literature, conforming with the design strategies that were explained earlier in this chapter. As suggested, sequential mixed method design can start with a qualitative approach (a semi-structured interview followed by a questionnaire); then the results are deepened and assessed in a third qualitative phase (Miles & Huberman 1994). To elaborate on that, Creswell described the strategy that starts with a qualitative phase and is followed by a quantitative phase as a 'sequential exploratory' approach; following a quantitative phase with a qualitative phase is an 'explanatory' approach (Creswell, 2009). This study combined both approaches and followed the same sequence suggested by Miles & Huberman (1994). Figure 4.2 summarises the research design showing all phases along with their outcomes. The design and the results of each phase is explained later in Chapters 6, 7, and 8.

4.3 Chapter Summary

This chapter has reviewed the available research methods and highlighted the different mixed methods as adopted in the current study. It has explained how the sequential mixed approach was utilised to answer the research question through three different phases: qualitative, quantitative, and another qualitative phase. The first phase aimed to validate the proposed model and to guide the research instrument development. The second phase was the empirical study, which was carried out through use of an online questionnaire. The third phase yielded the results. The overall research design has been illustrated in this chapter, but the design of each phase will be presented in the subsequent chapters. Chapter 6 provides the design and results of the first phase, Chapter 7 covers the second phase, and Chapter 8 covers the third and last phase.

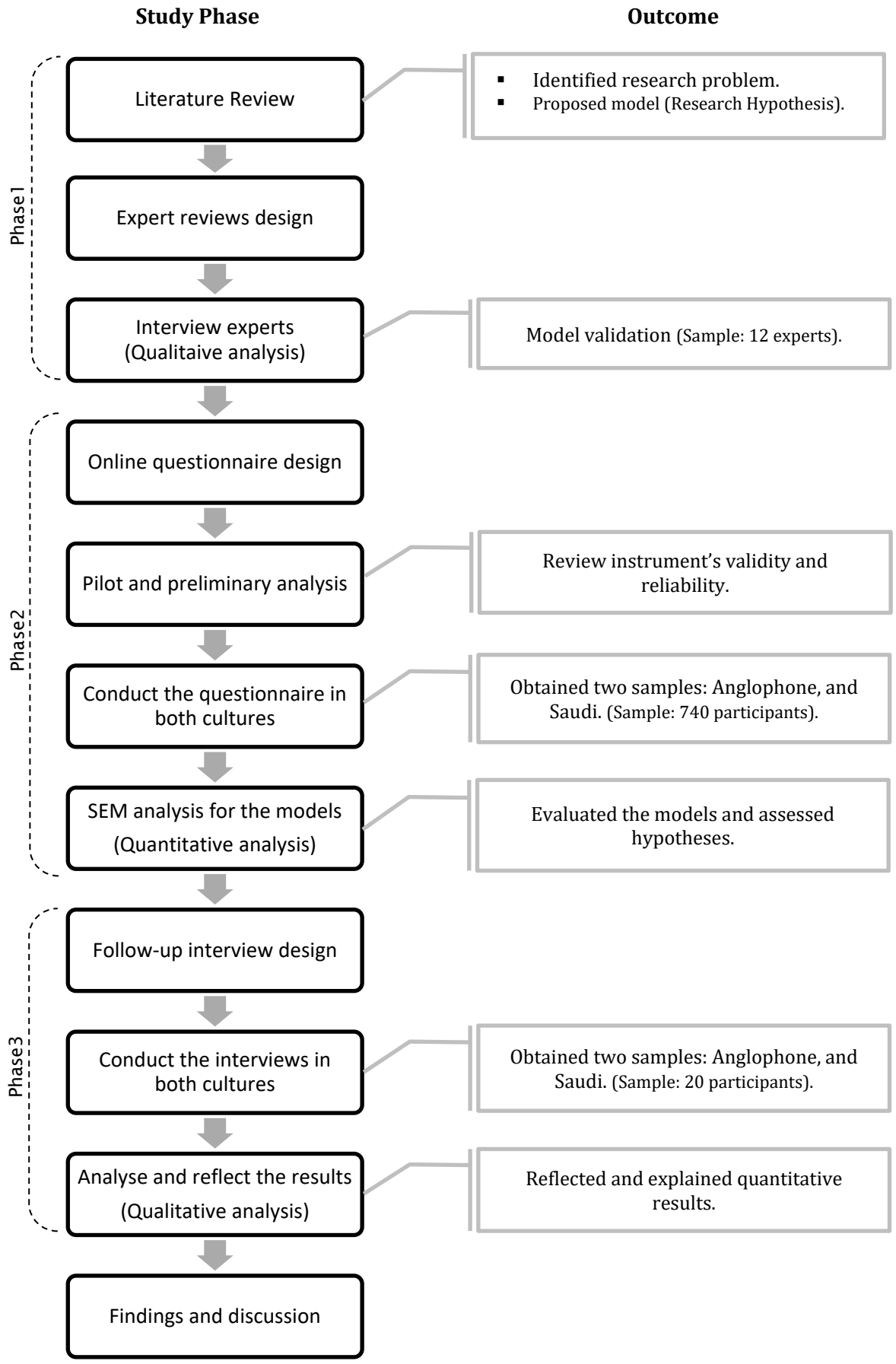

Figure 4.2 Research design and phases.

Chapter 5: Proposed Model

To answer the research question, which set out to investigate the impact of the perception of antisocial behaviour on Twitter use, a review was carried out of the essential background information around the topic of online antisocial behaviour, self-presentation and the most common theoretical models of technology use. On completion of this detailed review, the Unified Theory of Acceptance and Use of Technology (UTAUT) was found to be a suitable foundation model for the investigation. This chapter shows how the UTAUT can be extended to include concerns over antisocial behaviour, forming a new model called Technology Acceptance and Use under Risk (TAUR). The proposed model, including its factors and how they were derived and drawn from previous literature, is explained. Then, at the end of the chapter, the proposed model is illustrated (Figure 5.2).

The model in this chapter was realised as a result of further triangulation validation between the literature review, where an initial model was proposed by the researcher, and the first phase of the research (the expert reviews, explained in Chapter 6), in which the experts discussed a slightly different version and suggested some modifications to the initial proposed model. This process and the suggested changes are discussed later in Chapter 6, and this chapter lays out the final model to avoid any ambiguity for the reader. The main changes were regarding where to place the new factors within the UTAUT to preserve its integrity and to well explain the relationships among the new model.

5.1 Technology Acceptance and Use under Risk Model

To study how the perception of antisocial behaviour affects Twitter use, this study will propose the TAUR model to try to capture the diverse aspects of technology use, including technical and social factors, that had been reported to be significant in previous research, and that was discussed in the previous chapter.

This study proposes extending the Unified Theory of Acceptance and Use of Technology (UTAUT). In the first instance, UTAUT provided an effective model to consider the different factors around technology use, since it was built combining and testing previous prominent models and theories from different disciplines. Moreover, Venkatesh et al, (2003) reported its potential to explain up to 70% of variance in the use intention. In addition, most previous studies confirmed the relationship between the constructs of the model and users' acceptance and use of technology (Al-Gahtani, Hubonaand Wang, 2007; Im, Hongand Kang, 2011; Meyer and Dibbern, 2010; Müller and Stocker, 2011; Sundaravej, 2010). Therefore, UTAUT served as a sound foundation for this study to investigate and understand Twitter use and acceptance with the perception of antisocial behaviour.

As previously described, UTAUT presumes four main factors affecting user intentions to use the technology, namely: Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. These are moderated by four moderating factors: age, gender, experience and voluntariness of use (Venkatesh et al., 2003). However, the UTAUT model (and all previous component models) does not take into consideration any other 'risk' factors that could affect how individuals feel about using the technology, and, specifically, the perception of antisocial behaviour risk. Therefore, the current extension to the model aimed to fill this gap by adding three additional factors: *the perception of antisocial behaviour*, and then two supporting constructs drawn from sociology, which are *Self-presentation*, and *Protective Self-presentation* (Goffman, 1959; Rui & Stefanone, 2013).

The UTAUT model outlines different factors concerning technology use, these will be explained in more details in the following subsections, and they broadly include the the usefulness of the technology, the effort invested when using it, the existence of a social pressure to use it, and the available support and control over it. While looking into how the perception of antisocial behaviour would affect these factors, it is useful to add other factors that are more personal to the users, such as Self-presentation, and Protective Self-presentation, which both were reported to be important within social media use and interaction context (Lebel and Danylchuk, 2012; Rui and Stefanone, 2013; Smock, 2010). Adding self-presentation and protective self-presentation is intended to give a fuller picture and better understanding of the question being researched, as they constitute two important behaviours, in which users may exhibit resilience in how much they present about themselves and how, at the same time, they protect their image.

UTAUT lists a number of sub-factors that can be used under the four main factors. However, many researchers do not use all the listed sub-factors, but, instead, select what suits the purpose of their study. For instance, the final set of items used to assess the original UTAUT included only a subset of the sub-factors measurements. Thus, some sub-factors got excluded in many studies (Al-Gahtani et al., 2007; Im et al., 2011; Venkatesh et al., 2003). Similarly, in this study, some sub-factors were excluded too. These include: Extrinsic motivation, Job-fit, Relative advantage, Ease of use, Complexity, Social factors, Image and Compatibility. Three main reasons were behind these exclusions. First, UTAUT was originally proposed for task-oriented computer systems at organisational level, therefore some sub-factors might be not relevant in the context of a social network, this includes job-fit. Second, some sub-factors are very similar; for example, Perceived usefulness and Relative advantage, or Ease of use and Perceived ease of use. Thus, where one is selected there is no need to include the other as this will also result in using psychometric measures or scales that are quite similar (Venkatesh et al., 2003). Third, some sub-factors, such as Complexity and Compatibility, are not relevant with Twitter use since microblogging functions are very simple compared to other computer systems at organisational level. This

fact is supported by previous research (Schöndienst & Krasnova, 2011). The following sub-sections explain the main factors and sub-factors in the TAUR model in more detail (as they apply to Twitter). Figure 5.2 shows the model, with extensions depicted using dashed lines. The following sub-sections introduce each factor in the TAUR model.

5.1.1 Behavioural Intention

Behavioural Intention in this study represents Twitter users' intention to continue to use Twitter in the future. Behavioural Intention refers to an individual's conscious plan to make an effort to behave in a certain way (Eagly and Chaiken, 1993). Put another way, it is the extent to which a person has made up "conscious plans to perform or not perform some specified future behaviour" (Warshaw and Davis, 1985). Behavioural Intention has been widely used in technology acceptance models as an antecedent predictor to the behaviour (Davis, 1989; Venkatesh et al., 2003).

5.1.2 Performance Expectancy

Performance Expectancy (PE) is defined as the degree to which an individual believes that using Twitter is useful for different tasks including work, socialising and other goals. PE was found to have a significant positive effect on micro-blogging adoption in the workplace (Schöndienst & Krasnova, 2011). This factor is constructed using the following two sub-factors:

- *Perceived usefulness*: Perceived usefulness is defined as the degree to which an individual believes that using Twitter enhances their performance on their target tasks. Previous research confirmed that Perceived usefulness has significant influence on the intention of use of technology (F. Davis, 1989). It was also reported to be significant in Twitter use (Agrifoglio et al., 2010) and at organisational level in micro-blogging (Müller & Stocker, 2011).
- *Outcome expectations*: this sub-factor refers to the extent to which an individual believes that using Twitter can help them to obtain valuable outcomes. Outcome expectations have been proven to have a significant impact on the behavioural intention to use the technology (Compeau and Higgins, 1995; Venkatesh et al., 2003).

5.1.3 Effort Expectancy

Effort Expectancy is defined as the degree of ease associated with Twitter use. This factor is described in terms of two sub-factors:

- *Perceived ease of use*: Perceived ease of use is defined as the extent to which an individual believes that using Twitter is free of effort. The UTAUT model found that perceived ease of use was significant only at the earliest stages of the system adoption and it became non-significant as users' experience increased (Venkatesh et al., 2003). Moreover, with Twitter, a previous study found that the effort associated with learning and operating it was not a significant factor in an employee's decision to adopt it at work place, as the functionality of micro-blogging systems is very limited and simple (Schöndienst and Krasnova, 2011). However, it was the author's view that investigating the correlation between Effort Expectancy and other factors might be crucial for the study.
- *Enjoyment*: Enjoyment in using a system is defined as an individual's willingness to use it based on personal reasons and without expecting effort. Enjoyment in using a system was reported to affect user intention in many studies. Hsu & Lin (2008), for example, confirmed that enjoyment in using blogs influenced the intention of participating in blogs. Teo et al. (1999) found that enjoyment in using the Internet had great impact on the use intention. Similarly, Agrifoglio et al. (2010) confirmed that enjoyment in using Twitter positively affected Behavioural Intention.

5.1.4 Social Influence

Social Influence is defined as the extent to which an individual perceives that others approve of their participation on Twitter. It includes the following two sub-factors:

- *Subjective norm*: Subjective norm is defined as an individual's perception that most people who are important to them think that they should use Twitter. UTAUT confirmed that Subjective norm as a social influence factor has a significant impact on the system use intention, as social pressure on some employees affects their Behavioural Intention to use the system (Venkatesh et al., 2003).
- *Community identification*: Community identification is defined as the perception of belonging to the Twitter community. Hars & Ou (2001) confirmed that individual identification within a community played a major role in participation in open-source projects. This being the case, individual identification within the Twitter community might influence an individual's Behaviour Intention to use Twitter.

5.1.5 Facilitating Conditions

Facilitating Conditions are defined as the extent to which an individual believes that there is organisational and technical support and control over Twitter use. This factor is constructed from the following sub-factors:

- *Perceived behavioural control*: Perceived behavioural control is defined as an individual's perception of both internal and external constraints on their behaviour on Twitter. It includes an individual's ability to use Twitter and its available technical facilitating conditions. Perceived behavioural control was found to have a strong influence in different studies (Cheon et al., 2012; Lee, 2010; Taylor and Todd, 1995; Venkatesh et al., 2003)
- *Facilitating Conditions*: Facilitating conditions are defined as the objective factors in the system that users agree make Twitter easier to use. These could include instructions, guidelines or a special support group, for example. Facilitating conditions were also reported as being a significant factor in previous research (Venkatesh et al., 2003), it was also reported to be important to users when using microblogging within enterprises' inter-firm communication (Günther & Krasnova, 2009).

5.1.6 Self-Presentation

Self-presentation was one of the newly-added factors to the model. It is defined as the extent to which individuals control how they are perceived by others by carefully providing information to enhance their desired image on Twitter. Self-presentation was studied and described as an important online behaviour on social networks (Rui & Stefanone, 2013; Smock, 2010). It was also reported that Twitter was used for the purpose of self-presentation (Lebel & Danylchuk, 2012). Therefore, Self-presentation objective might be considered influential because many individuals use Twitter as a space to promote themselves and highlight their desired image.

5.1.7 Protective Self-Presentation

Protective Self-presentation was also a new addition to the model. In the context of this study, it is defined as the extent to which an individual is aware about strategies employed to overcome or minimise the impact of antisocial behaviour on one's image (Arkin, 1981; Rui and Stefanone, 2013). Studies have described individuals tending to employ those strategies to avoid rejection in a social context (Goffman, 1959), it has been also reported that these strategies are used in online social networks in different situations (Rui & Stefanone, 2013; Smock, 2010). Therefore, an individual's use of these strategies can affect their intention to participate in Twitter as a social network, which encompasses diverse social interaction contexts. It thus gives an individual a sort of control over their behaviour on Twitter.

5.1.8 Perception of Antisocial Behaviour

The Perception of Antisocial Behaviour was a main risk factor added to the model. It represents the perceived risk of online hostility within Twitter. It was reported that individuals responded to unwanted interaction by preforming protective self-presentation strategies in order to maintain their image or to avoid rejection (Rui & Stefanone, 2013; Smock, 2010). In addition, some studies revealed that the perception of antisocial behaviour made some users refrain from participating in online communities (Lange, 2007; Moor, Heuvelman & Verleur, 2010).

As explained in Chapter 2, the definition of online antisocial behaviour is controversial and thus difficult to define, as what is considered unacceptable to one person might be considered acceptable to another. Furthermore, it is difficult for researchers to make any moral judgments or classify any behaviour (Lange, 2006). However, it has been suggested that one of the solutions to overcoming this obstacle in online hostility research is to relax the definition and pay more attention to the impact that it leaves on individuals rather than to code or classify such an evolving behaviour (Jane, 2015). Karppi (2013) acknowledged that the impact of such behaviour is similar, regardless of the term we choose to describe it with. Therefore, we refer to '*the perception*' of antisocial behaviour and we do not give it a precise definition, but, instead, leave it up to the individual as to what made them unhappy, without considering or classifying the content. In psychology, perception refers to "the organization, identification, and interpretation of sensation in order to form mental representation" (Schacter et al., 2011).

5.2 Moderating Factors

UTAUT outlined four moderating factors that affected the other main factors. The moderating factors included gender, age, experience and voluntariness of use. This study will consider gender, age and experience, in addition to a newly-added risk factor: the perception of antisocial behaviour. Voluntariness of use is excluded because it is probably not significant in this study since Twitter use is commonly voluntary. Most Twitter users use it of their own volition and are not being subjected to any organisational pressure to use it.

Im et al. (2008) investigated the effect of perceived risk on technology acceptance employing the Technology Acceptance Model (TAM) model by Davis (1989). Their recommendation was to model it as a moderator rather than as an antecedent to other factors. Therefore, in this study, the perception of antisocial behaviour was considered as a moderator, in addition to investigating its direct effect.

The original UTAUT model was tested across diverse technologies among organizations, industries, and business functions under both mandatory and voluntary uses contexts, they confirmed that Performance Expectancy is moderated by gender and age, such that the effect is stronger for younger men. Effort Expectancy is moderated by gender, age and experience, such that the effect is stronger for older women with limited experience. Social Influence is moderated by gender, age and experience, such that the effect is stronger for older women with limited experience. And Facilitating Conditions is moderated by gender, age, and experience such that the effect is stronger for older individuals with high experience (Venkatesh et al., 2003).

Previous studies on online hostility have mentioned that younger males often engage in online hostility (Herring, Job-Sluder, Scheckler & Barab, 2002; Phillips, 2011; Thacker & Griffiths, 2012). It has also been reported that females are targeted more in trolling (Jane, 2015). Therefore, it was hypothesised that Self-Presentation, Protective Self-Presentation, and Perception of Antisocial Behaviour would be moderated by age and gender. The effect of the other moderators will be hypothesised as in Venkatesh et al. (2003).

Figure 5.1 shows the original UTAUT model, and Figure 5.2 shows the TAUR model with the extensions in dashed lines. Table 5.1 summarises the factors and their moderators.

Factor	Moderators
Performance Expectancy	Gender, age, perception of antisocial behaviour.
Effort Expectancy	Gender, age, experience, perception of antisocial behaviour.
Social Influence	Gender, age, experience, perception of antisocial behaviour.
Facilitating Conditions	Gender, age, experience, perception of antisocial behaviour.
Self-presentation Objective	Gender, age, perception of antisocial behaviour.
Protective Self-presentation Awareness	Gender, age, perception of antisocial behaviour.
Perception of Antisocial Behaviour	Gender, age.

Table 5.1 Summary of factors and moderators in the TAUR model.

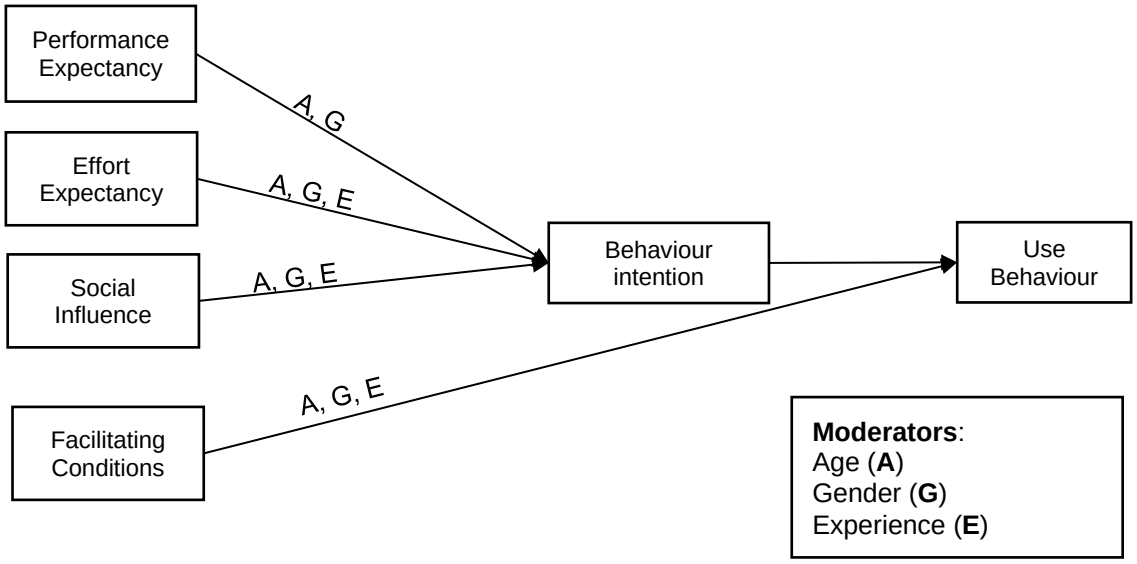

Figure 5.1 Original UTAUT model (Venkatesh et al., 2003).

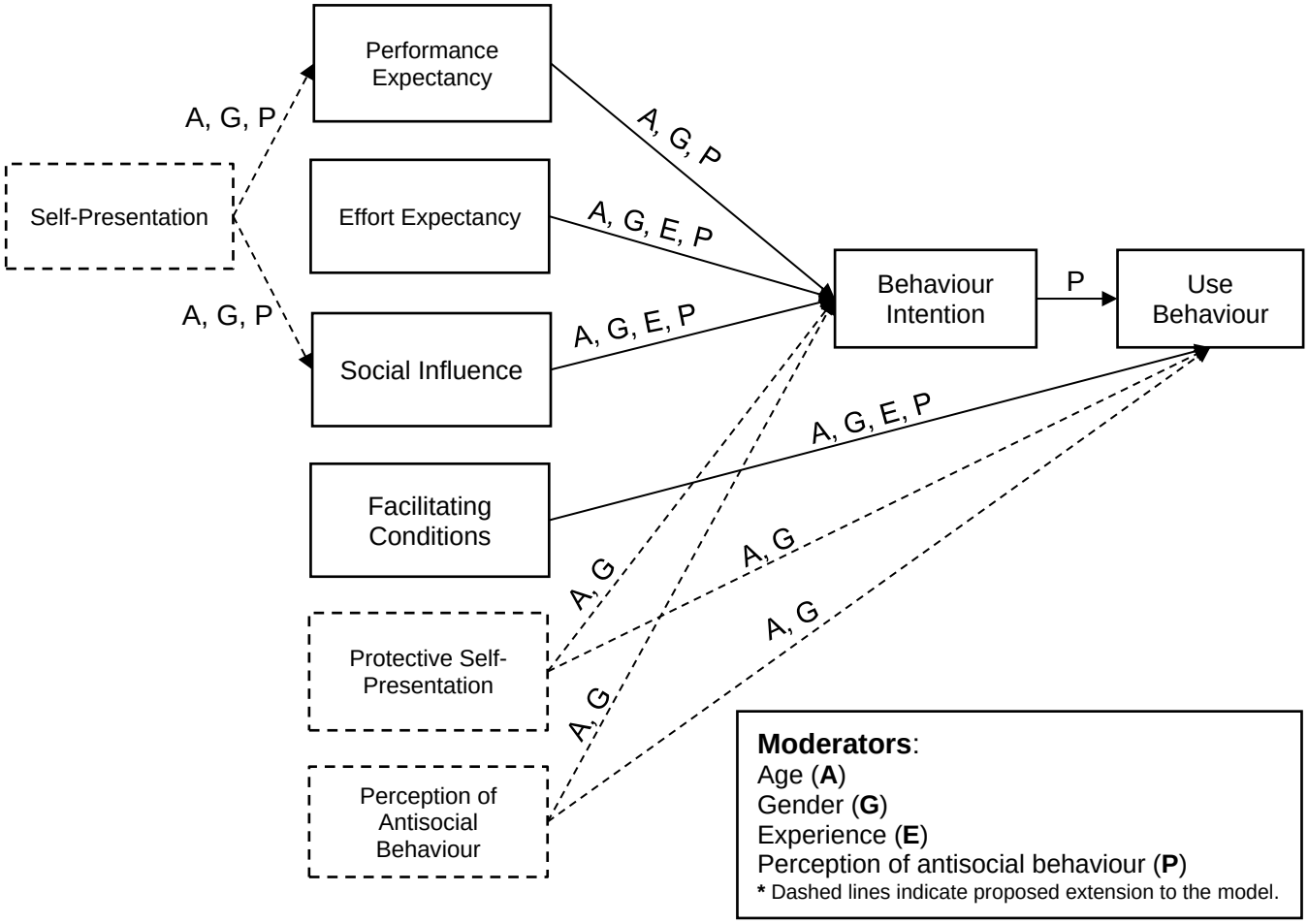

Figure 5.2 The TAUR model (*Showing the perception of antisocial behaviour as a factor and as a moderator*).

5.3 Chapter Summary

This chapter described the proposed model used in the study, the Technology Use and Acceptance under Risk (TUAR), which is based on the Unified Theory for Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). This choice was justified by the fact that UTAUT was developed by combining previous prominent models in technology acceptance and use, and it was also applied and confirmed by many subsequent studies. The factors added were the perception of antisocial behaviour, as a key risk factor, and self-presentation and protective self-presentation. The moderators (age, gender, experience and the perception of antisocial behaviour) were explained. The final proposed model is illustrated in Figure 5.2. The next chapter presents the first phase of the study, which is the expert reviews; it mainly aimed at validating the initial version of the model and discuss how well the extension is being incorporated within the original UTAUT model. The following chapter will then assess the model empirically and test the hypothesized relationships within the model, which in total will give support to the proposed model.

Chapter 6: Expert Review Design and Results

This chapter outlines the design, analysis and results of the first phase of the study: namely, the expert reviews. Expert reviews are one-on-one interviews with experts on a given subject (Tessmer, 1993). They can be used for different purposes, such as exploration or for orientation in a new study to give it a thematic structure and to assist the generation of hypotheses. This can also include preparing the main instrument in a study. They can also be used as a complementary source of insight when applying other methods. Furthermore, they can be used after the major data collection has been completed to validate the findings. In general, the expert interview is less used as a stand-alone method than as a complementary one, and it can be seen as an example of triangulation of different perspectives on a subject under study (Flick, 2009). This study used expert reviews as a first exploration and validation phase. After reviewing the literature and choosing a theoretical model for the study and extending it, the expert reviews were the initial method for validating the proposed model.

6.1 Expert Review Design

The main purpose of the expert reviews was to validate the factors in the proposed research model. The main objectives were:

- To validate and improve the model by discussing its components in relation to the target research problem;
- To validate and discuss the newly-added components and their relation to the original model;
- To make sure the model did not miss any key component related to the research problem;
- To collect data about the experts' opinions regarding all components in the model to help in assessing the significance of each component;
- To get the experts' ideas and feedback about the model and the research problem in general.

The interviews were semi-structured containing both closed and open questions. The closed questions were presented in a questionnaire that contained 25 statements covering each component in the model. (See Appendix C for the complete questionnaire.) The second part of the interview included open questions regarding newly added components, which are the perception of antisocial behaviour, and self-presentation, which needed more in-depth discussion with the experts. The following sections will describe the expert review process in more detail.

6.1.1 Sample Size and Description

In their review on sample size in qualitative research, Marshall et al., (2013) suggested that one of the methods to justify sample size is to cite recommendations by qualitative methodologists. Suggested ranges include 6-8 (Kuzel, 1992), and 6-10 (Morse, 2000). Another method suggested by Marshall et al., (2013) is to use internal justification to explain data saturation within a dataset. Data saturation in qualitative research is a concept that implies gathering data until the point at which redundancy is reached when nothing new is being added (Bowen, 2008). Therefore, sample size is directly related to the concept of saturation. Guest et al. (2006) interviewed sixty women in a phenomenological study to develop evidence-based guidelines from their dataset. They found that data saturation had occurred by the time they had analysed the twelfth interview.

The experts selected to participate in the interviews were 12 academics and researchers in computer science (CS), sociology and psychology, all with experience in social media and technology acceptance theories. Table 6.1 shows the codes used for each expert and the experts' background.

Expert	Background
A	CS
B	CS
C	CS
D	CS
E	CS
F	CS
G	CS
H	CS
I	Sociology
J	Sociology
K	Psychology
L	CS

Table 6.1 Participating experts and their background knowledge.

6.1.2 Presented Material

Expert reviews can be fruitful if the experts know what is expected from them; therefore, briefing the experts properly about the task in hand is crucial (Tessmer, 1993). The following materials were attached to the invitation email to each expert. The materials were also presented as hard copies to each expert at the beginning of the interview.

- Consent form (see Appendix B).
- The participant information sheet (see Appendix B).
- A brief summary of the proposed research model.
- A diagram of the proposed research model (as shown in Figure 6.1).
- A hard copy of the questionnaire (see Appendix C).

6.1.3 Interview Design

The interview was designed as a semi-structured interview that had two parts: the first, comprised closed questions; the second, a set of open-ended questions to invite more detailed discussion. Thus, both quantitative and qualitative analysis were required. The following sub-sections describe both.

6.1.3.1 The closed-ended questions

The closed-ended questions in the interview were presented in the form of a questionnaire to assist in the validation process. The reasons behind this were: first, it was a useful tool to establish common measurable opinions from the experts; second, it was easier and faster to cover all the parts of the model with questionnaire statements compared to open questions and discussion, which can be very difficult and time-consuming. The questionnaire contained statements about each sub-factor and moderator in the model, measured with a five-point Likert scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree) (Likert, 1932). (The complete questionnaire is shown in Appendix C).

6.1.3.2 The open questions

The open questions were provided to allow the newly-added factors to be discussed in more depth, and to gain greater insight around the model and problem. There were questions about specific factors and general questions about the model and the problem. Table 6.2 lists all the open questions.

6.1.4 Expert Review Pilot

The expert interview material and questions were piloted with three researchers from the Web and Internet Science Group at the University of Southampton. Improvements on the wording of the questions were made after the pilot and before starting the actual interviews with the experts.

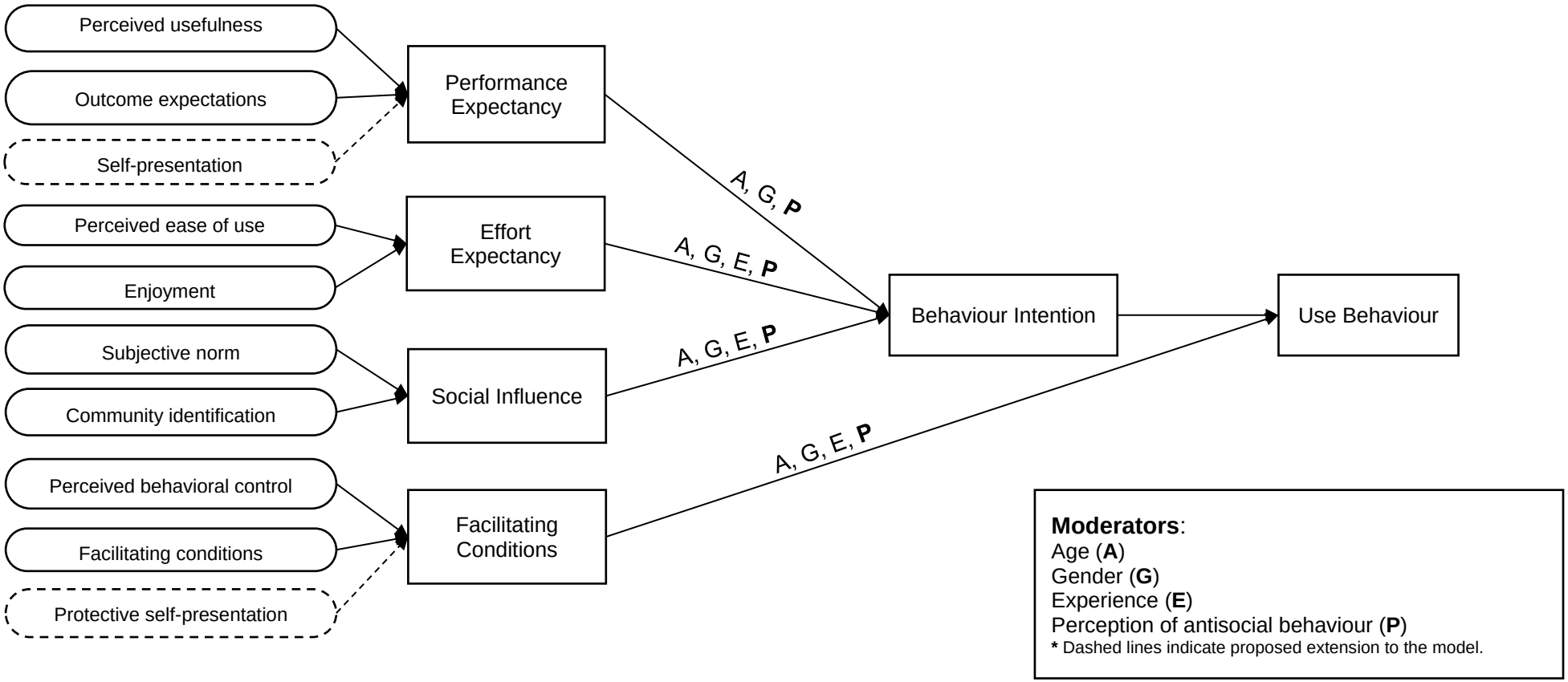

Figure 6.1 Initial proposed research model.

First: Self-presentation
1. What do you think about Self-presentation as a sub-factor to be included in the model? 2. Do you think it should go under Performance Expectancy? Why?
Second: Protective self-presentation
3. What do you think about Protective self-presentation as a sub-factor to be included in the model? 4. Do you think it should go under Facilitating Conditions? Why? 5. Do you think that ignoring unpleasant tweets should be considered as a Protective self-presentation strategy?
Third: Perception of antisocial behaviour
6. To what extent do you agree that the Perception of antisocial behaviour should act as a moderating factor? 7. To what extent do you agree that gender could moderate the influence of Facilitating Conditions on the Behavioural intention to use Twitter?
Fourth: General questions
8. Are there any other important factors missing that should be included in the model? 9. Would you suggest any modifications or additions?

Table 6.2 Expert review open questions.

6.1.5 Interview Procedure

All the experts were invited to participate by email; all materials were attached and the purpose of the interview was stated. Then, a one-to-one interview by the researcher was conducted with the experts who agreed to take part. The experts were first given the consent form to sign and were asked for permission to record the discussion. After that, the researcher explained the research problem to the experts, along with the model and its components. The experts were also given a brief printed summary that explained the model and a printed diagram. After explaining the model and making sure that the expert understood it, the expert was given a printed questionnaire that covered all the components in the model. The experts could ask questions and discuss any item. After filling in the questionnaire, the experts were asked open questions to discuss the additions to the model. The interviews were all conducted at Southampton University campus and each interview took between fifty and sixty minutes to complete.

6.1.6 Ethics Approval

The ethics approval of the expert reviews was obtained from the Ethics Committee at the University of Southampton (research ethics number 16133). No personal data was collected in the expert reviews and all collected information was anonymised. The experts gave their consent prior to the interview by signing the consent form and participant information sheet.

6.1.7 Data Collection and Analysis

The data collected from the interviews contained both qualitative and quantitative data. The qualitative data comprised the experts' answers to the open questions, which were in audio recorded format. The data needed to be transcribed into written format in order to conduct the analysis (Braun and Clarke, 2006). While the transcription process seems time-consuming and frustrating, it is recommended that researchers transcribe the interviews themselves as a good way of familiarising themselves with the data (Riessman, 1993). Some scholars even suggest that it is a key step prior to any qualitative analysis as it is considered an interpretative act where meanings are drawn out, not simply a mechanical act of transforming spoken words into a written format (Bird, 2005). After the transcription phase had been completed, all transcripts were saved in the qualitative analysis tool, NVivo, which was used to support the qualitative analysis. The quantitative data comprised the answers to the questionnaire. All the answers were entered into the statistical analysis software, SPSS. The next section gives a complete description and the results of both analysis methods.

6.2 Expert Review Analysis and Results

6.2.1 Quantitative Analysis

As mentioned earlier, the purpose of the expert reviews was to validate the factors in the proposed model. Triangulating is considered a good validation approach (Creswell, 2009). In addition to the open questions and discussion, the experts were given a questionnaire to ensure full coverage of all components in the model. The questionnaire contained 25 questions about each sub-factor and moderator in the model. All questions were measured using a five-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) (Likert, 1932). See Appendix C for the complete questionnaire.

The statistical software SPSS was used to analyse the quantitative data. All the experts' responses were collected and entered into SPSS. Then, One Sample T-test was used as the statistical test to analyse the results: it compares the mean of a population (μ) with a hypothesised value (μ_0). The hypothesised mean (μ_0) was set to 3, which corresponds to Neutral in the Likert scale. The following hypotheses were used to test each component:

> H0: if the mean rating of a given component is not different from 3, then the component is not important.
>
> H1: if the mean rating of a given component is different from 3, then the component is important.

The statistical significance level alpha (α) was set to 0.01 instead of the conventional level of 0.05 to avoid the bias of frequent hypothesis testing effect. H0 is rejected only if the statistical significance of the component is greater than alpha (p-value >= α); otherwise the component is statistically significant. (The complete analysis result tables are shown in Appendix D) Table 6.3 and Table 6.4 show the analysis of the responses including the mean and the p-value. Most components had mean values greater than 3, which is the test value. Only two components had mean values less than 3. Those were the moderating relationships between gender-performance expectancy and gender-effort expectancy. This was expected as most experts did not think that gender effect would be significant. This was also reflected in the experts' answers to open questions about gender and will be discussed later in the qualitative analysis section.

To find whether a given component is statistically significant, the p-value should be less than 0.01, which indicates the statistical significance level of an item being higher than the test value (3). As shown in Table 6.3 and Table 6.4, most components were statistically significant with low p-value. However, as expected from the low mean values of gender influence, it had p-values > 0.01 for gender influence on Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. Thus, we cannot say with statistical significance that the experts considered gender an important moderating factor.

Other sub-factors that had p-values > 0.01 were Perceived behavioural control and Facilitating conditions. A possible reason behind this was because the experts did not think that with Twitter the Facilitating conditions (which represent the platform support and self-control over the account) would make a difference as users do not usually pay attention to them.

Factor	Sub-factor	Mean	p-value	Statistically significant
Performance expectancy (PE)	Perceived usefulness	4.00	<0.001	Yes
	Outcome expectation	4.25	<0.001	Yes
	Self-presentation objective	4.42	<0.001	Yes
Effort Expectancy (EE)	Perceived ease of use	4.25	<0.001	Yes
	Enjoyment	4.08	<0.001	Yes
Social Influence (SI)	Subjective norm	3.83	<0.001	Yes
	Community identification	3.75	<0.001	Yes
Facilitating Conditions (FC)	Perceived behavioural control	3.42	0.096	No
	Facilitating conditions	3.42	0.014	No
	Protective self-presentation awareness	3.83	<0.001	Yes

Table 6.3 T-test result for the main factors.

	Factor			
Moderator	**Performance Expectancy**	**Effort Expectancy**	**Social Influence**	**Facilitating Conditions**
Experience		4.58 [<0.001]	4.17 [<0.001]	4.25 [<0.001]
Age	3.83 [<0.001]	4.17 [<0.001]	4.17 [<0.001]	4.00 [<0.001]
Gender	2.67 [0.220]	2.67 [0.104]	3.58 [0.046]	3.58 [0.046]
Perception of antisocial behaviour	4.25 [<0.001]	4.42 [<0.001]	4.33 [<0.001]	4.25 [<0.001]
Legend: Mean [p-value]				

Table 6.4 T-test results for the Moderator/Factor relationship.

6.2.2 Qualitative Analysis

All interviews with the experts were transcribed and saved into NVivo, a software tool used for qualitative data analysis that helps to manage and understand text-based data. Table 6.5 summarises the results of the qualitative analysis. More details are discussed in the following subsections.

	Factor		
Expert	**Self-presentation**	**Protective self-presentation**	**Perception of antisocial behaviour**
A	◉	●	●
B	●	●	●
C	◉	◉	◉
D	●	◉	◉
E	●	◉	◉
F	◉	◉	◉
G	●	◉	◉
H	●	◉	◉
I	◉	◉	◉
J	◉	◉	◉
K	●	◉	●
L	◉	●	◉
Suggested alternatives	▪ Could be related to Social Influence. (B, E, G, K) ▪ Could be added in another layer under PE. (D) ▪ Could be placed under OE. (H)	▪ Could be adopted as a main factor (A, B, L) ▪ Could change the label for FC. (D)	▪ Could be adopted as a main factor. (A, B, K) ▪ Could be linked to BI. (C)
● Expert agreed with it. ◉ Expert agreed with it and where it was located.			

Table 6.5 Summary of experts' opinions on the new factors.

6.2.2.1 Self-presentation objective and Performance Expectancy

The Self-presentation objective was included in the model for two main reasons. Firstly, it is a very important aspect of social networks. Secondly, it is highly vulnerable to antisocial behaviour compared to any other task or objective such as announcements or advertising. **Expert I** explained: "*I think the identity and self are at stake in the performance of tasks, because if they are at stake, people are aware of them and therefore they're an important dimension of behaviour.*" **Expert K** said: "*We do know from sociology and psychology how important self-presentation is to people, and how they will do the most extraordinary things in order to project the desired image that they want, so there's absolutely no question that it is important.*"

In questions 1 and 2, the experts were asked two things. Firstly, to talk about self-presentation and how relevant and important it is in the context of social networks and particularly with Twitter. Secondly, they were asked to discuss its relationship to the Performance Expectancy (PE) factor and where it should be placed in the model. Most experts agreed that it could be a sub-factor under PE; some experts had mixed opinions; others thought that it should be placed under Social influence (SI). In the following paragraphs, I will discuss all the different points of views and give quotations when possible.

Table 6.5 summarises the experts' opinions on the newly-added factors. It was clear there was agreement on including self-presentation in the model as an important subject for research. However, where it should be placed was not straightforward. The main reason for this was that, as an objective, self-presentation can easily be classified under Social Influence (SI) since it reflects on one's image which is perceived by others, and this is where SI plays a part. However, at the same time, self-presentation is a goal-driven process and people make use of technology to assist that process. That is the reason behind classifying it under Performance Expectancy (PE).

Expert A thought that where to place this newly-added factor depended on its definition and agreed to place it under PE based on the definitions provided. Similarly, **Expert E** agreed that it could go under PE but at the same time said: "*I think it could fit under any of them depending on how you argue the point. For example, you can put it under Social Influence.*" **Experts G and K** also thought that it could be linked to Social Influence.

Expert G clarified the reason behind considering self-presentation to be a sub-factor of PE by saying that "*…it does actually have an impact on why you would be using Twitter and the degree to which you might use it.*" **Expert B** elaborated: "T*he fact that you have Self-presentation objective and Protective self-presentation awareness here, you know, your objective is to do something but there's a risk. So, it seems like a logical argument. So if*

you want to do something, what are the factors that are going to stop you or might affect whether you do it? And one is worrying about what could happen."

Experts B, D, and H agreed but at the same time highlighted that there was an overlap between the existing other sub-factors under PE, namely Perceived usefulness (PU) and Outcome expectations (OE). **Expert H** leant towards linking it to OE, while **Expert D** tended to link it to PU. **Expert B,** on the other hand, mentioned only the overlap issue, without suggesting or favouring one placement over another. **Expert B** stated: "*If it is an objective, then clearly it has something to do with usefulness and outcome expectations. There's an issue here - in a sense that Perceived usefulness and Outcome expectations are part of it.*"

Expert I agreed with the fact that self-presentation was a major objective in using Twitter, saying: "*That's what I do it for!"* At the same time, this expert asserted that social identity theory doesn't see the person as an individual but rather as part of a group, and that the definition of self will depend upon the group identity, which in turn links to social influence.

Experts C, F, J, L agreed with placing Self-presentation objective under PE without mentioning any alternatives. **Expert J** confirmed the importance of self-presentation by saying "*I think in terms of Twitter, in terms of the Web, in general, the issue of identity matters because identity matters. One of the ways of configuring the identity is through the dramaturgical model of self-presentation, so that's one way of inscribing the question of identity in online behaviour.*"

The final quotation is from **Expert I** and reveals how important this factor is: "*Twitter and other social media channels are presentation of self – that's what it is there for. If you take all the social media away, then people will come back to talking to each other, talking about their work and saying what they are doing. Social media is just another platform for publicising your thoughts. Fifty years ago, we used to write letters. This is just a form of presenting yourself. If you are tweeting opinion, that's presentation of self.*"

To conclude, the experts' opinions on the Self-presentation objective can be summarised in two points: first, it is a key component and a very important factor in this research problem; second, there is no one accurate way of integrating it within the model. The experts divided into three groups on this point; a) those who agreed with the initial placing and included it under PE; b) those who argued that it could go under SI; c) those who agreed with it but argued where to place it within PE. An important conclusion that could be drawn from this argument – and a possible explanation – is about the UTAUT model itself. UTAUT provides an excellent theoretical way of modelling users' attitudes about using technology. However, it is a general model that was applied to task-oriented computer systems, which might not have had as rich a social context as Twitter, and that makes it difficult to accurately utilise

the model in a context where technology has complicated interrelated social and professional dimensions.

6.2.2.2 Protective self-presentation and Facilitating conditions

Protective self-presentation (PSP) was also discussed with the experts as one of the newly added factors. It represents the way people strategies their contributions within the social network context in order to avoid rejection or negative outcomes. An example from the interview with **Expert F**:

> Expert F: "*For example, we did the Gamer Gate talk here a while ago, and I was tweeting about it but I didn't mention the word 'Gamer Gate' because it then would be shown on other people's feed and then they would tweet me.* "
>
> Interviewer: "*So your awareness about it made you act differently?"*
>
> Expert F: "*Yes, because of my perception of antisocial behaviour I changed the way I behaved.*"

Another example by **Experts D** is "*For example, when the Labour Party had been elected, I noticed that only certain people were talking about it on social media and I asked the ones who didn't talk about it why and they said, well I'm happy about it but I hate arguing on the Internet so I thought I would shy away from it*." **Expert L** also mentioned, "*You have to be careful because even if you deleted your tweet, people would take a screenshot and use it*."

All experts agreed with including Protective self-presentation in the model as an important factor in the context of this investigation. "*The awareness, I think, is related to the model and it is very important in the context of this research and it influences how people use social networks. For example, the way you use social networks when you started a few years ago is very different from how you use it now, and that comes from your experience and awareness of how to deal with it,*" said **Expert A**. **Expert B** supported this view, adding it to the model by linking it to Self-presentation objective: "*The fact that you have Self-presentation objective and Protective self-presentation awareness here - you know - your objective is to do something; but there's a risk, so it seems like a logical argument."*

Most of the experts also agreed with where the PSP had initially been placed on the model: under Facilitating Conditions (FC). However, some of the experts had different opinions. **Expert A,** for example, thought that PSP should be considered as a separate new factor and it should be given more attention. **Expert L** also supported this view. **Expert B** agreed with including it under FC but also suggested that it could be a new factor. **Expert C,** on the other hand, did not see it as an independent factor: "*The way I see it, we're talking*

about Facilitating Conditions here, so being aware of what you can do to protect yourself will have something to do with it." **Expert E** also agreed saying that: "*Protective self-presentation awareness is the idea of having agency over the things they perceive on Twitter. Yes, I think it's relevant and Facilitating Conditions is a good fit for it*." Moreover, **Expert F** shared the same point of view: "*It is about them having control over things, isn't it? Then it fits under Facilitating Conditions*." **Expert H** agreed: "*…Because if you are not aware of how to protect yourself online, you wouldn't really want to present yourself online*." **Expert K** also agreed with PSP: "*It is a form of control, so for me, yes, it belongs somewhere under FC. I would integrate it under Perceived behaviour control, but pulling it out here makes it more visible and makes it more amenable to your manipulation and your measurements so that you can see its effect more clearly*."

Expert D agreed with the factor but did not think that Facilitating Conditions was the best label. "*I definitely think that these three things are connected, but I think the problem is whether considering Facilitating Conditions to be the best label for this whole thing*." **Expert I** agreed that PSP was important and it affected also both the enjoyment and the SI, but agreed with including it under FC. **Expert J** highlighted the importance of PSP and linked it to self-presentation and to Performance Expectancy saying that: "*One of the things we do is strategize the identities*" and "*we monitor the performance in order that we don't bring any threats to the way in which the identities are being used*." **Expert J** also agreed that it was reasonable to include it under FC: "*I think if one feels that one's identity or selfhood are going to be threatened in a forum or anything of that nature on Twitter, then I think it is an inhibiting factor - that would prohibit the facilitation of engagement*".

The collective conclusions from the experts' opinions on PSP can be summarised in the following points: a) PSP is an important factor in the current research problem; b) it can be incorporated under FC as it represents a form of control; it could also facilitate user engagement; c) it could also be looked at as a separate factor and studied to see how it could relate to the other factors.

6.2.2.3 Ignoring antisocial behaviour as a protective self-presentation strategy

The literature around protective self-presentation strategies classified the strategies into repudiative and subtractive strategies in which people either defend themselves by responding and providing more information, or try to disconnect themselves from the undesired content (Rui and Stefanone, 2013). In all previously reported strategies from sociology, ignoring was not mentioned explicitly as one of the strategies especially used under strategic self-presentation online.

'Planned ignoring' is defined as withholding the reinforcement in response to an undesired behaviour in order to avoid or limit its occurrence in the future (Lavay et al., 2006). Ignoring

is one of the strategies that many people conventionally follow online. For example, **Expert J** mentioned: "*I do contribute on the debates on YouTube sometimes, but my strategy would be to ignore the antisocial material and just concentrate on replying to people who are making sense or are being constructive in terms of criticism. So, I think, combined with the strategy of ignoring the antisocial stuff, then it's possible to override any inhabiting factors with antisocial behaviour on Twitter*." However, since ignoring was not explicitly included with PSP strategies, the experts were asked about it. **Expert K** explained: "*Behaviour psychology would tell you that ignoring something is a very powerful mechanism in controlling someone else's behaviour and probably one of the most powerful mechanisms known. It couldn't be much in sociology because those concepts don't translate well to group behaviour; but within individual behaviour, for example, if a particular person has sent you a tweet, you either respond to it positively or negatively or ignore it. It's one of the things you do*."

All experts were asked an open question about whether ignoring could be one of the strategies and why that was. All experts agreed that it could be but at different levels. They gave many reasons for considering it a valid response to antisocial behaviour. **Expert A** mentioned that: "*Most of those who engage in trolling or flaming are young people. Mature people who have awareness will not respond to trolls*." And others, including **Expert C,** indicated that it was a wise choice as: "*If you don't give something a value it will demolish its importance."* **Expert G** mentioned that this strategy could be associated with age. **Expert J** explained it by saying that: "*People like having effects - they like to announce themselves and part of one's investment in the conversation has to do with the degree of responsiveness; so if you are ignored, you are getting less attention*."

6.2.2.4 Perception of antisocial behaviour

Experts were asked to discuss the perception of antisocial behaviour as a risk component to be included in the model, and whether it should be considered as a moderating factor or as a main factor. All experts agreed that it was a key component in the investigation. **Expert J** described it as "*…an inhibiting factor that would prohibit the facilitation of engagement*." Most experts expressed the huge magnitude of the problem within their answers. For example, **Expert F** said: "*Trolling online is huge, and it is only important if you are well known. It definitely changes the way people interact; I imagine the knowledge of it leads to self-censorship*." **Expert L** also said: "*I've seen on Twitter people abusing each other. It is a big thing; people like to use Twitter to argue about different things. It is an open space where everyone can say his opinion."* **Expert K** said: *"Antisocial behaviour on the Web is a phenomenon that is extraordinary in its breadth and its depth and it needs to be investigated. We need to know what on earth is going on with people who now find pleasure in hurting people in that way*."

Most experts agreed with the initial setting of the model and considered it as a moderating factor. "*I think that your perception of antisocial behaviour is probably going to affect your use of a social media system at every level*", said **Expert D.** However, some experts, like **Expert A**, thought that it should be considered as a main factor, having direct influence on the Behaviour Intention rather than being a moderating factor on the other factors. **Experts B and K** indicated that it depended on whether the perception of antisocial behaviour would actually affect the other factors, and in that case it could be considered as a moderator rather than an independent variable.

Experts C, D, E, F, and G stated that the perception of antisocial behaviour would affect all the other factors, which are the PE, EE, SI and FC. However, the effect varies from one factor to another as **Expert D** explained: "*I think there is a question of weighting. I think it would probably affect some parts more than the others. For example, I think it is going to affect Performance Expectancy and Social Influence quite a lot compared to Effort Expectancy.*" **Expert G** emphasised SI, while **Expert F** placed more emphasis on FC. **Expert C** indicated that it might also affect the Behaviour Intention itself. Table 6.6 summarises the experts' opinions on the effect of the perception of antisocial behaviour on the other factors.

	Factors				
	PE	**EE**	**SI**	**FC**	**BI**
General effect	All experts	All experts	All experts	All experts	
Strong effect	B, D, F	F, E	A, C, D, G, F, H, L	F, E	A, C

Table 6.6 The effect of the perception of antisocial behaviour on other factors.

Finally, the experts' opinions on the perception of antisocial behaviour can be summarised in three points: a) it is a very important component in the model; b) it can be considered as a moderating factor since it could have an effect on the other factors; c) it could also be considered as a main factor that has a direct influence on the behavioural intention to use Twitter.

6.2.2.5 Gender influence

As shown previously in the quantitative data analysis, gender influence as a moderating factor had very low scores according to the experts' points of view. Table 6.7 summarises the experts' attitudes to considering gender in the model. Below, different opinions from different experts are discussed, as well as some reflection on findings in previous literature on gender and technology and online antisocial behaviour.

Agree	J, I.
Disagree	D, E, K.
Mixed	A, B, C, F, G, H, L.

Table 6.7 Experts' opinions on gender influence.

In the original UTAUT model, gender had no influence over FC. However, FC differs in the proposed model as it includes protective self-presentation awareness. Thus, experts were asked specifically about gender influence on FC.

Experts A and D believed that gender influence would be minor and could have an effect only when considering culture because it varied from one country to another. Similarly, **Experts H and L** believed that gender is connected more to culture. **Expert G** said: "*If we look at different cultures, then gender and age have a great impact on it*." **Expert C** also mentioned that it is personal and not gender specific but "*…it's not to be excluded completely*." **Expert E** also shared the same point of view but at the same time mentioned that: "*…possibly women might block tweets more because women are more often the target of antisocial behaviour but I think if you subject men to the same antisocial behaviour, they would use it equally. It will be interesting to find out*." **Expert F** agreed that gender could affect FC for the same reason as **Expert E**: "*I think generally because of the issues I mentioned earlier with Anita Sarkeesian*[9]*, where women tend to get more in these communities, and I'd imagine - I don't know, I'm not a woman - but I imagine it is a very different experience for you on Twitter as a woman. So that would influence how much control you feel you've got over it, and where you see yourself in the community*." Gender was notably considered to be an important moderator on Social Influence according to different **Experts** such as **A, D, F, H,** and **L**.

Experts I and **J,** however, had a different opinion about gender. As described by **Expert I:** "*Gender is a massive social variable. As a social scientist, it's almost like how something could not be moderated by gender. Because it makes no sense - because gender is a formal identity and because gender has effect on something*." During the discussion, **Expert I** was asked to comment on men and women using technology in the same way. The expert's response was that: "*It is nonsense! How you use technology as a man and a woman is a different question. The impact it has on you if you are being trolled on Twitter is different*." **Expert J** also stressed the importance of gender role as a moderating factor. One comment was that: "*There are whole websites in which I am involved, which are entirely male. And*

[9] A media critic and the creator of http://feministfrequency.com, a non-profit charity that provides video web series to explore the representations of women in pop culture narratives. She was a target of harassment mainly because of her opinions on women representations in video games.

I am wondering, what are the factors that are stopping women from getting involved in them? So I think there are contextual factors related to gender, which do kind of prohibit the use of technology. For Twitter, I don't know what the answer is."

The difference between the opinions could be classified by the experts' background, as the computer science experts tended to minimise gender effect as a moderating factor, while the social scientist thought that it was a key variable in the model. One expert with a psychology background had a mixed opinion but mostly favoured not giving consideration to gender as a moderator, as its effect is embedded within other factors, such as culture, for example and others. This expert said: "*Gender covers hidden underlying variables*," and it could also lead us to the problem of stereotyping men and women in regard to task performance. Venkatesh et al. (2003) indicated that gender influence on UTAUT appeared to work in concert with age, as their results showed that EE is more salient for women. It was particularly salient for older workers with relatively low experience. They suggested that the gender differences in how technology is perceived would probably disappear in the future, and that the previously reported results on gender differences in technology use were maybe transitory as later generations are raised and educated in the digital age.

To conclude, despite the low scores on quantitative data and the discrepancy between the experts' opinions, it was decided that gender would be kept in the model as a moderating factor, but culture would be also considered. The main reason for this was due to the nature of the problem being investigated, as it was reported in the literature that women tend to be the victims of antisocial behaviour more than men (Jane, 2015), and this could affect their perception of antisocial behaviour or the protective self-presentation strategies regardless of their PE or EE.

6.2.3 Emerging issues

One of the objectives from conducting the expert reviews was to gain insight into the model and to help to develop it into a comprehensive model that would take into account the most important factors in the context of the problem. The interviews with the experts yielded many issues that could affect the model or the investigation in general.

Table 6.8 lists all the emerging issues, along with the experts who raised them. The following paragraphs describe them in more detail.

Emerging issue	Expert(s)
Cultural impact	A, D, G, H, L, I
Passive users	B
Usage level	B
Personal or professional use	B, L, I
Double identity	B, H
Anonymity	H, L
Multiple sets of moderators	E, G

Table 6.8 Emerging issues from the experts' reviews.

6.2.3.1 Culture

Culture was one of the important issues that many experts brought up during discussion, especially when discussing factors like Self-presentation, Social Influence and Protective self-presentation, and it was also usually coupled with gender influence. One example was a response by **Expert L**: "*Yes, but in which culture? It is an issue but it differs from one culture to another. In some cultures, men tend to present themselves more than females. It affects everything, even the social influence.*" **Expert H** also commented: "*Referring to a cultural background, it could be even in the West, women tend to worry about being stalked or getting hurt on social media*" and that "*…if you are from a specific society, you'll be more careful, you'll block more, you might have your profile as private. So, it depends on both gender and culture.*" **Experts A and D** also discussed cultural differences, saying that they could also affect Facilitating conditions, or how Twitter admins themselves would deal with antisocial behaviour. **Expert D** gave an example:

> *"For example, I read that Twitter, its moderators and admins are commonly from the West and they are quite used to dealing with different forms of abuse that are commonly happening in a sort of Western culture. But I heard that they have things reported to them which are quite serious insults for one particular community but they didn't recognise it and didn't understand the problem there and ignored it. So, that is a part of this whole Facilitating Conditions there and has direct cultural impact."*

According to **Expert G**, culture and age could also have an impact. Cultural differences in using technology was also considered in previous research (Al-Gahtani et al., 2007; Rui and Stefanone, 2013). Thus, it appears to be an important moderator and was considered in the model by applying it to two different cultures, namely, Anglophone and Saudi Arabian,

thereby extending the knowledge about the applicability of such models in both Western and non-Western cultures.

6.2.3.2 Double identity and anonymity

One of the issues that is frequently mentioned in computer-mediated communication literature and earlier research on online hostility and behaviour is the issue of anonymity (Bishop, 2012; Hardaker, 2010; Suler and Ph, 2004). Researchers explained that anonymity could be one of the reasons behind disinhibition online. Some experts recommended that, for the model to explain users' behaviour more accurately, it was crucial to know what the status was of the participants, as people using their own identity might have a different experience compared to those using it anonymously. **Expert H** explained:

> *Expressing your own opinions while you are actually identifying yourself will always be protected by your image, and you always want to make sure that you don't put something that is controversial that might affect your image, especially when there's no support from the platform that you are using to remove the things that you have put up there and it will be very difficult to maintain this image. So what I'm trying to say is that the identity should be linked here very clearly.*

Another related issue is double identities as some individuals might have more than one account on Twitter for different purposes. **Expert B** mentioned that "*…somebody might have a personal account and a professional account. Do they have two different behaviours? So what happens if people have actually two Twitter accounts*?" Thus this issue also needed to be considered. **Expert H** supported this idea by giving an example:

> *Because, for example, I know people who have two Twitter accounts. One is to express themselves and they don't care about antisocial behaviour because what they want is to put their opinion out there, without restrictions. They don't want to be personally associated with what they are actually posting, so that would differ, I think. It would be helpful to identify that this model would work with certain conditions given the identity of the person.*

Therefore, based on the experts' opinions which are supported by previous research, the issue of anonymity and double identity was to be considered in the model.

6.2.3.3 Other issues

Other issues that could also affect the model were discussed by the experts. These included the nature of Twitter use, whether users were using it for personal or professional reasons, or whether they were using it as consumers or followers only. Another issue was whether they were heavy users. Experts also discussed whether those issues mattered in the model

or not. All these issues were taken into account later, during the research instrument design by adding control questions about the identity and the nature of Twitter use and others.

6.2.4 Conclusion and Discussion

The expert reviews were very helpful in validating the factors in the model and gaining useful insight around it in general. The following points summarise the conclusions drawn from the quantitative and qualitative analysis of the expert reviews:

- There was agreement by all experts on the newly-added factors to the model. They also agreed on the arguments about how they were related to the research problem. However, where to place them in the model was a difficult question, because despite many of the experts agreeing on the initial settings, some gave valid alternative suggestions.
- The results of both quantitative and qualitative analysis on including gender as a moderator received little support. However, discussions showed that it was because gender alone might not be enough, but when coupled with other moderators, such as culture or age, then it might make a difference.
- The Perception of antisocial behaviour was re-categorised and made a main factor instead of a moderator as this allowed for better understanding of the relationship between it and the other factors.
- Self-presentation was also re-categorised as a main factor and linked to both Performance Expectancy and Social Influence. This decision was made because of the different opinions supporting its relation to both, and to preserve the original constructs of the UTAUT.
- Protective self-presentation was re-categorised as a main factor in order to get a clear understanding of users' resistance to antisocial behaviour and also to preserve the relationships in the UTAUT model.
- Gender will be kept in the model as a moderator for two reasons: first, because the literature provided evidence that gender is a key social variable in the model (Venkatesh & Morris, 2000); second, gender is important in the context of this research and the nature of the research problem as it has been reported that women are usually more targeted online than men (Jane, 2015).
- Cultural impact was taken into consideration. This was done by applying the model in two different cultures: namely, Saudi Arabian and Anglophone.
- Other issues like anonymity, double identity, type and frequency of use were also taken into account when designing the research instrument.

Despite UTAUT giving an excellent theoretical based model to explain what influences technology use and acceptance, it could be somewhat difficult to adapt in some situations.

The problem with the model, and most previous technology acceptance models, is that it was designed to tackle task oriented computer systems. However, with Twitter, the performed tasks are largely social compared to other work related computer systems, thus making PE and SI highly related and somewhat difficult to separate. Moreover, the generality of the model makes it somewhat challenging to model a specific problem. As **Expert D** explained: "*The problem with these abstract models is that you are trying to model something here that is inherently very subjective and very, very difficult. There will be arguments for doing this in an entirely different way that are perfectly valid, but what we are talking about here is whether this semantically makes sense to someone who's trying to get a handle on what's going on, and to me, semantically [the research model] makes sense where it is.*" **Expert K** had a similar comment as well. Figure 6.2 shows the revised model after the expert reviews.

6.3 Chapter Summary

This chapter presented the design and the analysis of the first phase of the research, which is the expert reviews. The aim was to validate the proposed model and discuss the new factors and how they fitted into the model. The design of the expert review interviews was first discussed, presenting the sample size, which was twelve experts from computer science, sociology, and psychology. The interview was designed as a semi-structured interview, that included both quantitative and qualitative questions. The materials given to the experts were presented, plus the interview questions and the interview procedure. After that, the results were presented starting with the quantitative analysis, then the qualitative analysis, which discussed the experts' answers on each issue. The results obtained from this phase can be summarised in the following points: (1) the experts supported the proposed model in general; (2) triangulating between the literature, the quantitative and qualitative results assured the importance of the chosen factors in the proposed model; (3) the initially-proposed model was modified to create a better, more structured version that preserved the integrity of the UTAUT base model; (4) discussion with the experts also revealed some important issues, such as the need to consider culture, and gave some insight for the questionnaire design.

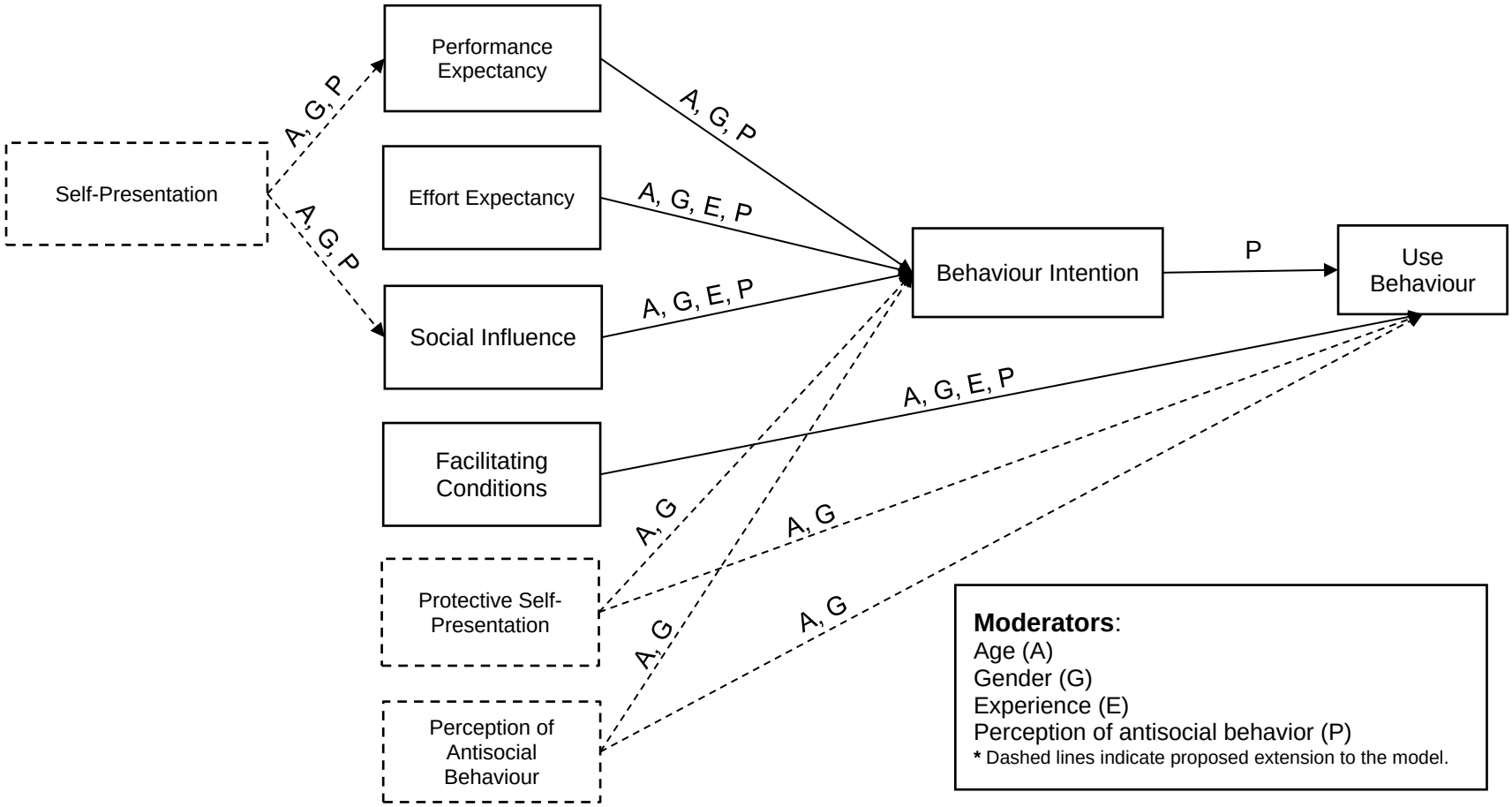

Figure 6.2 Revised TAUR model *(Showing the perception of antisocial behaviour as a factor and as a moderator)*.

Chapter 7: Online Questionnaire Design and Results

As described in the research design chapter, this research follows a sequential mixed methods approach, which starts with a qualitative phase comprising expert reviews, that are then used to validate the model and also guide the design of the following phase. This chapter is dedicated to the second phase of the study, which is the quantitative phase. This phase includes two main parts, first, the design of an online questionnaire, and second, the analysis of the collected data.

7.1 Online Questionnaire Design

The most common method of conducting a cross-cultural study is to administer the same research instrument to both cultures (Hui & Triandis, 1985). In the case of this study, we need to have an English and an Arabic version of the questionnaire. An online self-administered questionnaire technique was chosen for this study, because it is easy to manage and disseminate to a large population compared to other survey techniques. However, the design of the questionnaire needs to be considered very carefully, because the quality and accuracy of the responses are highly dependent on its structure and content (Brace, 2013). This section presents the different aspects of the questionnaire design, including the construct measurement for the proposed research model, the translation into Arabic, and the pilot.

7.1.1 Questionnaire Development

The questionnaire was an online self-administered questionnaire. The iSurvey tool, which is provided by the University of Southampton, was used to run the online survey. The complete questionnaire is provided in Appendix G. It consists of five pages and a welcome page that explains the research purpose and provides all participant information. After the welcome page, the participant has to tick a box to indicate consent to participate and this takes the participant to the beginning of the questionnaire. The first page covers demographics and control variables, while the following pages cover questions on the different factors comprising the research model. The design of each part is explained next.

7.1.1.1 Demographics and control questions

Since this research investigates the actual use of Twitter, the first question asks whether the participant uses Twitter, and if not, a thank you message appears asking the participant

to leave the survey as it is not applicable. Demographics of age, gender, and country of origin are covered in questions 1.2-1.4. The responses to the question about age are set out in categories as advocated by Gendall and Healey (2008), who found that this method has a higher response rate than the direct question. However, using a drop-down menu increases the error rate, and so radio buttons were chosen to record the answer to eliminate this problem.

Question 1.5 asks about the level of computer and Internet experience. The responses are Low, Medium and High. To avoid the problem of subjective self-reported answers, the levels were labelled using examples from the Computer Proficiency Questionnaire (Boot et al., 2015).

Questions 1.6, 1.9, 1.10, and 1.12 ask about the actual use behaviour. These include the frequency of access to Twitter, the amount of time spent using Twitter, the number of years of Twitter use, and finally the actions performed on Twitter. Other control variables derived from expert reviews are also included, such as double identity and type of use. Participants are asked if they have more than one Twitter account, and if so, a message appears asking them to answer the rest of the questions with reference to their own personal account, in order to ensure the homogeneity of the collected data.

7.1.1.2 Construct Measures

After completing the demographics and control question in the first page, the next four pages cover the constructs in the model. Performance expectancy including self-presentation are covered in the second page. The third page covers effort expectancy and social influence. Facilitating conditions and protective self-presentation are covered in the fourth page. And the final page covers the perception of antisocial behaviour and behavioural intention.

The measures for the constructs in this research were adapted from previous work. The original main constructs of UTAUT (performance expectancy, effort expectancy, social influence, facilitating conditions, and the behavioural intention) were adapted from Venkatesh et al. (2003). Self-presentation, protective self-presentation, and the perception of antisocial behaviour were adapted from Rui and Stefanone (2013), and additional statements on the perception of antisocial behaviour were adapted from Moor et al. (2010). Statements were slightly adjusted to reflect the target research problem on Twitter. For example, the statement 'I feel that I have control over using the system', was changed to 'I feel that I have control over my Twitter account (e.g. I can delete, retweet, undo retweet, etc…)'. Refer to Appendix E for the complete detailed list.

All of the statements are evaluated using a five-point Likert scale (Likert, 1932), which is one of the easiest and most common and methods used in surveys. It is also considered helpful in preparing the data for quantitative analysis as all answers are close-ended (Sekaran, 2003). Moreover, the Likert scale has been adapted by previous studies using the UTAUT and other technology acceptance models (Cheon et al. 2012; Im et al. 2008; Mathieson 1991; Venkatesh et al., 2003).

As suggested by Brace (2013), responses were ordered starting with Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). This was done to avoid acquiescence, which is the tendency to say 'yes' to questions or to agree rather than disagree with statements (Kalton & Schuman, 1982). Similarly, statements relating to perceptions of antisocial behaviour use the scale of Never, Rarely, Sometimes, Frequently, and Very Frequently.

7.1.2 Questionnaire Validity

A questionnaire is considered valid if it measures what we want it to measure (Brace, 2013). There are two common types of validity: content and construct validity. Content validity refers to the extent to which the measurements assess the underlying concept, and is often characterised by face validity and logical validity. Face validity indicates that the measure appears to be valid, while logical validity refers to how relevant and representative the measurements are to the underlying constructs (Rubio et al., 2003).

According to Litwin (2003), content validity refers to "how appropriate items or scales seem to a set of reviewers who have some knowledge of the subject matter." There are different ways to establish content validity, including using literature reviews, expert panels, and empirical assessment (Straub et al., 2004); this study applied all three. Firstly, the measurements of the constructs were adapted from previous research. Secondly, the questionnaire was reviewed by a panel of experts during the early piloting phase (see Figure 7.1). Rubio et al. (2003) recommended that at least three experts should validate a questionnaire; however, to establish validity, the questionnaire was examined by five experts from the Electronics and Computer Science Department (ECS) and the Education Department at the University of Southampton, who have experience in the field and have published and worked with similar models. The experts were provided with a description of the proposed model and the research problem and discussed the questionnaire either in meetings or via e-mail and phone. The third validation strategy of ensuring validity empirically was established during the data analysis by applying Structural Equation Modelling (SEM). This involved several validity and reliability checks, which are explained later.

Construct validity is defined as “the extent to which a set of measured items actually reflect the theoretical latent construct those items are designed to measure” (Hair et al., 2010). In other words, construct validity tests whether the measures chosen in the questionnaire for each construct fit together to capture the essence of that construct (Straub et al., 2004). Construct validity is measured based on the correlation between item measurements and theoretical constructs; the better the correlation the greater the validity.

In SEM, construct validity is established statistically through convergent validity, discriminant validity and nomological validity (Hair et al. 2010). Applying SEM requires a large amount of data, therefore, the different construct validity tests were calculated during data analysis, which is explained later under section 7.2.

7.1.3 Questionnaire Reliability

Instrument reliability is vital in studies where multiple item constructs are used. Establishing reliability ensures that these items are interrelated and consistent in measuring the same construct. The reliability of measurements refers to the extent to which the items used to measure a single construct are consistent in their measurements (Hair et al., 2010). There are different methods of establishing reliability, with the most common being internal consistency reliability, and test-retest reliability (Litwin, 2003).

This study uses internal consistency reliability since it is a widely used method of measuring the internal consistency for repeated measurements (Sekaran, 2003). Cronbach's alpha is commonly used in assessing the reliability of measurements. This ranges from 0 to 1, with alpha ≥ 0.7 measurements considered sufficiently reliable, meaning that the different items (questions) that are used to measure a construct, are consistent in measuring the same construct (Cronbach, 1951). It is suggested in the literature that a reliability score (α) is considered good within the range $0.9 > \alpha \geq 0.8$, and acceptable within $0.8 > \alpha \geq 0.5$. However, an α of less than 0.5 is considered an indication of poor reliability (Hair et al., 2010; Sekaran, 2003).

In this study, reliability was established at different times and levels. First, using SPSS to compute Cronbach’s alpha, and then composite reliability was also calculated within the statistical analysis stem under SEM. The initial reliability indicator using Cronbach’s alpha was obtained after the pilot, as will be shown in the following section. Later another Cronbach’s alpha score was calculated for the whole sample. After that, the composite reliability was calculated and presented later in the results section.

7.1.4 Piloting the Questionnaire

Common methods of piloting a questionnaire include informal pilot, cognitive interviewing, and large-scale pilot (Brace, 2013). An informal pilot is usually performed with a small number of colleagues to identify any mistakes in the questions or in the responses. However, although testing the questionnaire with colleagues might identify potential problems, it is not enough to show how respondents from the real survey population would respond to the questions. Thus, one-to-one cognitive walkthroughs with a few respondents from the survey population are very useful. In the case of an online questionnaire, the researcher sits with the respondents as they fill in the survey and follow a talk aloud protocol to allow them to 'think out loud' so they can talk about how they understand the questions and why they responded the way they did (Brace, 2013).

As indicated in Figure 7.1, an informal pilot was conducted first with five colleagues from ECS, Education, and Linguistics, and this was followed by expert panel reviews with five experts from ECS and Education. Cognitive interviews were then conducted with respondents and notes were taken by the researcher during all of the steps and a few amendments and improvements were made to the questionnaire. After reaching a satisfactory version, it was sent to 20 participants as a larger scale pilot and the feedback from this was positive as all respondents found the questionnaire to be clear and easy to follow.

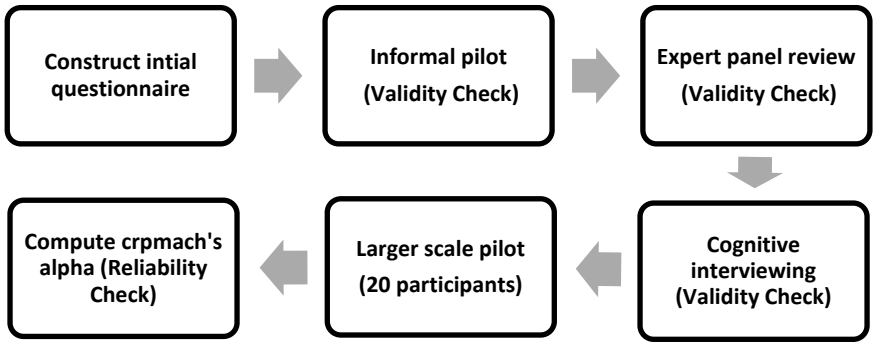

Figure 7.1 Questionnaire development and piloting phases.

To measure the internal consistency reliability after completing the pilot, SPSS was used to compute Cronbach's alpha for all the questions for the sample of 20 participants. Results are illustrated in Table 7.1. All factors gave alpha values larger than 0.7 which indicates that the instrument would be reliable for the real test.

Factor	Cronbach's alpha
Performance expectancy	0.845
Effort expectancy	0.770
Social influence	0.805
Facilitating conditions	0.864
Self-Presentation	0.752
Protective self-presentation	0.718
Perception of antisocial behaviour	0.809
Behavioural intention	0.958

Table 7.1 Internal consistency reliability for the pilot sample.

7.1.5 Questionnaire Translation

As mentioned earlier, cultural differences are identified by administering the same research instrument to both cultures (Hui & Triandis, 1985). The original questionnaire was constructed in English and was then translated to Arabic. To ensure item equivalence and reliability it was crucial to follow robust translation methods. There are different techniques, including back-translation, bilingual committee approach, and pre-tests (Brislin, 1970, 1980). Brace (2013) indicated that translating the questionnaire by a native speaker is probably the most important first step. Moreover, Forsyth et al. (2007) provided a five-step process for translating English questionnaires into different Asian languages. These are: (1) translation by a professional translator, (2) review of the translation, (3) adjudication of the revision by a bilingual adjudicator, (4) a cognitive review pre-test, and (5) the final review and adjudication.

After constructing and validating the questionnaire in English it was translated to Arabic by a professional bilingual native Arabic translator. The Arabic version was then checked by three bilingual PhD students in ECS and Linguistics at the University of Southampton. After that, a cognitive walkthrough with five native speakers was conducted and minor modifications were made. Upon satisfactory review, the Arabic version was back-translated into English by another translator. The final copy was compared to the original instrument to check validity of the translation. Minor variations were detected but did not alter meanings, these include synonyms and similar phrases used to express the same sentence. After translation was completed, a pilot was carried out to ensure accurate comprehension of all questions.

7.1.6 Ethics Approval

The ethics approval for the questionnaire was obtained from the Ethics Committee at the University of Southampton before publicising the questionnaire (Research Ethics No. 17807). Participants were provided with a participant information sheet and were informed that participation was voluntary and could be terminated at any time during the study. All collected data was anonymous and analysed as a group.

7.1.7 Population and Sample Size

The population of this study comprises Twitter users from Anglophone countries and from Saudi Arabia. The study used probability random sampling strategy, which is often preferred within quantitative research (Creswell, 2013). The questionnaire was publicised on Twitter from different accounts and was also sent to different mailing lists.

Sufficient sample size is essential to obtain reliable result in quantitative analysis. There are several recommendations for sample size, for example, MacCallum, et al. (1999) recommended a sample size of at least 100 participants for factor analysis. However, to be able to conduct a SEM analysis, Kline (2011) suggested that 200 cases is the typical sample size, while others argued that it can be less than 200 (Wolf et al., 2013). Some recommendations linked the required sample size to the number of factors in the study. These include the rule of 10 which recommends having at least ten cases per factor such that the sample size becomes ten times larger than the number of factors (Everitt 1975; Schreiber et al., 2006; Velicer et al. 1998). Despite the lack of agreement among the researchers on one the sample size (Hair et al., 2010; Kline, 2011; Muthén & Muthén, 2002; Wolf et al., 2013), 200 and above participants is considered adequate when using SEM (Kline, 2011). This study used two samples for the targeted cultures, the Anglophone sample size was 200, and the Saudi sample size was 540 Twitter users. The acquired sample size should be sufficient to obtain a reliable analysis, because this study investigates nine factors, therefore, according to the previously mentioned recommendations (the rule of ten, and the size of 200) the sample sizes are adequate.

7.1.8 Conducting the Questionnaire

After finalising the pilot and acquiring the ethics approval, the questionnaire was publicised online on Twitter and posted in a number of groups and mailing lists. There were two

versions of the questionnaire, an English version, and an English version with Arabic translation[10].

7.1.8.1 Sample description

The total number of responses to the questionnaire was 901, and after data screening was performed, a number of incomplete questionnaires were discounted. This follows the recommendations of Hair et al. (2010). Additionally, the questionnaires of any participant who gave their age as under 18 was also discounted to respect the ethics of the research, as this study was not intended for minors. Questionnaires were also discounted if they were judged to be unengaged responses, as such outliers can compromise the analysis (Tabachnick & Fidell, 2007). Table 7.2 shows the number of the completed questionnaires and the numbers of the deleted cases next to their category. Table 7.3 shows the sample size of the targeted cultures in this research, which are Saudi Arabia and the Anglophone countries.

Completed questionnaires	901
Missing values	39
Under age 18	25
Unengaged responses	4
Total valid responses	**833**

Table 7.2 Number of responses to the online questionnaire.

	Frequency	**Percent**
Saudi Arabia	**540**	**64.8%**
Anglophone countries	**200**	**24%**
United Kingdom	142	17%
United States	47	5.7%
Canada	11	1.3%
Other countries	**93**	**11.1%**
Total	**833**	**100.0%**

Table 7.3 Number of responses by different countries.

7.1.9 Data Analysis Method Used in the Study

Structural Equation Modelling (SEM) is a complex form of statistical analysis that is used to assess hypotheses among multiple variables. Using SEM allows us to evaluate whether the data fits the underpinning theory (Hair et al., 2010). This study applies the SEM approach to test the relationships between the constructs in the proposed model. Several

[10] English version of the online questionnaire: https://www.isurvey.soton.ac.uk/18204
English with Arabic translation: https://www.isurvey.soton.ac.uk/17894

reasons were behind this choice. First, SEM is highly recommended for complex theoretical models that include multiple constructs. Unlike other approaches such as multiple regression and bivariate correlations, SEM is able to analyse the dependent and independent variable relations simultaneously, while other approaches do that separately for each variable at a time. Therefore, SEM gives a better global model fit compared to any other approach (Byrne 2010; Gefen et al., 2000). Secondly, SEM is widely used in behavioural science studies for the modelling of complex, multivariate data sets. It is especially popular in Information Technology and Information System research, and as suggested by the literature, SEM has become *de rigueur* in validating research instruments and testing relations between constructs, which is common within the empirical articles in major IS journals (Gefen et al., 2000).

SEM tests the theoretical models in two main steps. First, the measurement model, which identifies how measured variables work together to represent latent factors; this includes a series of reliability and validity tests. Second, the structural model, which evaluates how constructs are related to each other in the model (Hair et al., 2010). The full SEM analysis details and components will be explained next in the results section.

7.2 Online Questionnaire Data Analysis and Results

The previous section discussed designing and piloting the online questionnaire; in this section results and data analysis are presented. First, data examination is performed as an initial step to ensure completeness and consistency prior to the analysis; this includes checking normality, missing data, and also checking the preliminary reliability of the instrument. Then, the SEM results are presented; these are divided into two phases, the assessment of the measurement model, followed by the assessment of the structural model where all hypotheses will be tested. The analysis was conducted using two widely used statistical applications, Statistical Parcel for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS).

7.2.1 Data Examination

Data examination is a crucial step before any statistical analysis is performed and ensures the completeness and consistency of the data (Hair et al., 2010). This included a number of different checks. The first step was to store the data in the right format and make sure that it was properly coded (Pallant, 2013). See Appendix H for the coding sheet, it contains a list of all the statements used and their shortened variable names. After importing the data, it was checked and coded according to the coding sheet. After that, missing values and

demographics were checked followed by normality tests. The following subsections explain each step.

7.2.1.1 Missing Data

Missing values is a common problem which can cause difficulties in any statistical test, and in the case of SEM it could lead to the inability of achieving model-fit (Hair et al., 2010). The instrument was designed carefully to make sure the missing data problem was minimised. All questions were mandatory and participants were notified about any missing answers. However, this problem could not be eliminated completely as some participants did not complete the questionnaire. The literature suggests that one solution would be to follow the complete case approach, in which the cases with missing values are not included in the analysis, especially when the number of cases with missing values is small relative to the sample size (Hair et al., 2010). Out of the 901 responses acquired, there were 39 incomplete cases which were discounted; these also included responses that did not belong to the targeted countries. All incomplete cases were missing more than 10% and so data imputation was not considered.

7.2.1.2 Normality

After making sure the data was free of missing values, normality was assessed for all variables. To perform SEM, data has to be normally distributed as it is sensitive to abnormality, which can lead to underestimation in the statistical results (Hair et al., 2010). The two main ways to assess normality are skewness and kurtosis of a distribution. Skewness implies lack of symmetry in a distribution, while kurtosis implies a distribution that rises more sharply to a pronounced peak. In skewed distributions, the most frequent scores are clustered at one end of the scale. A skewed distribution can be either positively or negatively skewed, where the frequent scores are clustered at the lower or upper end of the distribution (Field, 2005). It is commonly suggested that values of the z-scores of skewness and kurtosis between -2.58 and +2.58 indicate normal distribution (Hair et al., 2010). All variables in the dataset were tested for skewness and kurtosis and the results show that all variables were normally distributed, having skewness and kurtosis scores within the recommended range. Only one variable was not normally distributed, which was computer and Internet experience. This had a skewness score of -3.41 and a kurtosis score of 11.81, a possible justification will be explained later in the results section.

7.2.2 Demographic Data

Demographic questions were given in the first part of the questionnaire. Descriptive statistics for the two samples are presented in Table 7.4. The Saudi sample comprises 540

responses, while that of the Anglophone countries comprises 200 responses. The age distribution of the two samples is clearly different as shown in Figure 7.2. While the Anglophone sample is somehow normally distributed, the Saudi sample is slightly positively skewed, indicating that the Saudi sample is much younger than the Anglophone sample. The skewedness in the Saudi sample is possibly explained by the fact that 70% of Saudi Arabia's population are very young[11].

Another highly skewed score for both samples was given by the computer and Internet experience question. The data shows that 99.5% of the Anglophone participants and 88% of the Saudi sample responded with 'high' for the experience question. From this we can see that experience may no longer be an important moderator in the research model, and is possibly explained by the fact that this investigation was carried out using participants who are actually using Twitter and who are thus likely to be sophisticated and highly experienced users. The experience score used in the questionnaire was adapted from a Computer Proficiency Questionnaire that was developed to measure low, medium, and high levels of proficiency (Boot et al., 2015). To avoid the problem of self-reported answers on the computer and Internet experience question, it was clear what each level means by giving examples from the Computer Proficiency Questionnaire. Therefore, based on the obtained data, experience will not be considered as a moderating factor in this research.

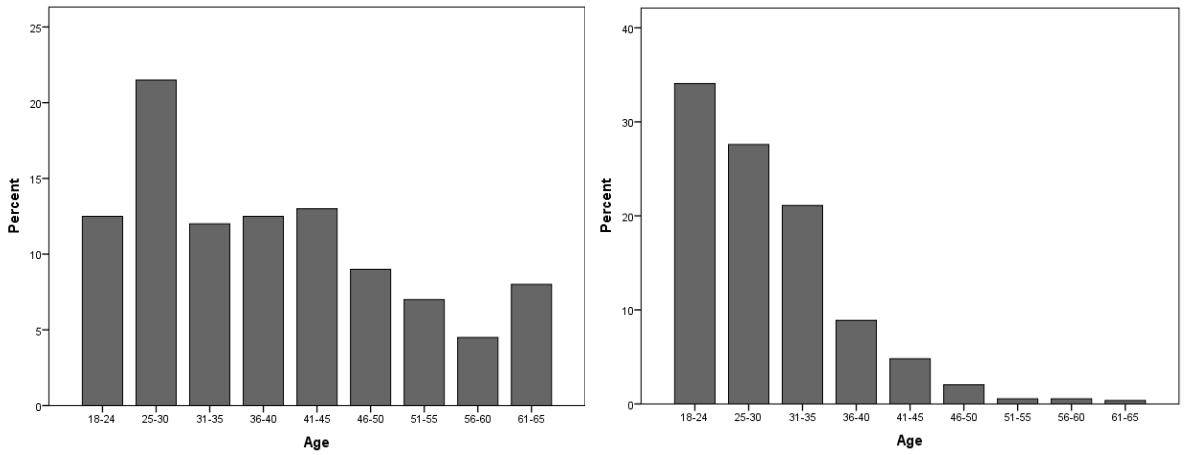

Figure 7.2 Age distribution of the (a) Anglophone sample and (b) Saudi sample.

[11] General Authority for Statistics, Kingdom of Saudi Arabia. Available online: http://www.stats.gov.sa/, retrieved March 2016.

	Saudi Sample (N=540)		Anglophone Sample (N=200)	
	Frequency	**Percent**	**Frequency**	**Percent**
Gender				
Male	194	35.9%	102	51%
Female	346	64.1%	98	49%
Age				
18-24	184	34.1%	25	12.5%
25-30	149	27.6%	43	21.5%
31-35	114	21.1%	24	12.0%
36-40	48	8.9%	25	12.5%
41-45	26	4.8%	26	13.0%
46-50	11	2.0%	18	9.0%
51-55	3	0.6%	14	7.0%
56-60	3	0.6%	9	4.5%
61-65	2	0.4%	16	8.0%
Computer and Internet experience				
Low	7	1.3%	0	0%
Medium	58	10.7%	1	0.5%
High	475	88.0%	199	99.5%
Do you have more than one Twitter account?				
Yes	196	36.3%	77%	38.5%
No	344	63.7%	123%	61.5%
Identity				
Using my own identity	432	80.0%	168	84.0%
On behalf of another identity	5	0.9%	5	2.5%
Anonymously	103	19.1%	27	13.5%
Type of Use				
Personal	385	71.3%	91	45.5%
Professional	13	2.4%	20	10.0%
Both	142	26.3%	89	44.5%

Table 7.4 Demographic information summary.

7.2.3 Instrument Reliability

To assess the instrument reliability, the study applied a measure of construct reliability based on the Cronbach Alpha test (Cronbach, 1951). The results are presented in Table 7.5. Most constructs show a reliability score above 0.7 which is considered acceptable. Two constructs showed a slightly lower reliability score, which are the Facilitating Conditions (FC) with a score of 0.658, and the Protective Self-Presentation (PSP) with a score of 0.621.

When items 1,2,3, and 5 are deleted from PSP, the reliability score rises to 0.729, which is considered as an acceptable value. The FC construct did not improve by deleting items so it was kept for further reliability tests to be conducted later in the study, as the reliability score was still within the acceptable range of between 0.8 and 0.5 (Hair et al., 2010; Sekaran, 2003).

Factor	Number of Items	Cronbach's alpha	Deleted items	Revised alpha
PE	4	0.740		
SP	5	0.745		
EE	5	0.768		
SI	5	0.734		
FC	4	0.658		
BI	3	0.935		
PSP	9	0.621	1,2,3,5	0.729
PAB	7	0.786		

Table 7.5 Cronbach's alpha reliability analysis test for the questionnaire data.

7.2.4 Structural Equation Modelling

Structural Equation Modelling (SEM) was used to assess the proposed model and to examine the relationship among its constructs. SEM is composed of two phases. First, the measurement model, in which the inter-relationships between each construct and its items is measured to ensure validity and reliability. Second, the structural model, in which the relationships between the constructs is examined, which helps in assessing research hypotheses. The following subsection presents both phases in detail.

7.2.4.1 Measurement Level Analysis

As mentioned earlier, the measurement model aims to establish inter-relationships between each latent variable (unobserved) and its measured items (observed variables). This is done through a series of validity and reliability tests (Hair et al., 2010). This study uses 8 latent variables, which were measured using 38 items adopted from the literature. Table 7.6 lists all latent variables and their observed variables in the study prior to the analysis.

The literature suggests that performing Exploratory Factor Analysis (EFA) in addition to SEM helps in getting a better model-fit (Asparouhov & Muthen, 2009; Brown, 2006). Therefore, this study employed EFA as starting point aiming to obtain better results from the measurement model. The EFA result (shown in full in Appendix I) suggests that a few items should be deleted as they either cross-load with other factors or have a low loading.

These items include PE4, EE3,4, SI3,5, and SP5. Therefore, based on the EFA result, these items were not taken forward to the measurement level analysis.

The measurement level of SEM aims to confirm the robustness of the instrument and its reliability and validity (Hair et al., 2010). In order to achieve this, composite reliability and construct validity need to be tested. The following sections outline both.

Latent variable	Items code	Observed variables
Performance Expectancy (PE)	PE	PE1, PE2, PE3, PE4
Effort expectancy (EE)	EE	EE1, EE2, EE3, EE4, EE5
Social Influence (SI)	SI	SI1, SI2, SI3, SI4, SI5
Facilitating Conditions (FC)	FC	FC1, FC2, FC3, FC4
Self-Presentation (SP)	SP	SP1, SP2, SP3, SP4, SP5
Protective Self-Presentation (PSP)	PSP	PSP4, PSP6, PSP7, PSP8, PSP9
Perception of Antisocial Behaviour (PAB)	PAB	PAB1, PAB2, PAB3, PAB4, PAB5, PAB6, PAB7.
Behavioural Intention (BI)	BI	BI1, BI2, BI3

Table 7.6 Latent and observed variable in the measurement model.

7.2.4.1.1 Composite reliability

Composite reliability or construct reliability is usually used within SEM to examine the reliability of the construct. It is used to measure the internal consistency and reliability of the observed variables representing a latent construct (Hair et al., 2010). Although this study has measured the reliability using Cronbach's alpha (Cronbach, 1951), construct reliability is also done as a preliminary reliability check as it provides more reliable scores (Raykov, 1997). Moreover, excluding construct reliability from any studies performing SEM would be considered misleading (Bentler, 2007). Hair et al. (2010) suggest the following equation to calculate the construct reliability:

$$\frac{(\sum_{i=1}^{n} Li)^2}{(\sum_{i=1}^{n} Li)^2 + \sum_{i=1}^{n} e_i} \qquad \text{Eq.1}$$

Where $\boldsymbol{Li}$ is the standardised factor loading, $\boldsymbol{n}$ is the number of items, and $\boldsymbol{ei}$ is the error variance of a construct.

A reliability score is considered acceptable if it lies between 0.6 and 0.7, and good if the score is higher than 0.7 (Hair et al., 2010). The construct reliability scores of all constructs are presented in Table 7.7, which shows that all reliability scores have exceeded the minimum threshold, and therefore the constructs are considered reliable for the remaining analysis.

Latent variable	Observed variables	Standardised factor loading	Construct Reliability
PE	PE1	0.768	0.770
	PE2	0.738	
	PE3	0.690	
SP	SP1	0.686	0.750
	SP2	0.766	
	SP3	0.690	
	SP4	0.528	
EE	EE1	0.772	0.805
	EE2	0.874	
	EE5	0.489	
SI	SI1	0.781	0.733
	SI2	0.679	
	SI4	0.458	
FC	FC1	0.557	0.665
	FC2	0.452	
	FC3	0.711	
	FC4	0.603	
PSP	PSP6	0.456	0.744
	PSP7	0.588	
	PSP8	0.699	
	PSP9	0.795	
PAB	PAB1	0.451	0.838
	PAB2	0.787	
	PAB4	0.801	
	PAB5	0.898	
	PAB6	0.436	
BI	BI1	0.905	0.936
	BI2	0.913	
	BI3	0.916	

Table 7.7 Composite Reliability results.

7.2.4.1.2 Construct Validity

Construct validity is defined as the extent to which a set of measured items actually reflects the theoretical latent construct which those items are designed to measure (Hair et al., 2010). It is suggested that validity needs to be assessed using more than one measure, Straub et al. suggest that validity should be established using convergent, discriminant and nomological validity (Straub et al., 2004). The following subsections explain each type and present their results.

7.2.4.1.2.1 Convergent Validity

The convergent validity is the extent to which a set of measured variables in a given construct are correlated. When the measured variables are highly correlated, it means that they are measuring their proposed construct quite well (Hair et al., 2010; Straub et al., 2004). Hair et al. suggest that convergent validity can be estimated using the Average Variance Extracted (AVE), which is calculated using the following equation:

$$\frac{\sum_{i=1}^{n} Li^2}{n} \qquad \text{Eq. 2}$$

Where ***Li*** is the standardised factor loading, and ***n*** is the number of items.

The standardised factor loading is an indicator of the path between the measured variable and its construct, with values lying between -1 and +1. Standardized loading of a measured variable that is above or equal to 0.7 indicates a significant loading. Nevertheless, 0.7 is considered ideally high, and therefore loadings between 0.7 and 0.5 are still considered significant (Hair et al., 2010). According to Hair et al., a rule of thumb when calculating AVE would be to delete measured variables that are less than 0.5 to improve the AVE when needed (Hair et al., 2010).

Table 7.8 shows the standardised factor loadings of all measured variables, and the AVE for all latent variables. The recommended value of AVE is 0.50 or higher (Hair et al., 2010). AVE values of SP, SI, FC, PSP, and PAB were all less than 0.5, therefore, items with the lowest standardised factor loadings were deleted to improve the AVE as shown in the table. After these deletions, the improved AVE of all variables was above 0.5, thus achieving good convergent validity of the constructs.

7.2.4.1.2.2 Discriminant Validity

Discriminant validity is defined as “the extent to which a construct is truly distinct from other constructs both in term of how much it correlates with other constructs and how distinctly measured variables represent only this single construct” (Hair et al., 2010). To measure discriminant validity, the square root of the AVE of each construct is compared with the correlation estimates of all other constructs. Table 7.9 illustrates the discriminant validity of the model by showing all the square roots of AVEs on the diagonal, and all other correlations below them. To establish the discriminant validity test, the value of the AVE for each construct should be higher than the correlation estimate between constructs (Hair et al., 2010). As shown in the table, the result suggests that good discriminant validity of the constructs is achieved.

Latent variables	Observed variables	Standardised factor loading	AVE	Deleted items	Improved AVE
PE	PE1	0.768	0.536		
	PE2	0.738			
	PE3	0.690			
SP	SP1	0.686	0.453	SP4	0.502
	SP2	0.766			
	SP3	0.690			
	SP4	0.528			
EE	EE1	0.772	0.532		
	EE2	0.874			
	EE5	0.489			
SI	SI1	0.781	0.427	SI4	0.586
	SI2	0.679			
	SI4	0.458			
FC	FC1	0.557	0.346	FC2,1	0.503
	FC2	0.452			
	FC3	0.711			
	FC4	0.603			
PSP	PSP6	0.456	0.419	PSP6	0.504
	PSP7	0.588			
	PSP8	0.699			
	PSP9	0.795			
PAB	PAB1	0.451	0.492	PAB6	0.576
	PAB2	0.787			
	PAB4	0.801			
	PAB5	0.898			
	PAB6	0.436			
BI	BI1	0.905	0.831		
	BI2	0.913			
	BI3	0.916			

Table 7.8 Convergent validity analysis.

	SP	PE	EE	SI	FC	PSP	PAB	BI
SP	**0.708**							
PE	0.359	**0.727**						
EE	0.278	0.540	**0.766**					
SI	0.163	0.475	0.355	**0.766**				
FC	0.219	0.514	0.598	0.361	**0.707**			
PSP	0.048	0.139	0.174	0.095	0.300	**0.710**		
PAB	0.168	0.271	0.309	0.206	0.312	0.177	**0.759**	
BI	0.231	0.486	0.369	0.328	0.369	0.055	0.135	**0.911**

Table 7.9 Discriminant validity analysis.

7.2.4.1.2.3 Nomological Validity

The nomological validity implies that the correlation between the constructs is based on theoretical support (Hair et al., 2010). To establish nomological validity, the relationships between the constructs should follow a theoretical model. In other words, when the relationships between the constructs in the study conform to a theoretical framework, it means that nomological validity is achieved. This study has hypothesised all relationships based on the existing literature, therefore, theoretically they should make sense. However, all hypothesised relationships will be assessed later in the structural model.

7.2.4.1.3 Measurement Model Goodness of Fit (GoF)

Goodness of Fit (GoF) is a measure used to examine how well a proposed model reproduces the covariance matrix among indicator variables. This is done by comparing the proposed model (hypothesis) with the collected data (sample's covariance matrix) (Hair et al., 2010). In other words, the Goodness of Fit obtained from the observed data is used to assess the hypothesised model. Hair et al. recommend that multiple GoF measures should be used, rather than just one, to give sufficient evidence of a model fit. They classify these measures into three different types: absolute fit, incremental fit, and parsimony fit measures. It is suggested that at least one incremental fit measure and one absolute fit measure, including the Chi-square (X^2) and degree of freedom (df), should be reported (Hair et al., 2010).

Fit measures reported in this study include both absolute and incremental fit measures, which were chosen as recommended in the literature (Hair et al. 2010; Hooper et al., 2008; Hu and Bentler 1998). The absolute fit measures are: the Chi-Squared test (X^2), Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), and Standardised Root Mean Square Residual (SRMR). While the incremental fit measure is the Comparative Fit Index (CFI).

The Chi-square (X^2) test is a fundamental statistical test that estimates the differences between the sample covariance matrix and the predicted model covariance matrix. However, Chi-square is highly sensitive to the sample size, as its value increases with a large sample size (Kline, 2011). Therefore, a normed chi-square and degree of freedom (df) should be reported, as this reduces Chi-square's sensitivity. The normed Chi-square is simply calculated by dividing X^2 by the degrees of freedom (X^2/df) (Kline, 2011). The degrees of freedom in SEM refer to the number of non-redundant covariance values (moments) in the input matrix minus the number of the estimated coefficients. Calculating the coefficients uses up the degrees of freedom, therefore, it is desirable to obtain a good-fit while maximizing the number of the degrees of freedom (Hair et al. 2010).

Root Mean Square Error of Approximation (RMSEA) attempts to correct for the tendency of X^2 GoF test to reject the model with a large sample or large number of observed variables, and is one of the most widely used measures (Hair et al., 2010). The recommended values of the RMSEA are between zero and 0.08, and a model is well-fitted when the RMSEA is close to zero (Hair et al., 2010).

Root Mean Square Residual (RMR) and Standardised Root Mean Square Residual (SRMR) are the "square root of the difference between the residuals of the sample covariance matrix and the hypothesised covariance model" (Hooper et al., 2008). RMR with the value of zero indicates a perfect fit, but values less than 0.1 are acceptable. SRMR, which is the squared root of RMR, is typically accepted with a value less than 0.08 (Kline, 2011).

Comparative Fit Index (CFI) is a widely used measure due to its relative insensitivity to model complexity. It is a normed measure that ranges between 0.0 and 1.0, where values closer to 1.0 indicate a good fit. Typically CFI values above 0.90 are associated with a well fitted model (Hair et al., 2010).

All GoF measures used in this study were calculated using AMOS (version 22). Table 7.10 shows the used measures for the combined, Anglophone, and Saudi samples respectively. It was necessary to report the validity and reliability scores for the combined model to make sure the same items are used in the later assessment of both models (Anglophone and Saudi), so that comparability is preserved. However, measurement assessment was also done separately for each model to ensure validity and reliability as indicated by the GoF measures shown for each model.

The results in Table 7.10 are compared against Hair et al.'s recommendations relative to the sample size. As shown in the tables, the obtained results give sufficient evidence of model fit for the measurement model, which in turn supports proceeding with the analysis to the structural level as suggested by Hair et al. (2010).

7.2.4.2 Structural Level Analysis

As mentioned earlier, the second phase of SEM is the structural model. After establishing construct validity, reliability, and model fit in the measurement model, the next step is to examine and assess the relationship between the constructs. The structural model includes path analysis in which all hypothesised paths between constructs are assessed. There are 11 hypothesised relationships in the model of this study, all are presented in Table 7.11 and illustrated in Figure 7.3. Other moderation and interaction hypotheses will be assessed in a following subsection.

Fit indices	Obtained fit indices	Recommend fit indices relative to sample size (Hair et al., 2010)
Combined sample (N= 740)		
Chi-square X^2	1487.452	N/A
df	591	N/A
Normed chi-square X^2/df	2.51	< 3.00
RMSEA	0.032	< 0.07
CFI	0.938	≥ 0.90
Standardized RMR	0.058	< 0.08
Anglophone sample (N= 200)		
Chi-square X^2	295.574	N/A
df	181	N/A
Normed chi-square X^2/df	1.63	< 3.00
RMSEA	0.056	< 0.08
CFI	0.946	≥ 0.92
Standardized RMR	0.056	< 0.09
Saudi sample (N= 540)		
Chi-square X^2	469.163	N/A
df	238	N/A
Normed chi-square X^2/df	1.97	< 3.00
RMSEA	0.042	< 0.07
CFI	0.954	≥ 0.90
Standardized RMR	0.052	< 0.08

Table 7.10 Goodness of Fit indices for the measurement model.

Construct	Hypotheses	Hypothesised relationships
Performance Expectancy (PE)	H1	PE → BI
Effort Expectancy (EE)	H2	EE → BI
Social Influence (SI)	H3	SI → BI
Facilitating Conditions (FC)	H4	FC → Use
Behavioural Intention (BI)	H5	BI → Use
Self-Presentation (SP)	H6	SP → PE
	H7	SP → SI
Protective Self-Presentation (PSP)	H8	PSPA → BI
	H9	PSPA → Use
Perception of Antisocial Behaviour (PAB)	H10	PAB → BI
	H11	PAB → Use

Table 7.11 Hypotheses to be assessed in the structural model.

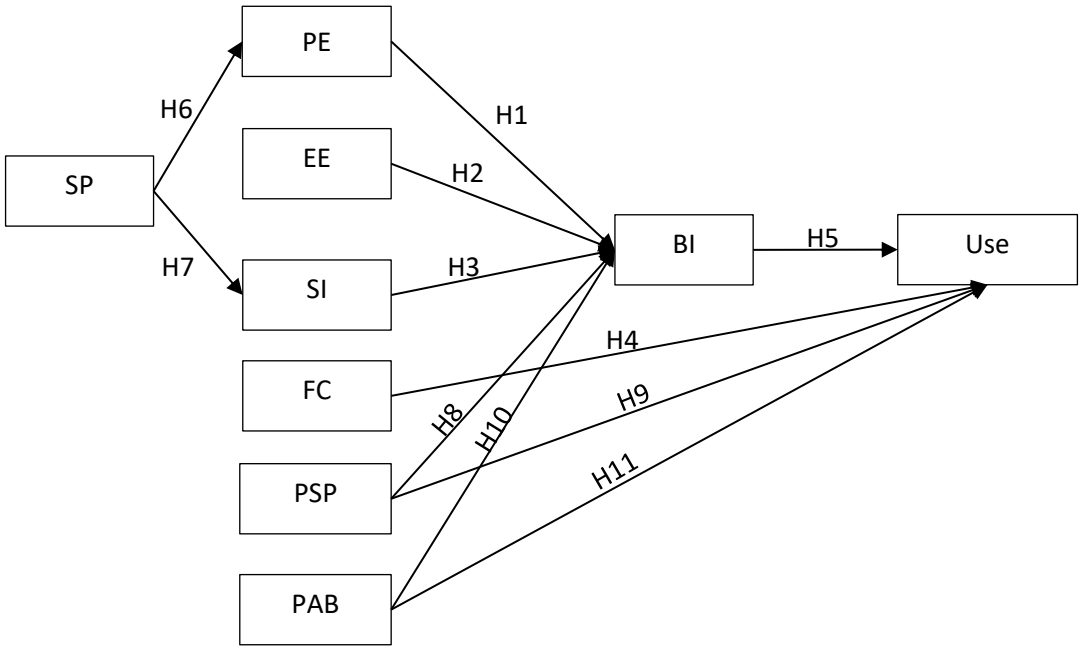

Figure 7.3 Hypotheses to be assessed in the structural model.

7.2.4.2.1 Structural Model Goodness of Fit (GoF)

As explained earlier, Goodness of Fit (GoF) is an important measure of how a proposed model fits the collected data. Establishing the model fit for the structural model is crucial indicator of model validity (Hair et al., 2010) a complete description of the different measures used to assess this was explained in a previous section in the chapter. Table 7.12 shows the fit indices used for the combined, Anglophone, and Saudi samples respectively. These are compared against Hair et al.'s recommendations relative to the sample size. The results indicate that the model is well-fitted to the collected data.

Table 7.12 shows the GoF measures for the structural model, while Table 7.10 shows the GoF measures for the measurement model. Therefore, these measures including the *df* were different. This can be possibly justified by the presence of additional 'free-parameters' representing the effects (paths) between the constructs in the structural model that are not present in the measurement model (Rigdon, 1994).

7.2.4.2.2 Construct Relations Assessment

Obtaining a good model fit alone is not enough to support the proposed structural model, and the hypothesised relationships between the constructs also need to be assessed (Hair et al., 2010). The 11 hypotheses shown in Table 7.11 will be assessed for the Anglophone and the Saudi models. Each hypothesis is assessed by examining the following variables: p-value, standardized path coefficient β (regression coefficients), and Critical Ratio (CR) (Hair et al. 2010). After that, the p-value for the Chi-square difference ($\Delta X^2/\Delta df$) is also calculated

to evaluate whether the observed differences between the hypotheses in the two samples have happened by chance (Fisher, 1922; Pearson, 1900).

Fit indices	Obtained fit indices	Recommend fit indices relative to sample size (Hair et al. 2010)
Combined sample (N= 740)		
Chi-square X^2	627.804	N/A
Df	223	N/A
Normed chi-square X^2/df	2.81	< 3.00
RMSEA	0.05	< 0.070
CFI	0.95	≥ 0 .90
Standardized RMR	0.078	< 0.080
Anglophone sample (N= 200)		
Chi-square X^2	404.659	N/A
Df	223	N/A
Normed chi-square X^2/df	1.82	< 3.00
RMSEA	0.064	< 0.080
CFI	0.92	≥ 0.92
Standardized RMR	0.077	< 0.090
Saudi sample (N= 540)		
Chi-square X^2	461.52	N/A
Df	223	N/A
Normed chi-square X^2/df	2.07	< 3.00
RMSEA	0.045	< 0.070
CFI	0.95	≥ 0 .90
Standardized RMR	0.071	< 0.080

Table 7.12 Goodness of Fit indices for structural model.

The p-value is used to evaluate the statistical significance of the relationship between the latent variables at 0.05 level. The standardized path coefficient (β) indicates the effect of the variable on other variables in the model; standardized path coefficients with values of less than 0.1 indicate a small effect. The CR is obtained by dividing the regression coefficient by the standard error. CR can be referred to as the standard normal distribution, therefore, CR values of 1.96 or higher (and -1.96 and lower) indicate two-sided significance at 0.05 level (Hair et al., 2010). CR values that are greater than 1.96 (or lower than -1.96) indicate statistical significance. When the p-value for the Chi-square difference ($\Delta X^2/\Delta df$) is less than 0.05, this indicates that the difference between the groups (Anglophone and Saudi or male and female) is statistically significant.

Table 7.13 shows the results of the analysis for all hypotheses for both models. The following subsections give an overall description of the results of each model. Appendix J gives a more detailed narrative for the results in the table.

	Hypothesised path	Anglophone Sample (N=200)			Saudi Sample (N=540)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1	PE → BI	0.572	6.117	<0.001	0.325	5.035	<0.001	n.s.
H2	EE → BI	0.201	2.548	0.011	0.174	3.345	<0.001	n.s.
H3	SI → BI	-0.121	-1.602	0.109	0.187	3.094	0.002	0.005
H4	FC → Use	0.519	3.707	<0.001	0.229	4.217	<0.001	0.036
H5	BI → Use	0.378	2.439	<0.001	0.189	4.255	<0.001	n.s.
H6	SP → PE	0.534	3.344	<0.001	0.356	5.572	<0.001	<0.001
H7	SP → SI	0.160	1.594	0.111	0.127	2.156	0.031	n.s.
H8	PSP → BI	0.019	0.304	0.761	-0.005	-0.114	0.909	n.s.
H9	PSP → Use	-0.287	-2.329	0.020	-0.106	-2.277	0.023	n.s.
H10	PAB → BI	0.028	0.474	0.635	0.018	0.405	0.685	n.s.
H11	PAB → Use	0.086	0.918	0.359	0.102	2.208	0.027	n.s.

Table 7.13 Hypothesis analysis for Anglophone and Saudi models.

7.2.4.2.2.1 Anglophone model construct relations assessment

In the Anglophone model, the hypothesized relationships involving SI, which are H3 and H7, were not statistically significant (p-values 0.109 and 0.111 respectively). This means that the relationship between SI and BI and between SP and SI are not significant. The result implies that social ties do not have an influence on Twitter use for the Anglophone users.

In addition, the hypothesized relationships between PAB and BI, and PAB and use (H10, H11 respectively) were also found to be not statistically significant (p-values 0.635, and 0.359 respectively). Which means that PAB does not has a direct impact on the BI or the use. Therefore, to gain more understanding about the impact of PAB on the model, further investigation was needed by examining its interaction effect on the other variables. This is presented in the next section. PSP was found to have a significant negative effect on the use, this implies that the more Anglophone Twitter users become protective and careful when using Twitter, their use level will decrease. However, it was found to not to be significant on the BI as indicated by H8 meaning that it does not affect the behavioural intention to continue to use it in the future.

Overall, most of the hypothesized paths from the base UTAUT model were significant, implying that the UTAUT is partially applicable in the case of Twitter for the Anglophone countries. The only insignificant path was from SI to BI. PE was found to have the strongest effect among the other factors, implying that the utility of Twitter greatly influences its use. SP had a strong effect on PE, meaning that when SP increases, PE will also increase, and this perhaps indicate that Anglophone Twitter users greatly utilise Twitter for self-presentation.

7.2.4.2.2.2 Saudi model construct relations assessment

The Saudi model also showed stronger support of most hypothesised relationships among the constructs, and only H8 and H10 were found to be not statistically significant (p-values 0.909 and 0.685 respectively), which implies that both PSP and PAB have no direct effect on BI to continue to use Twitter. Unexpectedly, H11 showed a significant positive effect between PAB and the use of Twitter, this implies that when PAB increases, use will also increase, which does not conform to the hypothesised relationship. A possible justification is that it might be the case the Saudi Twitter users are not affected directly by antisocial behaviour, therefore, even if they were exposed to antisocial behaviour, their use level won't be affected. However, the indirect interaction effect will be investigated to get more insight. This is covered in the next section. Similar to the Anglophone sample, PSP also has a negative significant effect on the use, implying that when Saudi Twitter uses are careful during their use, their use level will decrease. But this effect was not significant on the BI.

All hypothesised paths from the base UTAUT model were statistically significant, this result give evidence of the transferability of the UTAUT in Saudi culture with regard to Twitter. Like the Anglophone model, PE was the strongest influencer to use Twitter in the Saudi model. SP also had an influence on both PE and SI, implying that Saudi Twitter users utilise Twitter to present themselves, and to reflect a desired image to those who they care about.

7.2.4.2.3 Assessment of moderating variables and interaction

To fully assess the model, the moderating variables and the interaction of PAB with the other variables need to be examined. As proposed in this study, gender and age had moderating effects on the model constructs. The following subsections examine both moderation and interaction hypotheses.

7.2.4.2.3.1 Moderators effect

In SEM, the moderators' effects are examined using multi-group analysis, where the data is split based on the groups comprising the moderating variable (Hair et al., 2010). In this study we have gender, which is examined through two groups, one for males and the other for females. Age was split into two groups, older and younger users, with the age cut-off points determined based on t-test analysis to find the "magic number" for age where the difference in the measurements between groups was statistically significant (Venkatesh et al., 2003). In both the Anglophone and Saudi samples this magic number was found to be 30 years old.

Age and gender moderation were assessed for the previous hypothesis, for each group p-value, standardized path coefficient β, CR and the p-value for the Chi-square difference

($\Delta X^2/\Delta df$) were evaluated to find whether the difference between the groups is significant. Tables 7.14-7.17 show the analysis for the Anglophone and Saudi samples respectively, followed by an overall description of the results. Appendix J gives a more detailed narrative for the results in each of the tables.

7.2.4.2.3.2 Moderators effect for the Anglophone sample

Table 7.14 presents the analysis results of the gender groups for the previously assessed hypothesis. In the Anglophone sample, gender groups comprised 102 males and 98 females. Hypotheses H1.1-H11.1 were assessed for each group as explained in the following.

	Hypothesised path	Male (N=102)			Female (N=98)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.1	PE → BI	0.633	5.912	<0.001	0.447	3.146	0.002	n.s.
H2.1	EE → BI	0.175	1.939	0.053	0.213	1.868	0.062	n.s.
H3.1	SI → BI	-0.299	-3.335	<0.001	0.142	1.260	0.208	0.001
H4.1	FC → Use	0.188	1.547	0.122	0.337	2.606	0.009	n.s.
H6.1	SP → PE	0.388	2.379	0.017	0.570	1.964	0.049	n.s.
H7.1	SP → SI	0.026	0.278	0.781	0.219	1.369	0.171	n.s.
H8.1	PSP → BI	0.077	1.072	0.284	-0.082	-0.876	0.381	n.s.
H9.1	PSP → Use	-0.119	-1.294	0.196	0.056	0.614	0.539	n.s.
H10.1	PAB → BI	0.031	0.403	0.687	0.023	0.265	0.791	n.s.
H11.1	PAB → Use	0.251	2.570	0.010	-0.015	-0.133	0.894	n.s.

Table 7.14 Gender moderation hypothesis assessment (Anglophone sample).

Some gender differences were found between the hypothesised relationships in the model, these include H1.1, H3.1, H4.1, H6.1, and H11.1. However, the only one that was found significant is H3.1, which is between SI and BI. Despite the fact that H3 was not supported, it was found that gender has a moderating effect on the relationship, as males showed a significant negative effect, whereas females showed a positive effect, thought it was not significant. This possibly means that women in the Anglophone sample care more about social ties than men, who exhibit a strong negative relationship.

Age groups included a younger group with 92 cases, and an older group with 108 cases. Table 7.15 shows the analysis results of the age groups. Some differences were found within age groups between the hypothesised relationships in the model, these include H1.2-H6.2. However, similar with gender, the only one that was found significant is H3.2, which is between SI and BI. it was found that age has a moderating effect on the relationship, as older Twitter users showed a significant negative effect, whereas the younger users showed a positive but weak effect. This possibly means that older Twitter users in the Anglophone sample do not care about social ties when using Twitter compared to younger users.

	Hypothesised path	<30 years (N=92)			>=30 (N=108)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.2	PE → BI	0.511	3.447	<0.001	0.617	5.421	<0.001	n.s.
H2.2	EE → BI	0.232	2.030	0.042	0.157	1.501	0.133	n.s.
H3.2	SI → BI	0.039	0.327	0.744	-0.295	-3.252	0.001	0.025
H4.2	FC → Use	0.266	1.989	0.047	0.616	2.914	0.004	n.s.
H6.2	SP → PE	0.398	1.706	0.088	0.595	2.768	0.006	n.s.
H7.2	SP → SI	0.252	1.435	0.151	0.029	0.268	0.789	n.s.
H8.2	PSP → BI	-0.053	-0.603	0.547	0.046	0.703	0.482	n.s.
H9.2	PSP → Use	-0.073	-0.750	0.453	-0.101	-1.448	0.148	n.s.
H10.2	PAB → BI	0.009	0.105	0.917	0.050	0.612	0.540	n.s.
H11.2	PAB → Use	0.108	1.109	0.267	0.150	0.953	0.341	n.s.

Table 7.15 Age moderation hypotheses assessment (Anglophone sample).

7.2.4.2.3.3 Moderators effect for the Saudi sample

Table 7.16 presents the analysis results of the gender groups within the Saudi sample. They include 194 males and 346 females. There are gender differences between the hypothesised relationships in the model, these include H1.1-H6.1 and H9.1. However, the only one that was found significant is H4.1, which is between FC and Use. It was found that FC has a greater influence on the Use for males compared to females, who exhibited a much lower effect. This possibly means that men in the Saudi sample care more about having control and support over Twitter use than women.

	Hypothesised path	Male (N=194)			Female (N=346)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.1	PE → BI	0.291	2.823	0.005	0.333	4.050	<0.001	n.s.
H2.1	EE → BI	0.180	1.984	0.047	0.173	2.728	0.006	n.s.
H3.1	SI → BI	0.231	2.406	0.016	0.163	2.120	0.034	n.s.
H4.1	FC → Use	0.519	6.014	<0.001	0.134	2.136	0.033	0.028
H6.1	SP → PE	0.367	3.846	<0.001	0.336	4.182	<0.001	n.s.
H7.1	SP → SI	0.179	1.876	0.061	0.080	1.142	0.253	n.s.
H8.1	PSP → BI	0.009	0.132	0.895	0.008	0.128	0.898	n.s.
H9.1	PSP → Use	-0.154	-2.267	0.023	-0.049	-0.819	0.413	n.s.
H10.1	PAB → BI	0.001	-0.004	0.997	0.017	0.300	0.764	n.s.
H11.1	PAB → Use	0.075	1.076	0.282	0.102	1.722	0.085	n.s.

Table 7.16 Gender moderation hypothesis assessment (Saudi sample).

Age groups included a younger group with 333 cases, and an older group with 207 cases. Table 7.17, shows the analysis results of the age groups. Age differences were found in H1.2-H6.2. However, similar with gender, only the difference in H4.2 was statistically significant,

which is between FC and Use. It shows that older Saudi Twitter users exhibited a greater influence of FC on Use; this possibly means that the older users care more about having control and support over Twitter compared to the younger users.

	Hypothesised path	<30 years (N=333)			>=30 (N=207)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.2	PE → BI	0.340	3.765	<0.001	0.312	3.436	<0.001	n.s.
H2.2	EE → BI	0.086	1.284	0.199	0.304	3.844	<0.001	n.s.
H3.2	SI → BI	0.181	2.188	0.029	0.091	1.094	0.274	n.s.
H4.2	FC → Use	0.109	1.942	0.050	0.382	3.889	<0.001	0.020
H6.2	SP → PE	0.312	3.600	<0.001	0.426	4.264	<0.001	n.s.
H7.2	SP → SI	0.154	1.937	0.053	0.113	1.255	0.209	n.s.
H8.2	PSP → BI	0.033	0.587	0.557	-0.084	-1.168	0.243	n.s.
H9.2	PSP → Use	-0.090	-1.550	0.121	-0.092	-1.212	0.225	n.s.
H10.2	PAB → BI	-0.002	-0.037	0.970	0.072	1.001	0.317	n.s.
H11.2	PAB → Use	0.113	1.884	0.060	0.069	0.880	0.379	n.s.

Table 7.17 Age moderation hypotheses assessment (Saudi sample).

7.2.4.2.3.4 Interaction effect

Since one of the most important issues addressed by this study is the impact of PAB on the other factors influencing Twitter use, it was crucial to investigate this impact in many possible ways, directly (as hypothesised previously), and indirectly as an interacting factor within the relationships in the model, in which PAB plays the moderating role in this case. The interaction hypotheses are listed in Table 7.18. Figure 7.4 shows the interactions with PAB in the model, and is illustrated separately from the rest of the other hypotheses to give a clearer picture. As explained by Hair et al. (2006), one approach for handling a moderator that does not involve creating groups is to create an interaction between the moderator and the other latent constructs. An interaction construct can be formed to represent the moderating effect by multiplying the latent constructs and the moderator (Hair et al., 2006). Table 7.18 and Figure 7.4 illustrate the interaction hypothesis and its sub-hypotheses. To assess this hypothesis, seven underpinning hypotheses need to be assessed. Not all of them were supported, therefore H12 was partially supported for both the Anglophone and the Saudi models. The assessment is presented below.

H12	PAB will have an indirect negative effect on the relationships between BI, use and other constructs.
H12.1	The PAB will dampen the positive relationship between SP and PE.
H12.2	The PAB will dampen the positive relationship between SP and SI.
H12.3	The PAB will dampen the positive relationship between PE and BI.
H12.4	The PAB will dampen the positive relationship between EE and BI.
H12.5	The PAB will dampen the positive relationship between SI and BI.
H12.6	The PAB will dampen the positive relationship between FC and Use.
H12.7	The PAB will dampen the positive relationship between BI and Use.

Table 7.18 PAB interaction hypotheses.

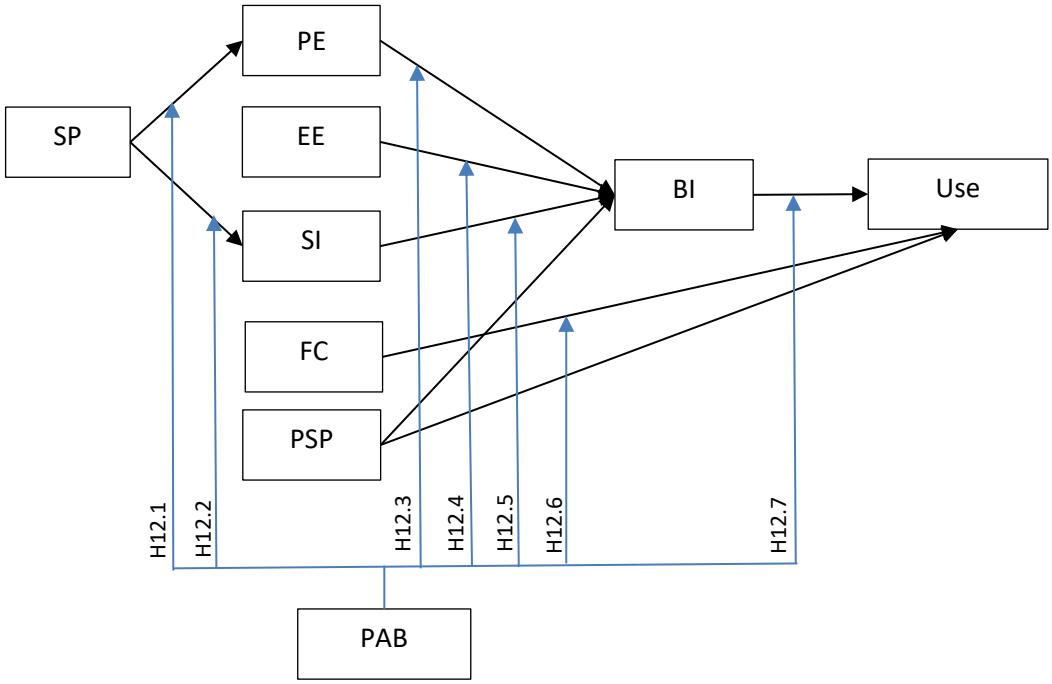

Figure 7.4 Interactions between PAB and the other constructs.

The assessment of the Anglophone and the Saudi models are presented in Table 7.19. It is clear that overall, PAB has a negative effect over the hypothesised relationships in the model. When the interaction effect is broken down between the two samples it can be seen that it tends to impact the Anglophone sample more than the Saudi sample. For the Anglophone sample, PAB had a negative significant effect on all hypotheses except for H12.4 and H12.5, which involve SI and EE. While in the Saudi sample, PAB had a negative effect on H12.4, which involve EE. It was also found that PAB had a negative effect on both H12.6, and H12.7, which involve the relationships between BI and Use, and between FC and Use, implying that PAB dampens the positive relationship between those two. Refer to Appendix J for a more detailed narrative for the results.

Hypotheses	Hypothesised path	Anglophone		Saudi		$\Delta X^2/\Delta df$
		β	p-value	β	p-value	p-value
H12.1	SP×PAB → PE	-0.340	0.000	-0.019	0.659	n.s.
H12.2	SP×PAB → SI	-0.215	0.002	-0.027	0.530	n.s.
H12.3	PE×PAB → BI	-0.366	0.000	0.070	0.235	n.s.
H12.4	EE×PAB → BI	-0.106	0.185	-0.120	0.014	n.s.
H12.5	SI×PAB → BI	0.092	0.262	0.051	0.364	n.s.
H12.6	FC×PAB → Use	-0.373	0.000	-0.117	0.007	n.s.
H12.7	BI×PAB → Use	-0.296	0.001	-0.126	0.010	n.s.

Table 7.19 Interaction hypotheses assessment for the Anglophone and Saudi models.

	Hypothesis	Moderators	Findings	Conclusion
H1. PE → BI	PE will have a positive effect on BI.	None	Positive and statistically significant effect (β = 0.572 p<0.001). Effect was found stronger for older males, but not significant.	Supported
H2. EE → BI	EE will have a positive effect on BI.	None	Positive and statistically significant effect (β = 0.201 p<0.001). Effect was found stronger for younger females, but not significant.	Supported
H3. SI → BI	SI will have a positive effect on BI.	Gender, age	Negative and not statistically significant effect (β = -0.121 p=0.19) Effect was found negative and significant for males (β = -0.299 p<0.001) as well as older users (β = -0.295 p=0.001.).	Not supported.
H4. FC → Use	FC will have a positive effect on use.	None	Positive and statistically significant effect (β = 0.519 p<0.001) Effect was found stronger for older females, but not significant.	Supported
H5. BI → Use	BI will have a positive effect on use behaviour.	None	Positive and statistically significant effect (β = 0.378 p<0.001)	Supported
H6. SP → PE	SP will have a positive effect on PE.	None	Positive and statistically significant effect (β = 0.534 p<0.001) Effect was found stronger for older females, but not significant.	Supported
H7. SP → SI	SP will have a positive effect on SI.	None	Positive but not statistically significant effect (β = 0.160 p=0.111) No moderation effect was found.	Not supported.
H8. PSP → BI	PSP will have a negative effect on BI.	None	Weak and not statistically significant effect (β = 0.019 p=0.761) No moderation effect was found.	Not supported
H9. PSP → Use	PSP will have a negative effect on Use.	None	Negative and statistically significant effect (β =- 0.287 p=0.020) No moderation effect was found.	Supported
H10. PAB → BI	PAB will have a negative effect on BI.	None	Weak and not statistically significant effect (β = 0.028 p=0.635). No moderation effect was found.	Not supported
H11. PAB → Use	PAB will have a negative effect on use.	None	Weak and not statistically significant effect (β = 0.086 p=0.359). Effect was found positive and significant for males (β = 0.251 p=0.010)	Not supported
H12	PAB will have a negative indirect effect on the relationships between BI, use and other constructs.	None	Interaction effect was negative and statistically significant over the paths in H1,H4, H5, H6,and H7.	Partially supported

Table 7.20 Summary of Hypothesis Assessment for the Anglophone Model.

	Hypothesis	Moderators	Findings	Conclusion
H1. PE → BI	PE will have a positive effect on BI.	None	Positive and statistically significant effect (β = 0. 325 p<0.001). Effect was found slightly stronger for younger females, but not significant.	Supported
H2. EE → BI	EE will have a positive effect on BI.	None	Positive and statistically significant effect (β = 0. 174 p<0.001). Effect was found stronger for older males, but not significant.	Supported
H3. SI → BI	SI will have a positive effect on BI.	None	Positive and statistically significant effect (β = 0.187 p=0.002). Effect was found slightly stronger for younger males, but not significant.	Supported.
H4. FC → Use	FC will have a positive effect on use.	Gender, age	Positive and statistically significant effect (β = 0.229 p<0.001) Effect was found stronger for older males and was statistically significant.	Supported
H5. BI → Use	BI will have a positive effect on use behaviour.	None	Positive and statistically significant effect (β = 0.189 p<0.001)	Supported
H6. SP → PE	SP will have a positive effect on PE.	None	Positive and statistically significant effect (β = 0.356 p<0.001) Effect was found slightly stronger for older males, but not significant.	Supported
H7. SP → SI	SP will have a positive effect on SI.	None	Positive and statistically significant effect (β = 0.127 p=0.031) No moderation effect was found.	Supported.
H8. PSP → BI	PSP will have a negative effect on BI.	None	Weak and not statistically significant effect (β = -0.005 p=0.909) No moderation effect was found.	Not supported
H9. PSP → Use	PSP will have a negative effect on Use.	None	Negative and statistically significant effect (β =-0.106 p=0.023) Effect was found stronger for males, but not significant.	Supported
H10. PAB → BI	PAB will have a negative effect on BI.	None	Weak and not statistically significant effect (β = 0.018 p=0. 685). No moderation effect was found.	Not supported
H11. PAB → Use	PAB will have a negative effect on use.	None	Effect was found positive (β = 0.102 p=0. 027). No moderation effect was found.	Not supported
H12	PAB will have a negative indirect effect on the relationships between BI, use and other constructs.	None	Interaction effect was negative and statistically significant over the paths in H2, H4, and H5.	Partially supported

Table 7.21 Summary of Hypothesis Assessment for the Saudi Model.

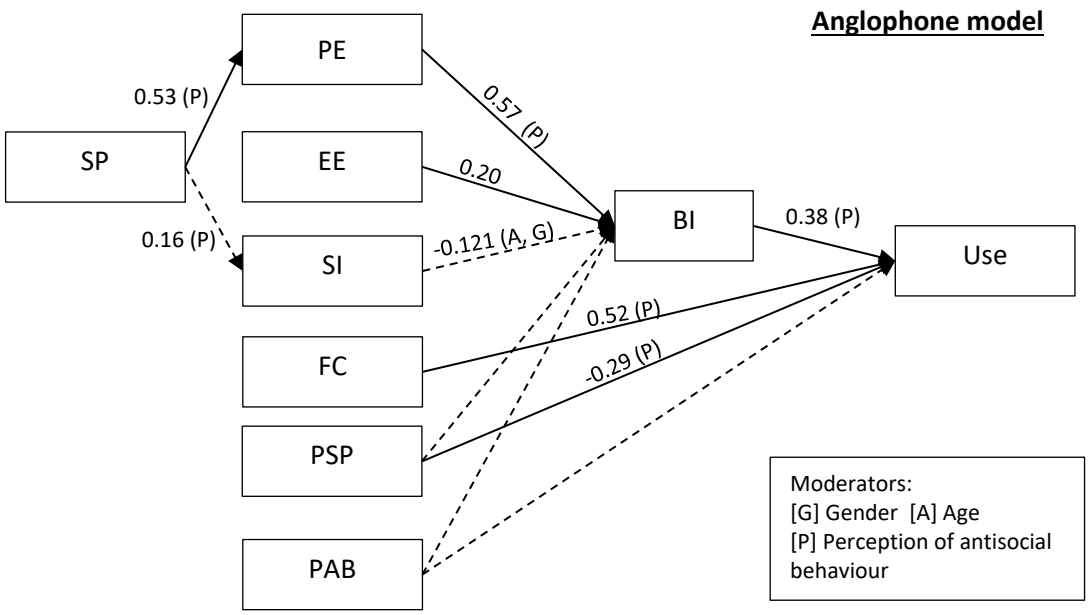

Figure 7.5 Structured model for the Anglophone sample.
(Dashed lines indicate a non-significant relationship; moderators are added next to the regression weight on the lines).

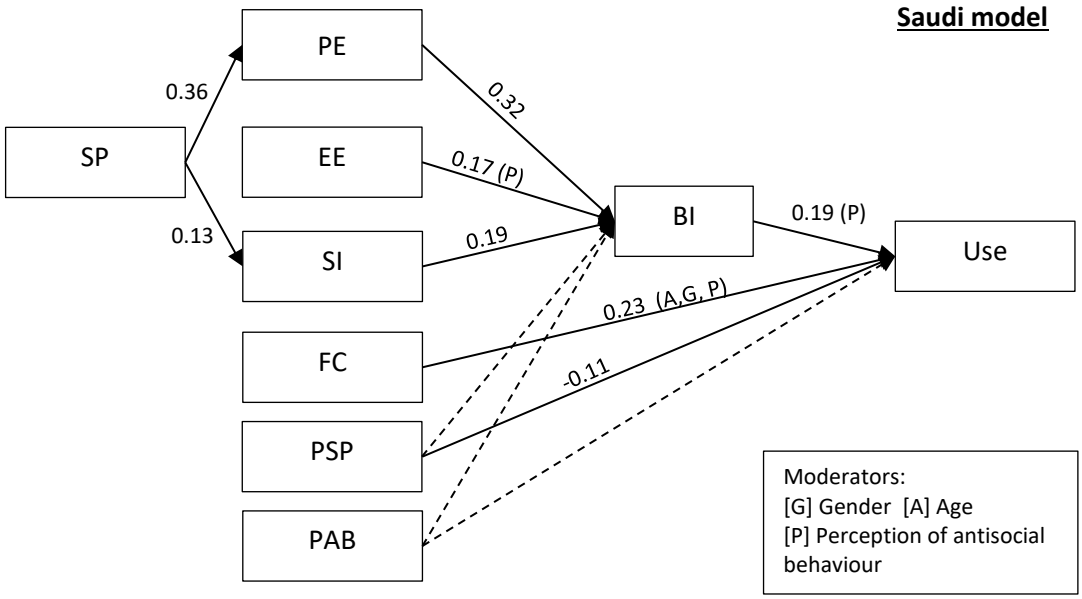

Figure 7.6 Structured model for the Saudi sample.
(Dashed lines indicate a non-significant relationship; moderators are added next to the regression weight on the lines).

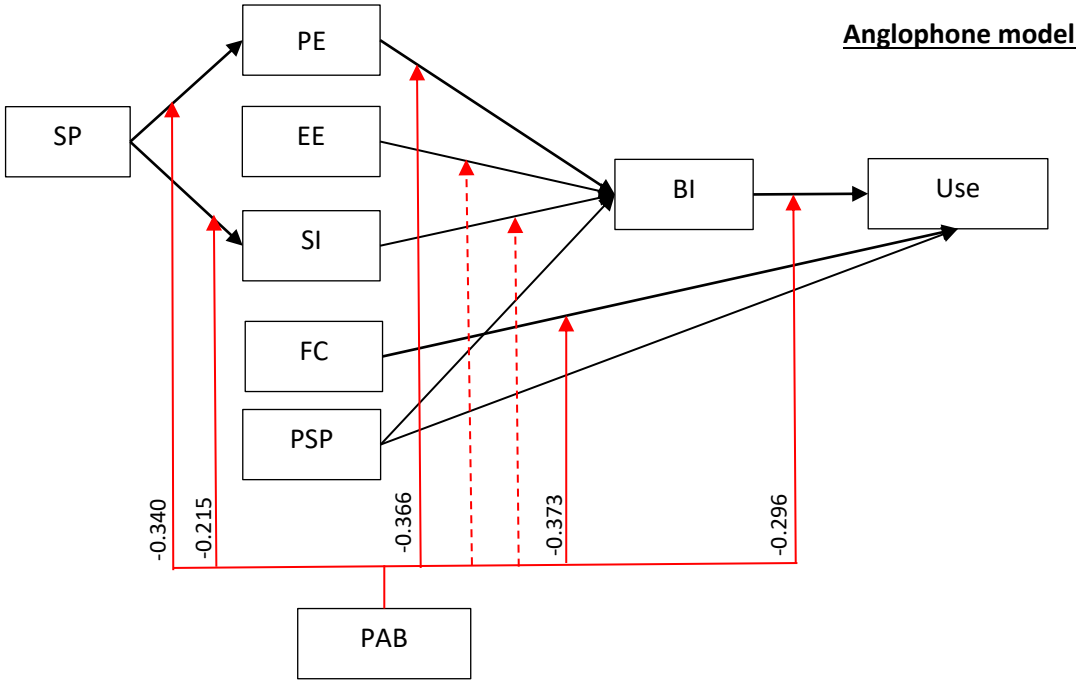

Figure 7.7 Interactions between PAB and the other constructs on the Anglophone sample.
(Dashed lines indicate a non-significant relationship)

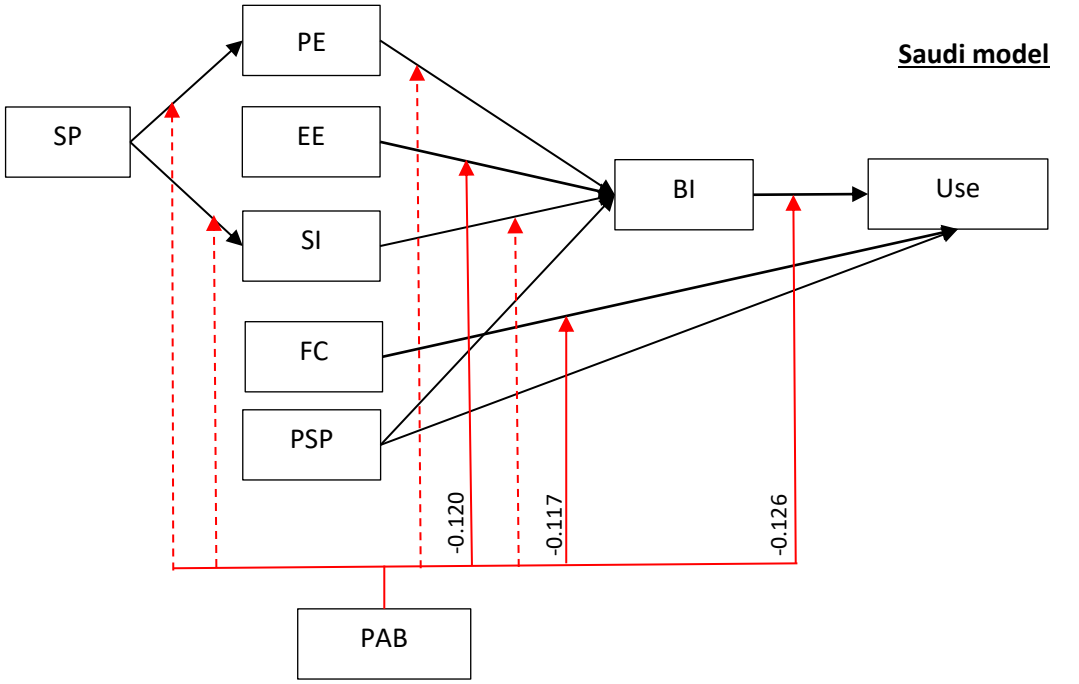

Figure 7.8 Interactions between PAB and the other constructs in the Saudi Sample.
(Dashed lines indicate a non-significant relationship)

7.3 Chapter Summary

This chapter presents a complete description of the design, analysis, and results of the second phase of this research, which is the online questionnaire. The questionnaire was carefully designed using measures drawn from the existing literature, which were then validated by informal pilots, a cognitive walk-through, and a panel of experts. The translation of the questionnaire was also done following procedures suggested in the literature. After piloting the questionnaire, a preliminary reliability score was calculated to make sure the instrument will be reliable for the real test. Upon satisfactory results from the expert panel and the pilot, permission was granted by the University of Southampton Ethics Committee and the questionnaire was publicised on Twitter and other mailing lists. A total of 901 responses were collected, which after data screening was reduced to 740, with the Anglophone sample size comprising 200 responses and the Saudi Arabian 540.

Data analysis was begun by examining and screening the data to resolve issues of missing data and to exclude any responses belonging to other countries. SEM was then conducted as the statistical approach and was carried out in two steps. Firstly, the measurements were assessed in order to guarantee the validity and reliability of the model, and secondly, the model was structurally assessed by evaluating the paths between the constructs, thereby assessing the hypotheses proposed in the study. The model fit was also calculated in each step and satisfactory results were obtained. Finally, each hypothesis was assessed separately and a decision whether to accept or refute it was made. The models for both cultures were finalised once the hypothesis assessment had shown the significance and strength of the paths. A complete discussion of the results is provided in the discussion chapter.

Chapter 8: Follow-up Interviews Design and Results

This chapter describes the design and results of the third phase of the research, namely the follow-up interviews. Creswell defined the mixed method where a qualitative study follows a quantitative one as the sequential 'explanatory' approach (Creswell, 2009), implying that the main aim is to achieve a better explanation of the quantitative results. Flick also asserted that linking the qualitative and quantitative results, either one after the other, or at the same time, in the same study was useful (Flick, 2009). He gave an example of how combining the results of a survey and an interview might be beneficial, including obtaining a broader understanding of the issue being studied, or validating the findings of both methods. The follow-up interviews were designed with the aim of gaining a better understanding and interpretation of the results in the quantitative phase. The following sections outline the design, analysis and results of the interviews.

8.1 Follow-up Interviews Design

The interview was designed as a semi-structured interview. One reason for choosing this type of interview was that semi-structured interviews are widely used. Another was that they have attracted interest in research because they are more likely than a standardised interview or questionnaire to enable the interviewees to express their viewpoints openly (Flick, 2009).

8.1.1 Sample Size and Description

As explained earlier in chapter six, sample size in qualitative research can be justified either by a recommendation from qualitative methodologists (Marshall et al., 2013), where suggested ranges include 6-8 (Kuzel, 1992) and 6-10 (Morse, 2000), or by linking the sample size to the concept of data saturation within a dataset (Marshall et al., 2013). In a phenomenological study in which sixty interviews were conducted, it was reported that data saturation had occurred by the time the twelfth interview had been analysed (Guest et al. , 2006). The sample size used in the follow-up interview study was 20 participants, which can be considered sufficient for the purpose of a follow-up study.

All of those taking part had been using Twitter for at least three years and some for more than seven. The sample consisted of 10 participants from the Anglophone, and 10 from Saudi Arabia. Within each group there were five males and five females. The age of the participants

varied, with the majority being in the 25-30 age group. Table 8.1, shows the breakdown of the sample by age group and gender. As the sample description implies, the sampling technique selected was purposive sampling, which is common in qualitative research. In purposive sampling, specific participants are chosen who have characteristics relevant to the study and who will, it is thought, be most informative. It is particularly useful to provide as much variation as possible within a sample (Anderson, 2010). Moreover, it allows for the selection of extreme or deviant cases, which in turn assists the study of the target issue. Purposive sampling also permits cases to be selected on the basis of the level of intensity of the interesting experiences reported (Patton, 2002). In conducting the interviews, there was a set aim to have different experiences, so participants who had different levels of exposure to antisocial behaviour were included in the sample. This was achieved in both samples.

Age group	Number	Gender
Anglophone sample		
25-30	5	3 Males, 2 Females
31-35	2	2 Males
41-45	1	1 Male
51-55	1	1 Female
65+	1	1 Female
Saudi sample		
18-24	2	2 Males
25-30	4	1 Male, 3 Females
31-35	3	1 Male, 2 Females
65+	1	1 Male
Total	20	10 Males, 10 Females

Table 8.1 Follow-up interviews sample.

8.1.2 Interview Questions

The interview questions are presented in Table 8.2. The interview began with closed questions about the participants' demographics and use of Twitter and was followed by open questions. Flick named the rich stock of knowledge that interviewees bring with them to a topic as the 'subjective theory'. The interview should start with open questions about the topic to reconstruct the contents of interviewees' subjective theory. During the interview, the flow of the questions helps to make the interviewees' implicit knowledge more explicit. This then permits more 'theory-driven, hypotheses-directed questions' to be asked. These are based on the researcher's theoretical assumptions of the issue under consideration (Flick, 2009). The more theory-driven, hypotheses-directed questions were asked at the end so that the required information relating to the theoretical model and research question had been covered in the earlier questions. There was concern that participants might forget to mention something or that they would give a very brief answer. The follow-up questions were therefore useful to obtain more comprehensive information.

Interview questions			
Closed questions:			
1- What is your gender? 2- What is your age? 3- For how many years have you been using Twitter? 4- How many times do you typically access Twitter?			
Open questions:			
5- How would you describe your usage of Twitter? Why do you use it? 6- To what extent do you think that antisocial behaviour is a problem on Twitter? Why? 7- How does your perception of antisocial behaviour impact you when using Twitter?			
Hypotheses-directed follow-up questions:			
How does antisocial behavior affect your usage of Twitter in the following regards:			
	No	Somehow	Yes
a. Does it lessen its usefulness?			
b. Does it prevent you from presenting more information about yourself and your ideas?			
c. Does it make it requires more effort to use?			
d. Does it make you concerned about your image and the opinions of how other users on you?			
e. Does it make you more careful when you participate?			
f. Did it push you into looking into the use agreement or the use of other functions like block or report?			
g. Did it make you think to stop using Twitter?			
h. Has it ever made you stop using Twitter?			

Table 8.2 Follow-up interview questions.

8.1.3 Follow-up Interview Pilot

Follow-up interview questions were checked with three researchers from the Web and Internet Science Group at the University of Southampton. Improvements to the wording of the questions were made after the pilot and before starting the actual interviews with the participants.

8.1.4 Interview Procedure

All participants were invited to participate by email. A participant information sheet and a consent form were attached, and the purpose of the interview was stated. Participants were given the choice to either meet in person for the interview or to have the interview sent by email. In the case of one-to-one interviews, participants were first given the consent form to sign and were then asked for permission to record the discussion.

The interview began by first asking the demographic and use questions, followed by the open questions. Once the interviewee had answered all the open questions, the researcher followed up with the hypotheses-directed questions. In the case of the email interviews, all questions were given as presented in Table 8.2. Participants were given the opportunity to ask any clarifying questions before answering the interview questions. After the answers were returned, the researcher had the option to ask interviewees further questions by email to elaborate on the answers they had given.

8.1.5 Ethics Approval

The ethics approval of the follow-up interviews was obtained from the Ethics Committee at the University of Southampton (research ethics number 23093). No personal data was collected in the expert reviews and all collected information was anonymised. Participants gave their consent prior to the interview by signing the consent form and participant information sheet, or by replying with a written consent via email. All participants were assigned a code to preserve anonymity. Interviewees from the Anglophone sample were assigned the codes EN1-EN10; those from the Saudi sample were assigned the codes SA1-SA10.

8.1.6 Data Collection and Analysis

The collected data from the interviews contained the audio-recorded and the written answers. The recorded answers were transcribed into written format before conducting the analysis. As mentioned earlier in chapter six, it is recommended that researchers transcribe the interviews themselves in order to familiarise themselves with the data (Riessman, 1993). The reason is because the transcribing is considered to be an interpretative act, where the researcher can draw meaning from the transcripts rather than simply transforming spoken words into a written format (Bird, 2005). After the transcription phase had been completed, all transcripts were saved in the qualitative analysis tool, NVivo, which was used to support the qualitative analysis.

The qualitative analysis method used in this phase was the six-step approach of thematic analysis by Braun and Clarke (2006). These steps are: (1) familiarising yourself with your data, typically by transcription; (2) generating initial codes;(3) searching for themes; (4) reviewing the themes; (5) defining and naming the themes; and (6) producing the final report, by selecting vivid, compelling examples relating back to the analysis.

There are two primary ways of identifying themes in thematic analysis: an inductive or 'bottom up' approach, or a theoretical deductive or 'top down' approach. The analysis of the follow-up interviews followed the deductive approach, where the questions and the themes were driven by the researcher's theoretical interests in the topic (Braun & Clarke, 2006). In this instance, the researcher's interests were the different aspects of Twitter use under the perception of antisocial behaviour. After the thematic analysis had been completed, a thematic network analysis was employed to better illustrate and visualise the data. Thematic networks analysis is a way of organising a thematic analysis of qualitative data. It includes three types of nodes: (1) *Basic Themes*, which are the lowest-order premises; (2) *Organising Themes*, which are categories of basic themes grouped together; and (3) *Global Themes*, super-ordinate themes encapsulating the whole text (Attridge-Stirling, 2001). The following section gives a complete description of the procedure and the analysis of the results.

8.2 Follow-up Interviews Results

8.2.1 Analysis Procedure

The coding process went into a number of iterations following the six-step thematic approach explained above. After the initial coding of the data, codes were grouped into themes, after which themes were reviewed. During the review, some themes were merged with others and some were split as they grew bigger, to give more organisation and clarity. Also, some themes were found to intersect with other themes at some point. In the end, a set of seven organising themes was obtained. These are illustrated in Figure 8.1 in the ovals. The global theme of the analysis was: Aspects of Twitter use under the perception of antisocial behaviour. In the following section, each organising theme and its components will be explained.

The final set of themes was found to match both the data from the Anglophone and the Saudi group. Minor differences were found but they did not affect the structure of the thematic analysis. For example, under the theme Bad feelings, participants from both cultural groups expressed how bad and frustrated they felt about the antisocial problem. However, in the Saudi sample, some participants linked this feeling to the violation of religious belief, resulting in them feeling sad. Therefore, despite the difference, they all fell into the same theme.

8.2.2 Analysis Results

As mentioned earlier, seven organising themes were obtained from the thematic analysis. Each theme will be explained and examples provided in the following subsections. Connections between the themes are also illustrated and explained in Figure 8.1.

8.2.2.1 Impact

As the name implies, this organising theme addresses the impact of antisocial behaviour on Twitter use. Its underlying basic themes include the following:

- *Limit the use*. Participants indicated how the existence of antisocial behaviour limited how much they used Twitter in different ways.
- *Bad feelings*. Participants expressed how bad they felt about this problem. These feelings were categorised into two types: the users being upset and frustrated themselves; or the users feeling bad for another Twitter user being targeted.
- *Require more effort*. Participants explained how the problem of antisocial behaviour on Twitter required them to use more effort when using the site. This included blocking unwanted accounts, preserving neutrality in their expressions and avoiding using some hashtags or key words.
- *Hesitation about the use*. Participants expressed how they were still not sure about how much they should be using Twitter; a variety of different reasons were given, but all were linked to the existence of antisocial behaviour.
- *No direct impact*. Participants indicated that they did not really care about antisocial behaviour and it did not affect how they used Twitter at all.

Table 8.3 gives quotations extracted under each theme.

8.2.2.2 Becoming protective

This theme was originally listed under the Impact theme. However, because it comprises other underlying basic themes it was drawn out as an organising theme, and was linked to the Impact theme in the thematic network map to show the relationship. Becoming protective implies that the participants had changed their normal behaviour due to their perception of the risk of antisocial behaviour. It includes the following basic themes:

- *Become very cautious*. Participants showed their concern about how they needed to be cautious and think twice before writing tweets, or giving their opinions about certain controversial subjects. This was also linked to their perception of the problem of antisocial behaviour and how certain comments or tweets could get them involved in an unpleasant situation.

Theme	Example
Impact	
Limit the use	"*You can easily be exposed to tweets that contain offensive and antisocial content. This does limit how much I use Twitter as I treat it like a noticeboard.*" -EN1. "*It definitely stopped me from tweeting out - maybe if I didn't get the odd interaction, but I wouldn't say that I still got nothing from Twitter. I still go on and look at it. It just reminded me that it's not a safe place.*" –EN10 "*It makes users hesitate to express their opinions and forces them to think twice or back off.*" –SA8
Bad feelings	"*I think it's awful but I don't get upset as much as I get really angry that people think that they have the right to do that.*" –EN3 "*I think reading stories might kind of put you off sometimes.*" –EN10 "*I get frustrated because of the spread of this problem.*" –SA4
Require more effort	"*I would definitely put in effort to make sure I block users I didn't know and, as it went on, I stopped doing that but then I stopped really using it. I've gone off it, so then my time and effort in monitoring who's following me was kind of going down.*" –EN10 "*It totally impacts the effort! I'm always like super careful to be as neutral as possible.*" –EN8 "I*t makes it less enjoyable and I need more effort to block these people from viewing my account.*" –SA2
Hesitation about the use	"*So that incident I mentioned, for a tiny while it kind of made me pause and think why I am using this?*" –EN10 "*Abusive behaviour is a big problem because it could lead to the reluctance of some people to use it.*" –SA9
No direct impact	"*It doesn't make me tweet less or make a difference to me. You can't let people like that win, so I just carry on as normal.*" –EN3 "*It doesn't really affect me much: I'm white, I'm male, I'm very unlikely to be targeted… despite the problem. Twitter is still useful for me to keep in touch and things I need. And I'm lucky I've never been a target.*" –EN6 "*I disregard it, I'm afraid I'm old enough!*" –EN7 "*It is not as big a problem as everyone thinks… those who are experiencing this problem are a certain number of celebrities who make up a small percentage of Twitter users.*" –SA6

Table 8.3 Examples for the theme: Impact.

- *Limits self-presentation*. This theme encapsulated participants' perceptions of how they should not share a lot about themselves and should limit the amount of information they presented about themselves, typically because of privacy issues. It was also found that their perception of antisocial behaviour made them cautious about what they shared on Twitter, especially with regard to personal information.

- *Becoming anonymous*. Participants explained that sometimes to be able to say what was on your mind without worrying about your image made it necessary to use an anonymous account. Anonymity was also mentioned many times as a reason for the existence of the problem of antisocial behaviour. This will be discussed in the Reasons theme later.

The following table shows examples for each of the basic themes described above.

Theme	Example
Becoming protective	
Become very cautious	"*I avoid interaction with any of the offensive accounts or the ones that have bad language, and if I personally encountered any racist people I will block them.*" –SA2 "*It makes me very cautious when I tweet and sometimes it stops me from tweeting.*" –SA9 "*The phenomenon of abusive behaviour is a problem because it may restrict the freedom of others when using Twitter as they fear the reactions of the abusive users and therefore it makes users hesitate to express their opinions and forces them to think twice or back off.*" –SA8
Limits self-presentation	*"I mean I'm really, really careful … I really limit my opinions, and it's entirely because of the existence of this problem! Because I have no problem with people I know, my friends, but I do worry about a random person taking it and suddenly going off and blowing it up into a huge kind of national problem!"* –EN8 "*Sometimes I avoid sharing my opinions fearing it could damage my image or make me fall out with others who are important to me whether at work or friends and family.*" –SA2
Becoming anonymous	"*It dissuades the users from writing some tweets and sometimes you have to be anonymous.*" –SA9 "*The degree of anonymity allows people to create different sorts of accounts.*" –EN6

Table 8.4 Examples for the theme: Becoming protective.

8.2.2.3 Exposure

This theme illustrates participants' perception of antisocial behaviour on Twitter encompassing the different ways they have encountered the problem. It includes the following basic themes:

- *Not personally exposed to it*. Participants expressed the view that they did not really have a great sense of the problem when they used Twitter.
- *Witnessed it happening to someone else*. Under this theme, different participants shared how their awareness about the problem was formulated. This included

witnessing someone being abused, reading stories about it, or encountering antisocial materials within a hashtag or in the timeline.

- *Had one or more incidents*. Some participants within the sample had encountered some forms of antisocial behaviour, such as stalking, or unpleasant messages.

Table 8.5 shows examples for each theme.

Theme	Example
Exposure	
Not personally exposed to it	"*For me personally - I haven't really encountered any problems. As my use of Twitter is restricted to a few groups of people - and I don't really involve myself in the wider community - I avoid most of the antisocial behaviour.*" – EN2 "*No, those who experience this problem are a certain number of celebrities who make up a small percentage of Twitter users.*" -SA6
Witnessed it happening to someone else	"*I know of female friends who get followed by these strange male accounts with sort of very suggestive messages being sent that are not good, and then there is sort of very angry and violent comments, and every week there is some story about a celebrity who said something and got really angry responses.*" –EN9 "*I see… some of the people I follow might retweet something that was sent to them that's particularly unpleasant. Sometimes I see comments that are made by people that I'm following that I think, emm, that are if they were face to face they will not say them. And I see a lot of evidence of harassment on Twitter aimed generally at women.*" –EN3 "*For instance. when a female student abroad gets harassed, instead of supporting the cause and call for protective measures, they continue the verbal harassment and change the subject to another level.*" –SA14 "*It is really bad when they create hashtags about someone and escalate it until it becomes trending, What's even worse is when those who are against it start fighting using the same hashtag which gives it more value.*" –SA1 "*You can see the highest levels of abuse, on religion and beliefs. It is very immoral.*" –SA9
Had one or more incident	*"I did have a really weird scenario… and that kind of creeped me out and I think since then I used it less because I felt like 'why, you're stalking!' That's how I felt like when being stalked and I didn't like that… I've seemed to actually, if I think about it, I've probably used it less now since that time."* – EN10 "*One time I was tweeting about something and I got this angry response and I was tweeting about football and it was a light-hearted joke and got a set of responses from the supporters of a particular football team and they were not really happy!"* –EN9 *"One time I tweeted asking about something, one person replied to me in an offensive tweet asking me to visit his account which was very offensive and with very bad content. I was very upset, I closed Twitter and even stopped looking for the information I needed.*" –SA1

Table 8.5 Examples for the theme: Exposure.

8.2.2.4 Facilitating conditions

This theme considers the aspects of the Facilitating conditions factor as theorised in this study, which includes the perceived behavioural control of Twitter use, and the organisational and technical support available on different aspects of Twitter use. This theme included the following:

- *Limited control*. Participants indicated that they did not feel that they had control over their accounts or the different situations or context around their use of Twitter.
- *Uncertainty about polices and laws*. In this theme. participants showed their concern about the lack of clear laws and awareness about policies on the use of Twitter.

Table 8.6 presents examples related to these themes.

Theme	Example
Facilitating conditions	
Limited control	"On *Twitter you cannot report spam, you cannot go and report back unless you take the trouble to go out and go back to the main Twitter site to be able to report something that you find unpleasant. It's not so easy - at least I haven't found it to be easy or maybe I've missed something!"* –EN7 "*On Facebook you can't be absolutely certain who's reading your Facebook posts but I feel more in control with that, whereas on Twitter I'm not on control at all.*" –EN3
Uncertainty about polices and laws	"*The bad thing about policies is they always have them there; you don't read them.*" –EN10 "*People I follow; they're constantly talking about Twitter procedures. Although they're some use, they don't go far enough to stop people from acting this way.*" –EN3 "*For example, we have good system for burglaries. If you get burgled, there's a law against it. You phone the police; they come around etc.... The problem for me with Twitter is this thing happens where people troll people online but there aren't any real laws about it and there's no way of managing it… What concerns me is where this whole thing started and creates this whole new thing and everybody thinks there should be some kind of law against it and there should be some way of dealing with it, but there isn't! So for me that is a genuine risk and that's why I don't get involved.*" –EN8 "*I didn't encounter any guidelines or instructions on Twitter that raises awareness about how to deal with antisocial behaviour.*" –SA1 "*Most Twitter users do not know that there is an authority that they can file a complaint to about users who attack others on Twitter.*" –SA4

Table 8.6 Examples for the theme: Facilitating conditions.

8.2.2.5 Reasons

This theme groups what participants thought were possible reasons for the antisocial behaviour problem. Reasons included:

- *Anonymity*. Many participants thought that anonymity was one of the reasons for antisocial behaviour on Twitter, allowing users to behave in a way that they wouldn't do if they were using their real identity.
- *Type of community*. Some participants mentioned that the discrepancy of class, upbringing, politeness and education levels of Twitter users could possibly lead to conflict and, therefore, encourage antisocial behaviour on Twitter.
- *140-character limit*. Participants stated that the size limit of the tweet was very troubling as they could not deliver the desired message within that limit, which in turn led to misunderstanding and therefore invited conflict.
- *No content filtering*. According to some participants', the lack of content filtering on Twitter encouraged antisocial behaviour and lowered the quality of the Twitter experience in general.
- *Large user base*. Some participants linked the spread of the antisocial behaviour problem to the size of the Twitter platform in terms of the number of users. In other words, having a huge user base made the problem more severe.
- *Broadcasting nature*. Because Twitter is designed to broadcast tweets to everyone with no restrictions (when the account is public) attracting reactions from complete strangers, this can sometimes lead to unwelcome messages. According to some participants, the broadcasting nature of Twitter, despite being a key value of the platform, could also invite unwanted interactions.
- *Uncertainty about polices and laws*. As mentioned under the Facilitating conditions theme, lack of awareness about the laws could contribute to the spread of the problem of antisocial behaviour.
- *Becoming a norm*. Some participants expressed their concern about the spread of antisocial behaviour on Twitter. They felt it was so common nowadays that people had started to accept it to some extent, and to behave in a way that they did not before, and to even encourage such behaviour.

Table 8.7 gives examples for all the previous themes extracted from different interviews.

Theme	Example
Reasons	
Anonymity	"*I think the whole anonymity of it gives people a false sense of security so they feel they can say things that they will not necessarily say in real life.*" –EN5 "*People will behave in a way when they're not face to face and they're hiding behind a piece of technology - anonymity - they will do things that they will not normally do in real life.*" –EN3 "*Some profiles are anonymous which allows them to carelessly say anything without considering the consequences.*" –SA4
Type of community	"*It is very easy to get caught up in a bad mentality.*" –EN6 "*Twitter has a slightly different community than other social media, and I'm principally a Facebook user… so Twitter is a secondary social media platform for me. [Do you mean that the Twitter community is maybe less friendly?] Yes*" –EN4 "*I feel very bad but I take into consideration the different backgrounds and upbringing.*" –SA12 "*Because Twitter could be used by groups of different ages (old and young) and especially the youngest could see this as a way of proving themselves… It saddens me because some of them are not well educated and they just write things without thinking.*" –SA4
140-character limit	*"I find Twitter conversations quite troubling. You can never really get the message you need in 140 characters."* –EN9 *"I think Twitter, and it might be because of its microblogging aspect, has a more formal feeling whereas Facebook feels more casual."* –EN4
No content filtering	"*The content on Twitter is unfiltered or edited. You can easily be exposed to tweets that contain offensive and antisocial content.*" –EN1
Large user base	"*Other platforms that allow for anonymity have similar problems - though possibly on a smaller scale due to having fewer users.*" –EN2
Broadcasting nature	"*It is a problem because it is so public, so all these things that are happening and people see them, it seems like people then think it's okay because they can see them.*" –EN9 "*Twitter is like shouting from the rooftops to anyone within hearing range. You have to be aware anyone can respond to a tweet.*" –EN1 "*Twitter is different; it is a broadcast medium … you never know who's going to read or pick up what you've said.*" –EN3
Uncertainty about polices and laws	"*This bad thing about policies is they always have them there; you don't read them.*" –EN10
Becoming a norm	"*I can see how it would be easy to be an antisocial person yourself on Twitter. So there's a Nobel winning economist called Paul Krugman and he wrote this blog post that I totally didn't agree with, and I wrote in the bottom of it "You okay hun?" and I was like oh my god I just trolled Paul! I don't get involved in Twitter very much because I can see myself trolling others… so I can see how the antisocial behaviour starts really easily on Twitter.*" –EN8 "*Unfortunately, sometimes I can encourage those who abuse others by following them. They mock others who don't share the same orientation, parties or clubs.*" –SA6 "*It's becoming a norm in a way, in a sort of horrible way. You hope it isn't happening.*" –EN9

Table 8.7 Examples for the theme: Reasons.

8.2.2.6 Performance expectancy

This theme also represents the Performance expectancy factor in the theoretical model of the study. This is related to the extent to which Twitter users believe that it is useful to them in different ways. This theme was widely covered in the interviews, as most participants found Twitter very useful in many different ways. The following basic themes categorise the uses of Twitter that emerged from the interviews:

- *Communication*. Under this theme, participants showed how Twitter was useful to them in different tasks, such as keeping in touch, announcing something, contacting someone, finding someone.
- *News/interests resource*. Under this theme, participants showed how they used Twitter as a valuable resource to access different news and information of interest to them. They also mentioned how the trending hashtags were a key feature that drove them to look at Twitter to know what was going on.
- *Promoting business/self*. Some participants also indicated that they used Twitter as a way of promoting themselves or their business, or as a form of social presence.

Table 8.8 provides examples of these themes.

8.2.2.7 Use Intention

This theme covers participants' discussion of the nature of their use of Twitter, or how they felt about using it. It also relates to the theoretical model, as conclusions can be drawn from the discussions about how their perception of antisocial behaviour and its impact on them affected their use. The theme includes the following three basic themes:

- *Still use it (albeit more limited use)*. Participants expressed how Twitter was useful to them and that, despite antisocial behaviour being apparent and limiting their use, they continued to use it. However, they also expressed that their perception of antisocial behaviour did limit how much they used it.
- *Not sure about using it*. Some participants explained how their use had gone down and how they sometimes thought about leaving Twitter, and that was possibly related to, but not limited to, Twitter's environment and their perception of antisocial behaviour.
- *Never thought about quitting*. This theme showed how some participants were not really affected by the antisocial behaviour problem and it did not matter to them.

Table 8.9 show examples for each theme.

Theme	Example
Performance expectancy	
Communication	"*I've gained some nice contacts through Twitter simply because they've been tagged in a conversation. I've joined in and then they followed me and I followed them. That doesn't happen with other social networking sites.*" –EN3 *"I started using Twitter as a fast means of communication with my advisees.*" –SA5
News/interests resource	"*I kind of follow Barack Obama, Chris Hadfield, not for politics but a kind of world view stuff. I'm following NASA for instance and that's because they're doing interesting research. They tweet amazing pictures and stuff."* -EN8 "*I get a lot of the news from Twitter actually. When I notice something trending I will go and look at it."* –EN6 "*I learn about the latest developments and to participate in the exchange of ideas and discussion of Arabic literature which is what interests me most."* –SA8 "*It's still full of daily news, fun and entertaining*." –SA5
Promoting business/self	"*I use Twitter partly to promote my writing and when I use it for work it's to build a network of people who are doing related things*." –EN9 "*I originally started to use it for work when I used to be self-employed promoting my business. When you are working independently it's quite a good way to connect with other photographers and things like that*." –EN5 "*I tweet about special occasions or achievements about myself and sometimes I like to express my thoughts through tweets*."-SA1

Table 8.8 Examples for the theme: Performance expectancy.

Theme	Example
Use intention	
Still use it (albeit more limited use)	*"It never made me think about stopping using it in total, it just made me think about not posting about certain things, so I wouldn't really comment on, or post a tweet about politics or news or something like that*." –EN9 "*It could possibly reduce my use of Twitter but would not completely prevent me from using it*." –SA2
Not sure about using it	"*Actually, even now thinking about it, it's like, should I be thinking about it? Or why am I really using it?"* –EN10 "*Abusive behaviour is a big problem because it could lead to some people being reluctant to use it [Twitter].*" –SA9
Never thought about quitting	"*Doesn't make any difference to me. I would carry on anyway."* –EN3 *"It is not as big a problem as everyone thinks… Those who experience this problem are a certain number of celebrities who make up a small percentage of Twitter users."* –SA6

Table 8.9 Examples for the theme: Use intention.

8.2.3 Thematic Network of the Analysis

Figure 8.1 illustrates the thematic network of the analysis which includes the extracted organising themes and the basic themes under each one. All of these were being investigated under the global theme: the different aspects of Twitter use under the perception of antisocial behaviour. Each node or theme has been explained above, with supporting examples drawn from the interviews' transcripts.

The following points explain the connections to understand how the themes are related:

- The theme Impact is connected to the theme Being protective. This connection is due to the underlying causative effect relationship between the two, where the state of being protective is actually classified under the impact. However, due to the need to illustrate the other basic themes that can be categorised under Being protective, it has been moved out of the theme Impact and made another organising theme to give it the proper weight it deserves and to allow for greater clarity.
- The connection between the themes Impact and Use intention is to illustrate that the basic themes under Use intention are also in some way connected to Impact, as they are semantically and logically consistent with other basic themes under Impact which are: Limited use, No direct impact and Hesitation about the use. These comply with the basic themes under Use intention which are Still use it (limited use), Not sure about using it and Never thought about quitting. However, they were not merged to avoid ambiguity.
- The theme Use intention is also connected to Performance expectancy implying that usefulness is, as indicated by many participants, a strong reason to use Twitter.

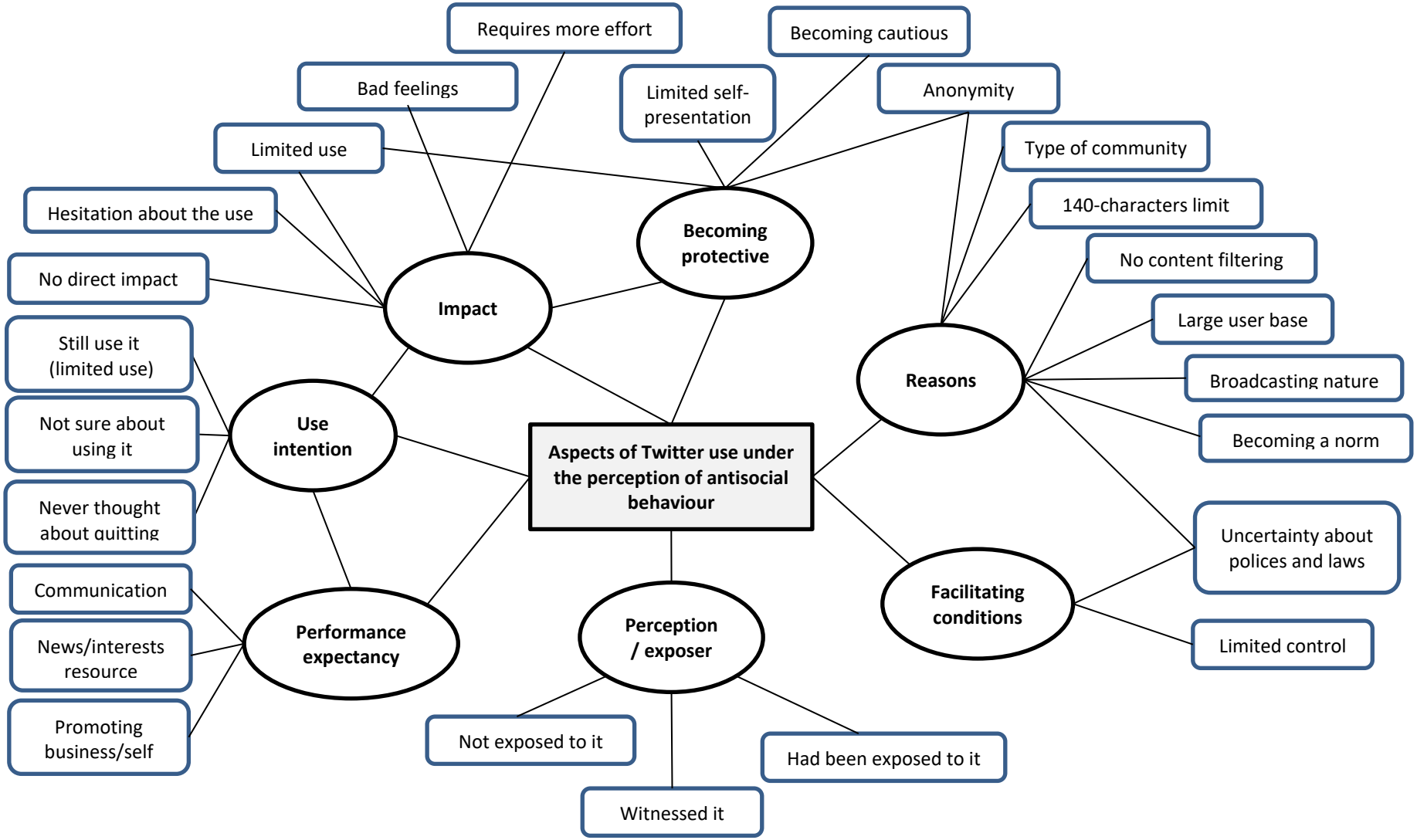

Figure 8.1 Thematic network analysis.

8.2.4 Hypotheses-directed Follow-up Questions Results

As mentioned earlier in this chapter, after the participants had answered the last open question, which was: "How does your perception of antisocial behaviour impact you when using Twitter?" further follow-up questions were asked that were directed by the research hypotheses, this allows for more coverage and comparison with the obtained results in the previous phase. Participants were asked: "How does antisocial behaviour affect your usage of Twitter in the following aspects?" All questions were then discussed, unless some of them had been covered implicitly within a previous answer. Participants were invited to answer the follow-up questions using the following three options: yes, somehow, or no, to better summarise and classify their answers. All answers are shown in Table 8.10.

	Anglophone			SA		
	No	S/hw	Yes	No	S/hw	Yes
Does it lessen its usefulness?	60%	30%	10%	50%	30%	20%
Does it prevent you from presenting more information about yourself and your ideas?	30%	60%	10%	30%	50%	20%
Does it make it requires more effort to use?	50%	20%	30%	70%	10%	20%
Does it make you concerned about your image and the opinions of how other users on you?	50%	10%	40%	10%	60%	30%
Does it make you more careful when you participate?		10%	90%		30%	70%
Did it push you into looking into the use agreement or the use of other functions like block or report?	30%	50%	20%		40%	60%
Did it make you think to stop using Twitter?	90%	10%		50%	40%	10%
Has it ever made you stop using Twitter?	100%			80%		20%

Table 8.10 Hypotheses-directed questions answers.

8.3 Chapter Summary

This chapter has discussed the design, analysis and results of the final phase of the study, which was the follow-up interviews. The follow-up interviews were designed to give a wider understanding and explanation of the results obtained from the questionnaire. The sample included twenty participants, divided equally between two cultures: Anglophone and Saudi Arabia. In each cultural group, there were five males and five females and a mix of ages. Both groups included participants with different experiences of Twitter with regard to their perception of antisocial behaviour. The qualitative analysis was done following Braun and Clarke's (2006) approach, and then illustrated using a thematic network (Attridge-Stirling, 2001). The obtained themes explained the different aspects of Twitter use in relation to the impact of antisocial behaviour, and examples were given to illustrate each theme. It was found that participants had different perceptions about the extent of the problem on

Twitter: some participants did not think that it was a serious problem, while others had suffered from it to some extent. The impact of the antisocial behaviour was also discussed and classified. It can limit how much participants use Twitter and it can make them very cautious, and this is to avoid unpleasant situations, and to protect their image, also to spare themselves the effort of dealing with trolls. Moreover, participants discussed how useful Twitter was for them and there was a clear link between the usefulness and their use of Twitter. Under the Use intention, participants indicated that despite the fact that they still used Twitter, the problem of antisocial behaviour did limit their use, and sometimes made them hesitate about participating and keeping their accounts. An additional theme was also identified that had not been derived from the theoretical models: namely, the theme of underlying reasons for the existence of the problem of antisocial behaviour on Twitter. According to participants, these underlying reasons included: the size limit of a tweet and anonymity. In the next chapter, the results obtained from both the quantitative and the qualitative studies will be combined and discussed.

Chapter 9: Discussion

This chapter presents a discussion of the results obtained from the previous phases. The discussion tries to link the three phases of the research together and compares the results with previous literature. The chapter ends by answering the research questions and drawing some conclusions. Since the TAUR model is based on the UTAUT, and it incorporates the perceived risk of antisocial behaviour, and self-presentation; the discussion is organized to address each part of the model in a separate section, followed by a comparison between the targeted cultures.

9.1 UTAUT Applicability to Twitter

The UTAUT was the base model for this study. It was extended to obtain the final research model. As explained in previous chapters, there were many reasons behind this choice. The first issue was whether the UTAUT was applicable to Twitter and what factors were more influential than others. The second concerned its transferability and applicability to the Saudi culture in the context of this research. The following sections cover these issues.

9.1.1 Anglophone Results

The results of the research model suggested that the UTAUT was partly applicable to the Anglophone sample's use of Twitter. The only hypothesis that did not conform to the original UTAUT was the path from Social Influence to the Behavioural Intention to continue to use Twitter. Venkatesh et al. (2003) hypothesised that social influence had a significant positive impact on the intention to use technology. However, there had been some inconsistency regarding the social influence effect in earlier empirical studies, as some had reported evidence suggesting that this factor was significant (Hsu & Lin, 2008; Lucas & Spitler, 1999; Taylor & Todd, 1995; Venkatesh & Morris, 2000), while others had reported that it was not (Chau & Hu, 2002; Davis, Bagozzi & Warshaw, 1989; Dishaw & Strong, 1999). A possible explanation for this might have been the type of technology being investigated and the context of the use. TAM-2, for example, suggested that social influences had a direct effect on use intention in mandatory use contexts (Venkatesh & Davis, 2000). In the context of Twitter, use is not mandatory and, therefore, it is possible that participants in the Anglophone sample did not find it important whether others approved of their use of Twitter. In other words, they did not feel social pressure to use Twitter.

This study found that social influence had an insignificant negative effect on the Anglophone sample. When this effect was broken down by gender, it was found that men

exhibited a strong and significant negative effect while, by contrast, the effect for women was positive, but not significant. Previous studies had reported that the social influence effect was positive and more likely to be salient for women (Venkatesh & Morris, 2000; Venkatesh et al., 2003). One possible explanation for this result was that women in the Anglophone culture felt more social pressure than men when using Twitter.

The other main factors that influenced the behaviour intention to use Twitter were all positive and statistically significant for the Anglophone sample. These included Performance Expectancy and Effort Expectancy. Facilitating Conditions also had a significant positive effect on the actual use of Twitter.

By comparing standardised regression weights, Performance Expectancy had the strongest effect on the Behavioural Intention to use Twitter compared to other factors, implying that Twitter's usefulness was the strongest motive for its users. This is in line with the results obtained by Venkatesh et al. (2003). Other studies on Twitter and microblogging have also stated that Performance Expectancy was significant (Agrifoglio et al., 2010; Günther & Krasnova, 2009).

This result also corroborated the results obtained in the other phases of the research: firstly, in the expert reviews, where all experts supported the use of Performance Expectancy as a factor; and secondly, in the follow-up interviews, where participants explained the different ways in which they used Twitter and why they found it very useful in their daily lives. For example, participant EN6 mentioned: "*I get a lot of the news from Twitter actually. When I notice something trending I will go and look at it.*" Other participants mentioned many other important uses such as communication and making contacts. Agrifoglio et al. (2010) found that the more users considered Twitter useful for both their work and social life, the more they were willing to use it.

Effort Expectancy was also found to have a significant influence on the behavioural intention to continue to use Twitter. This result corroborated previous studies applying the UTAUT to different technologies (Im et al., 2011; Venkatesh et al., 2003). However, a previous study on Twitter found that the effort associated with using Twitter might not have been a significant factor (Schöndienst and Krasnova, 2011). Nevertheless, the current study found that the effort associated with use was a significant factor. This implies that Twitter's ease of use does encourage people to use it. Furthermore, this brings a new issue regarding Effort Expectancy to the fore, as the discussions during the follow-up interviews revealed that the effort invested in Twitter also included the effort invested in the interaction and participation with other users. For example, participant EN10 explained: "*I would definitely put in effort to make sure I block users I didn't know and as it went on, I stopped doing that but then I stopped really using it. I've gone off it, so then my time and effort in monitoring who's following me was kind of going down.*" This possibly highlights a

limitation within the conventional effort concept used in technology acceptance models, as they do not take into consideration the effort invested in the social aspects related to system use. This is something that needs to be addressed by future research, possibly by introducing new measurements, or enhancing the existing ones. However, it is worth noting that technology acceptance models were introduced long before social media were so widely adopted. Since they were aimed at computerised systems at an organisational level, such models might not translate effectively into the context of web-based social media. In support of this, Röcker (2010) mentioned that the factors used to predict technology acceptance and use in existing systems would not be sufficient for explaining the adoption of future information and communication technologies. This relates to the fact that the different way new social media technologies are used is integrated in the technologies themselves.

The Facilitating Conditions factor represents the extent to which Twitter users believe that there is organisational and technical support and personal control over Twitter use. This means that the more Twitter users feel that they have control over their accounts and interactions, the more they will be encouraged to use it. The Facilitating Conditions factor was found to be highly influential, confirmed by the analysis which showed that it had a strong positive effect on the actual use behaviour. Facilitating Conditions were reported as being influential to use in previous studies (Im et al., 2011; Lee, 2010; Taylor and Todd, 1995; Venkatesh et al., 2003).

9.1.2 Saudi Results

The results obtained for the Saudi sample showed strong support for the hypotheses in the original UTAUT model. This meant that the UTAUT could be successfully transferred to the Saudi culture in the context of Twitter use. All factors affecting the behavioural intention to continue to use Twitter were statistically significant. These included Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions.

As with the Anglophone sample, Performance Expectancy showed the highest regression weight among the Saudi sample, indicating that Twitter's usefulness was a key factor influencing users' intentions to continue to use it. This was also captured in the follow-up interviews. For example, participant SA5 described Twitter as "*...full of daily news - fun, and entertaining*." Effort Expectancy was also significant, which means that Twitter's ease of use encouraged the Saudi users to use it. Previous studies applying the UTAUT to Saudi Arabia also reported Performance Expectancy to be significant (Al-Gahtani et al., 2007; Alshehri and Drew, 2012; Nassuora, 2012; Oshlyansky et al., 2007). This was also the case with Effort Expectancy (Alshehri and Drew, 2012; Nassuora, 2012).

Unlike the Anglophone model, Social Influence was found to have a significant effect on the behavioural intention to continue to use Twitter. This implied that the Saudi Twitter users cared about the social ties when using Twitter and felt encouraged to use it if someone else whom they cared about approved of it. This result backed up a previous cross-cultural study involving Saudi Arabia and other countries on website acceptance. In that study, it was reported that social influence had greater weight in Saudi Arabia than in the other countries (Oshlyansky et al., 2007).

Similar to the results in the Anglophone sample, Facilitating Conditions were found to have a direct influence on the actual use of Twitter, suggesting that the sense of having control and support over Twitter use was very important to Saudi Twitter users.

9.1.3 Moderators Effect

This research looked into gender and age differences on Twitter use. The UTAUT found that Performance Expectancy was moderated by age and gender, such that it was stronger for younger men (Venkatesh et al., 2003). The current study found that gender and age differences in Performance Expectancy were minor and not statistically significant. The same applied to Effort Expectancy.

Social Influence, on the other hand, was found to be moderated by both age and gender, but only in the Anglophone sample. Although Social Influence itself was not an influential factor, moderators effect could explain this unexpected result. It was found that the negative effect was associated with older men and it was statistically significant on the negative side, meaning that older men did not care about others' opinions of their use of Twitter. By contrast, the results for women were positive but not significant. Venkatesh et al. (2003) found that Social Influence mattered; however, it was more likely to be salient to older women. This was also found to be the case in earlier studies, suggesting that women tend to be more sensitive to others' opinions (Venkatesh et al., 2000). As for the Saudi sample, unlike the Anglophone sample, the Social Influence effect was slightly higher for men, but that difference was not significant between men and women.

The Facilitating Conditions factor was moderated by age and gender in the Saudi sample; the effect was significant for older men. This would suggest that within Saudi culture, men care more about having control and support when using Twitter. Venkatesh et al. (2003) reported that Facilitating Conditions were more likely to be salient for older workers. However, in the Anglophone sample, the effect was stronger for older women but it was not significant.

Venkatesh et al. (2003) made the point that as younger generations are raised and educated in the digital age, gender differences as to how each gender perceives information

technology may be transitory and disappear in the future. This study confirmed this prediction as most factors were not moderated by age or gender as in the original theory. Even in the early phase of this study, experts did not highly support gender differences on the UTAUT factors. Similarly, in a study applying the UTAUT in Saudi Arabia, it was not found that gender showed any significant moderation with any factor in their model (Al-Gahtani et al., 2007).

9.2 Self-Presentation on Twitter

Self-presentation and Protective self-presentation were integrated into the model since they provided more depth to the investigation. Expert B commented that "…t*he fact that you have self-presentation objectives and protective self-presentation awareness here, you know, your objective is to do something but there's a risk, so, it seems like a logical argument, so if you want to do something what are the factors that are going to stop you or might affect whether you do it and one is worrying about what could happen.*" Therefore, adding the two factors related to Self-presentation reveals the reticence in how much Twitter users present about themselves and how they protect their image at the same time, and how is that affecting the model.

The study hypothesised that Self-presentation would have a positive effect on both Performance Expectancy and Social Influence, while Protective self-presentation would have a negative effect on the Behavioural Intention and the Use. The following sub-sections highlight and discuss the results obtained in the two samples.

9.2.1 Anglophone Results

It was found that Self-presentation positively affected Performance Expectancy in the Anglophone sample, and the effect was strong (β=0.53). This suggested that the Anglophone users used Twitter for self-presentation and the more their self-presentation activities increased, the more they perceived Twitter as useful. However, following the insignificant results of the Social Influence factor within the model, it was not unexpected that Self-presentation did not have a significant effect on Social Influence as well. It suggested that in this group Social Influence was possibly not influenced by Self-presentation, certainly not compared with the usefulness. In other words, Anglophone Twitter users felt that Twitter was more useful as a tool for self-presentation than as a means of projecting their desired image to other people they cared about. Expert I declared: "*That's what I do it for!"* referring to self-presentation as a major objective of Twitter use. Participant EN5 explained: "*I originally started to use it for work when I used to be self-*

employed promoting my business. When you are working independently, it's quite a good way to connect with other photographers and things like that."

It was also found that protective self-presentation had a negative effect on Twitter use (β=-0.29). implying that as the Anglophone users became more protective when using Twitter, their use of it decreased. This was also reflected in the interviews, as participants expressed that they limited their opinions and participation in general. Participant EN1 said: "*You have to be aware anyone can respond to a tweet, so making comments that could invite negative and antisocial behaviour*." This, and other similar comments, implied that their use was being restricted to some extent, and this was backed up by the statistical results.

9.2.2 Saudi Results

Self-presentation of the Saudi sample had a positive and significant effect on both Performance Expectancy and Social Influence. However, the effect was stronger on Performance Expectancy. This suggested that the Saudi Twitter users used Twitter to present themselves and to project a desired image of themselves to others they cared about. For example, participant SA1 said: "*I tweet about special occasions or achievements about myself and sometimes I like to express my thoughts through tweets*." SA2's interview provided another example of showing how the Saudi Twitter users cared about social influence. This participant said: "*Sometimes I avoid sharing my opinions, fearing it could corrupt my image or brings me into conflict with others who are important to me whether at work or friends and family.*" Participants also mentioned that they cared about what their relatives thought about their tweets. Protective self-presentation also had a significant effect on the model. This is possibly explained by the fact that the Saudi users are more conservative and less expressive by nature.

9.3 The Impact of Antisocial Behaviour on Twitter

This study aimed to understand how the perception of antisocial behaviour had an impact on Twitter use. The UTAUT was the base model used to carry out this investigation. After reviewing the literature, it was proposed that the Perception of Antisocial Behaviour was integrated into the UTAUT model as a new risk factor. Other factors related to self-presentation were also integrated to give a deeper understanding of the impact at a personal level. In this section, the results regarding the impact of antisocial behaviour will be discussed, starting first with the Anglophone sample and then the Saudi sample.

9.3.1 Anglophone Results

The results of the impact of antisocial behaviour on this sample were twofold. Firstly, the direct effect on behavioural intention and use was examined, as shown in H10, H11 (see Table 7.13). Secondly, the interaction effect with the other paths in the models was considered, as shown in H12 (see Table 7.19).

The statistical analysis revealed that there was no direct significant effect between the Perception of Antisocial Behaviour (PAB) and the behavioural intention to continue to use Twitter, nor between perception of antisocial behaviour and the actual use, as shown previously when evaluating H10 and H11. Surprisingly, it even showed that the effect was positive and significant for males. This suggested that this problem did not really stop the Twitter users from using it, or effect their willingness to continue to use it.

Gender differences regarding PAB were expected to be significant based on the literature and the expert reviews. The results showed that there was a difference: that men were less likely to care about this problem than women. However, it also showed that women were not strongly affected. The regression weight for the path between PAB and use for the females group was -0.015, which is negative but very weak. Therefore, it appeared that most women in this sample did not suffer from this problem. Interestingly, the follow-up interviews brought this issue to light as some participants noted that, in their experience, they thought that women tended to be targeted by abusive behaviour more than men. For example, participant EN3 said: "*I see a lot of harassment on Twitter aimed generally at women*." And Participant EN1 said: "*I know of female friends who get followed by these strange male accounts with sort of very suggestive messages being sent that are not good.*" EN6's comment raised the same issue: "*I'm white, I'm male, I'm very unlikely to be targeted*." These comments were only salient in the Anglophone sample, suggesting that gender might have an effect on the perception of antisocial behaviour; however, the results obtained from the quantitative analysis did not strongly support this.

When the impact of the perception of antisocial behaviour was investigated at an interactional level, it was found that it affected Twitter use in general by reducing the positive effect of the factors in the model.

In the Anglophone sample, the interaction of the perception of antisocial behaviour with other paths in the model was found to be strongly negative. First, it lessened the positive relationship between Self-presentation and both Performance Expectancy and Social Influence (β=-0.340, β=-0.215 respectively). This meant that when the Twitter users perceived a higher level of antisocial behaviour, their usefulness and desired social image from self-presentation will be compromised, implying that their self-presentation decreased when their perception of antisocial behaviour increased. This was also highlighted in the

follow-up interviews as participants expressed that they limited how much they wrote about themselves and it was related to their perception of antisocial behaviour. For example, participant EN8 said: *"I'm really, really careful … I really limit my opinions, and it's entirely because of the existence of this problem! Because I have no problem with people I know, my friends, but I do worry about a random person taking it and suddenly going off and blowing it up into a huge kind of national problem!"*. In addition, 70% of the participants expressed the view that the perception of antisocial behaviour on Twitter did limit their self-presentation to some extent.

Another strong negative interaction was found with Performance Expectancy (B= -0.366). For the Twitter users who had a higher level of their perception of antisocial behaviour, the performance influence on the behavioural intention went down. In other words, if they felt that the usefulness of Twitter was being constrained or limited, this would discourage them from using it. For instance, participant EN1 mentioned: "*You can easily be exposed to tweets that contain offensive and antisocial content. This does limit how much I use Twitter as I treat it like a noticeboard."* In addition, 40% of the participants agreed that the perception of antisocial behaviour on Twitter compromised its usefulness to some extent.

The analysis also showed that the positive relationship between Facilitating Conditions and the use behaviour was significantly reduced by the perception of antisocial behaviour. This interaction showed the strongest impact: with β=-0.373. These users felt that they had less control and support over their use of Twitter when their perception of antisocial behaviour increased. This suggested that the perception of antisocial behaviour on Twitter restrained users' interaction to some degree. Twenty percent of the participants mentioned that their perception of antisocial behaviour made them look into use policies and/or use functions such as 'block' and 'report', and 50% mentioned that it made them do so to some extent.

Finally, the analysis revealed that the relationship between the behaviour intention to continue to use Twitter and the actual use was also reduced by the perception of antisocial behaviour. Another way to explain this is that where users believed that they would continue to use Twitter in the future, this reflected positively in their actual use, so that when the intention increased, the actual use would also increase. However, when introducing the risk factor (PAB), this relationship was reduced, and the weight for that interaction was β=-0.296 which is quite strong.

The follow-up interviews explained the discrepancy between the results of the direct effect and the interaction effect. While the direct effect suggested that there was no impact (or that it might even be positive), the interaction effect showed that it was actually negatively affecting different aspects of Twitter use. Ninety percent of the participants said that this problem did not make them think about leaving Twitter, and all of them reported that they

had not stopped using it. Nevertheless, during the interviews, participants explained how the problem was affecting them: while it did not stop them from using Twitter, it added some constraints to the nature of their use of it and made them feel bad sometimes. EN8 said: "*I don't think it changes the utility of Twitter; it changes how I feel about it, you know. I treat it with caution.*" Ninety percent of the participants said that their perception of antisocial behaviour had made them become very cautious when they were using it. For example, they would avoid using specific words, talking about politics or any controversial issues.

For some participants, especially those who had been exposed to antisocial behaviour, it made their use decline over time and they became less keen to participate. To illustrate this, a EN10 noted: "*It definitely stopped me from tweeting out; maybe if I didn't get the odd interaction, but I wouldn't say that I still got nothing from Twitter.*"

Following up on the lack of impact of social influence within the Anglophone sample, 50% of participants mentioned that they did not care about the opinions of others, while 40% said that they cared to some extent. This possibly justifies the weak impact of Social Influence in the model.

It is also worth mentioning that with some participants, it did not really matter to them. This naturally related to the particular experience of each individual and who they were following.

9.3.2 Saudi Results

The Saudi sample was also negatively affected by the interaction of the perception of antisocial behaviour; however, the results showed less impact compared to the Anglophone sample. Only three relationships were affected. These were: the relationships between Effort Expectancy and Behavioural Intention, Facilitating Conditions and Use, and Behavioural Intention and Use.

Unlike the Anglophone sample, the effect of Effort Expectancy over the behavioural intention to continue to use Twitter was reduced by the perception of antisocial behaviour. This suggested that as these Twitter users' perception of antisocial behaviour increased, the positive relation between the effort expectancy and the behaviour intention decreased, meaning that they felt that using Twitter had become more effortful. Some participants stated that they needed more effort to navigate through and manually filter the content by blocking abusive accounts. For example, participant SA2 explained: "*It makes it less enjoyable and I need more effort to block these people from viewing my account*".

Similar to the Anglophone sample, the analysis for the Saudi sample also showed that the positive relationship between Facilitating Conditions and the use behaviour was significantly reduced by the perception of antisocial behaviour. Sixty percent of the participants noted how their perception of antisocial behaviour made them look into use policies or use functions such as 'block' and 'report', while the remainder felt that it made them do so to some extent. Additionally, participant SA4 described how: "*…most Twitter users do not know that there is an authority that they can file a complaint to about users who attack others on Twitter.*"

In addition, it was found that the relationship between the behaviour intention to continue to use Twitter and actual use was also reduced by the perception of antisocial behaviour. Similar to the Anglophone sample, this suggested that the influence of the intention to continue to use Twitter would be negatively affected by antisocial behaviour. This interaction effect was the strongest: 50% of the Saudi participants also expressed the view that they sometimes had thoughts about quitting Twitter because of their perception of antisocial behaviour. However, 80% mentioned that they did not really stop using it. Participant SA2 said: "*It might possibly reduce my use of Twitter but it would not completely prevent me from using it.*"

9.4 Anglophone Vs. Saudi Results

The frameworks of the different cultural dimensions were introduced in Chapter 3. They provided quantitative measurements to identify and measure national cultural scores. The most commonly used is Hofstede's national cultural dimensions (Hofstede, 1997). Published national culture scores allow for national-level analyses and multiple country comparisons. As explained in Chapter 3, most researchers treat culture as a moderating variable within technology acceptance research and they focus on the transferability and applicability of technology acceptance models. However, some studies have used cultural scores to explain their results (Al-Gahtani et al., 2007; Anandarajan et al., 2000; Mao and Palvia, 2006). This study drew on the available published national cultural scores to reflect cultural differences on the results obtained. The national cultural scores for the Anglophone countries and for Saudi Arabia were listed and compared with each other as shown in Table 9.1 and Figure 9.1. The table shows the five cultural dimensions by Hofstede, which were defined in Table 3.3. The Anglophone countries' scores were very similar. They were averaged and the average score was used for comparison with the scores for Saudi Arabia.

As shown in Table 9.1, Saudi Arabia's scores were much higher than the Anglophones' in power distance and uncertainty avoidance; much lower in individualism; and approximately the same in masculinity and long term orientation.

High power distance indicates the tendency to submit to authority, and follow the expectations of others in superior social roles. Individualism reflects loose ties between individuals where everyone is looking after themselves. Low individualism, or collectivism, refers to the extent to which individuals are integrated into cohesive in-groups and value the protection such groups provide. Masculinity refers to the extent to which a society emphasises achievement and competence versus femininity which focuses on caring and nurturing behaviours. Uncertainty avoidance gauges the extent to which a person feels uncomfortable in uncertain situations; it reflects the tolerance for uncertainty and ambiguity. Long term orientation refers to how a society maintains some links with its own past while dealing with the challenges of the present and future.

	UK	US	Canada	Anglophone average score	Saudi Arabia score
Power Distance	35	40	39	38	95
Individualism	89	91	80	86.6	25
Masculinity	66	62	52	60	60
Uncertainty Avoidance	35	46	48	43	80
Long Term Orientation	51	26	36	37.6	36

Table 9.1 National cultural scores for Anglophone countries and Saudi Arabia *(Available online from The Hofstede Centre[12]).*

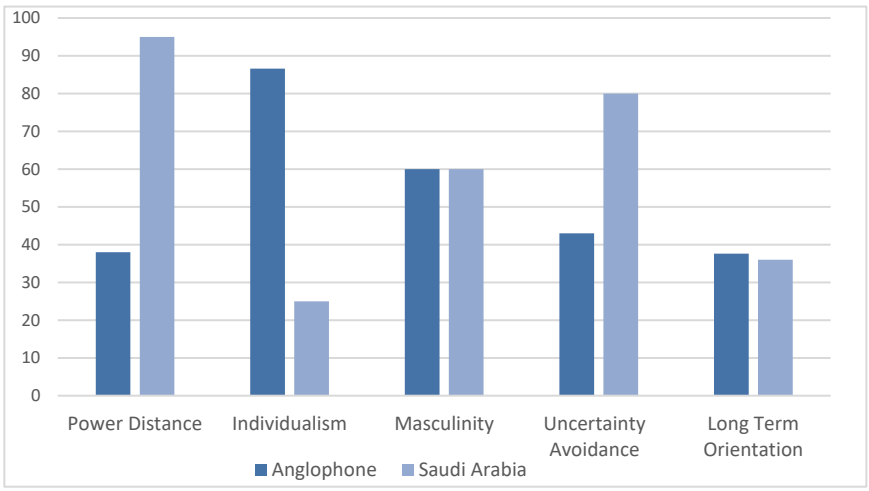

Figure 9.1 Anglophone Vs. Saudi Arabia cultural scores *(Available online from The Hofstede Centre[12]).*

In this study, three significant differences were found between the Anglophone culture and the Saudi culture. These were the influences of Self-presentation on the Performance

[12] Available online from *The Hofstede Centre*, url: https://geert-hofstede.com/saudi-arabia.html, Accessed 20 November 2016.

Expectancy, the Social Influence on the Behavioural Intention, and the Facilitating Conditions on the Use.

The Anglophone sample exhibited stronger effect of Self-presentation compared to the Saudi sample (β=0.534, and β=0.356 respectively), suggesting that the Anglophones tend to express their opinions and share information about themselves more that the Saudis. Individuals in cultures with low power distance tend to express their opinions and disagreement more than individuals in cultures with high power distance, and this possibly explains why the Anglophone Twitter users exhibited higher self-presentation than the Saudi users.

The social influence effect was positive and significant in the Saudi culture, while it was negative and insignificant in the Anglophone culture. The score for individualism was much lower among the Saudi sample than among the Anglophone, implying that the Saudi culture is a collectivist culture that respects and adheres to in-group values. This suggests that the opinions of others would matter to individuals within that culture. Consequently, the collective opinions of others would strongly impact individual behavioural intentions and lead to a positive relationship between social influence and behavioural intention. On the other hand, the Anglophone culture is an individualist culture where the opinions of others do not seem to have as great a value as in collectivist cultures. This gives an explanation for the different set of results in Social Influence for the two cultures.

The Anglophone sample exhibited stronger effect of Facilitating Conditions compared to the Saudi sample (β=0.519, and β=0.229 respectively). This suggests that the Anglophone Twitter users felt more in control of their Twitter accounts and interactions compared to the Saudi users, which in turn encouraged them to use Twitter. However, the result showed that Anglophone users were more influenced by Facilitating Conditions than the Saudi users. It could be argued that where the Anglophone culture had a low Uncertainty Avoidance score, this made Anglophone users less anxious about using Twitter, compared to the Saudi users whose Uncertainty Avoidance score was much higher, and thus, they seemed to be more anxious about unexpected situations associated with the use.

9.5 Chapter Summary

This chapter has presented a discussion of the findings of the research study. The results have been discussed and conclusions drawn. The results of the hypotheses assessment in Chapter 7 was discussed and linked with the follow-up interviews and the expert reviews, when appropriate. First, the main constructs of the UTAUT were discussed. A key findings was that, firstly, the UTAUT was applicable to Twitter and was transferable to the Saudi culture. However, the social influence factor was not significant in the Anglophone sample.

Secondly, Self-Presentation was found to be a key motivator for using Twitter in both cultures. Thirdly, the impact of antisocial behaviour was discussed in more details and the discussion was highly linked on the results from the follow-up interviews which allowed for more explanation and more in-depth understanding. While the obtained results did not show a direct significant effect between the Perception of Antisocial Behaviour and the behavioural intention to continue to use Twitter, nor between it and the actual use. The results showed that there is a significant negative indirect effect on both of them and on the other factors influencing Twitter use, such as Self-Presentation, Performance Expectancy, and Facilitating Conditions. This means that when the Perception on Antisocial Behaviour increases, the positive effects between these factors will decrease. Some participants demonstrated this, as they expressed how their perception of antisocial behaviour limits their use of Twitter in many different ways. Finally, this chapter discussed the differences between the two cultures drawing from Hofstede's National cultural scores for both cultures, it was found that the two cultures differ mainly in the effect of Social Influence, Facilitating Conditions, and Self-Presentation.

Chapter 10: Conclusion and Future Work

This chapter presents an overview of the research, summarising its phases and key findings. An overview of the research contribution and limitations is then provided. Finally, future work and research implications and recommendations are discussed.

10.1 Research Overview

Online antisocial behaviour has attracted significant attention in the media and in the research community. Twitter has repeatedly been reported as one of the most problematic platforms for antisocial behaviour. This study set out to investigate the impact of antisocial behaviour on Twitter cross-culturally, and how it might be compromising Twitter use. It investigates the impact within one western and one non-western culture, namely the Anglophone and the Saudi Arabian cultures. Through the literature review and a sequential mixed method, a comprehensive picture was gradually built up within the proposed model, which integrated the perception of antisocial behaviour and self-presentation factors within the UTAUT technology acceptance and use theoretical model.

Figure 10.1 shows a broad overview of the research process. Chapter 2 reviewed the literature of online antisocial behaviour, looking at definitions and previous work in the area. Some of the arguments and the evolution of the different terms and definitions describing antisocial behaviour in the literature were considered. A review of previous work on online hostility, showed it to be multidisciplinary, and most studies tend to focus on a certain aspect and a certain cyberspace and to be more qualitative. The concept of self-presentation was also introduced, as well as protective self-presentation in which people change their behaviour in an effort to protect their image and avoid rejection by others.

Chapter 3 presented and discussed the widely used technology acceptance theories and models, including the UTAUT model, which was then used as a base model for this study. The concepts of culture and common cultural frameworks were also introduced. Then, cross-cultural studies on technology acceptance were reviewed, and it was concluded that the main focus of the previous cross-cultural studies was to investigate the applicability and transferability of the technology acceptance models into other non-Western cultures.

Chapter 4 reviewed the research methods and explained the research design. The sequential mixed approach was used in this study through three different phases: first, a qualitative phase that comprised expert reviews; second, a quantitative phase where the empirical study was conducted through an online questionnaire; third, a qualitative phase to follow-

up on the results of the quantitative phase using interviews with some participants from the study.

As mentioned earlier, the UTAUT was chosen as a base model, and it was extended to include the perceived risk of antisocial behaviour and self-presentations factors, making up the new model of Technology Acceptance and Use under Risk (TAUR). This was explained in Chapter 5.

The first phase of this study, the expert review interviews (explained in Chapter 6), aimed at validating the proposed model and discussing the new factors. Twelve experts participated. The results from the interviews included both quantitative and qualitative questions. Overall, the experts supported the proposed model, and the validity of the factors in the model was assured through triangulating between the literature, the quantitative and the qualitative results. Another outcome from this phase was the modification of the initial proposed model to a more structured version to preserve the integrity of the UTAUT. Finally, the experts made recommendations for the design of the next phase, the online questionnaire.

In the second phase, covered in Chapter 7, the TAUR model was evaluated using an online questionnaire. The sample size was 740 participants, 200 of whom belonged to the Anglophone culture and 540 to the Saudi Arabian culture. Structural Equation Modelling was used to assess the reliability and the validity of the instrument, and to assess the hypotheses within the model. It also provided model fit measures. The results showed that the data fitted the model very well in both cultures.

The last phase of the study, covered in Chapter 8, aimed at explaining the results from the previous phase. While it was found that the PAB did not have a direct impact on the intention to use Twitter or on the actual use, it was found that its interaction effect was negative and strong. Follow-up interviews were designed and conducted with 20 participants from both cultures to get insight into their Twitter use when the risk of antisocial behaviour was present.

The study also highlighted several cultural differences between the Anglophone and the Saudi cultures, and the possible reasons for these differences were explained by Hofstede's cultural framework, using a comparison between the published national cultural scores of the two cultures.

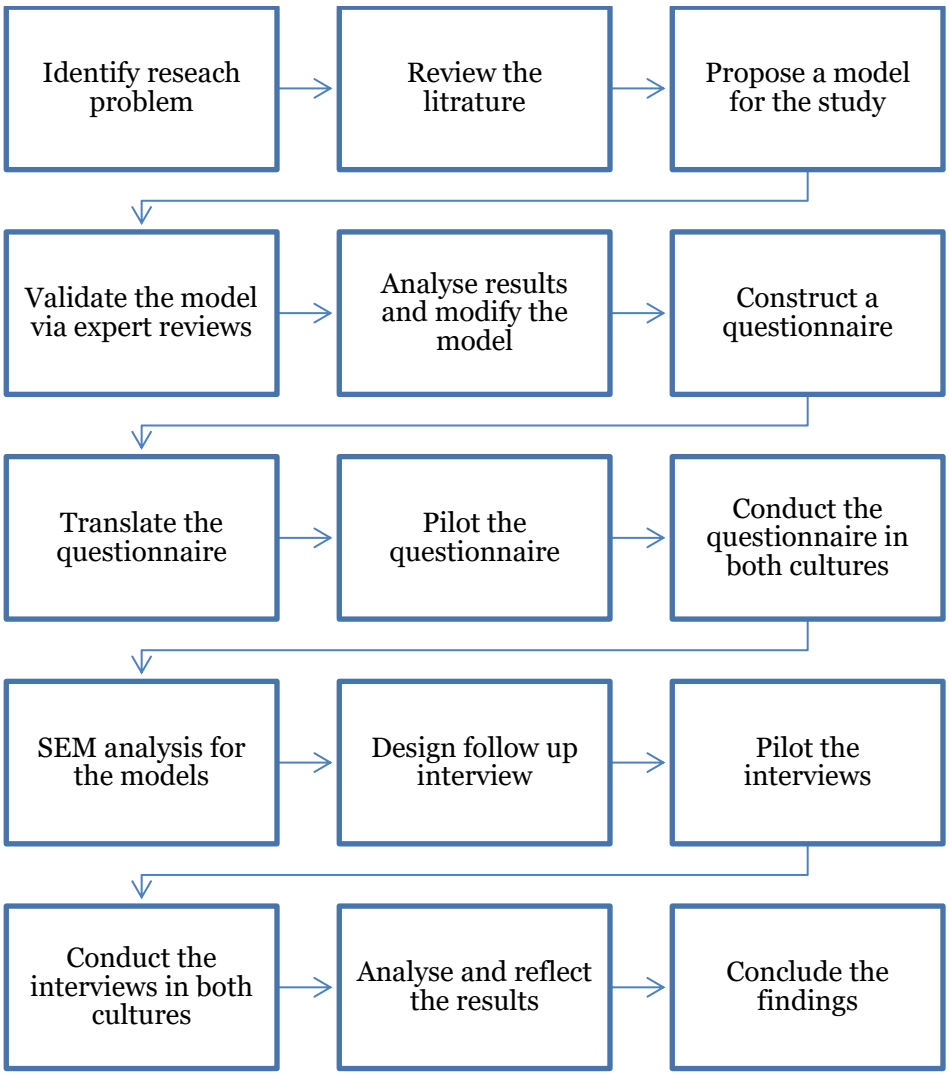

Figure 10.1 Research overview.

10.2 Research Questions

The main research question in this study was:

How does the perception of antisocial behaviour affect Twitter use?

To answer the question, this study proposed the TAUR model, which incorporated the Perception of Antisocial Behaviour (PAB) as a risk factor. The impact of the Perception of Antisocial Behaviour was investigated directly and indirectly. The results from the statistical analysis showed that there was no direct effect of the PAB on the use or the intention to continue to use Twitter; however, there was a strong negative indirect impact when the interaction of the PAB was investigated with the other factors. The key finding was that the PAB negatively affected the positive relationships in the model, suggesting that when it was high, users were less encouraged to use Twitter compared to when it was low. For example, the positive relationship between the Performance Expectancy and the Behavioural Intention was dampened by the PAB in the Anglophone sample, which means that high

levels of PAB lessen Twitter usefulness for the Anglophone users. It also dampened the positive relationship between the Facilitating Conditions and the actual use of Twitter in both culture, this suggests that Twitter users felt less control over Twitter use when their PAB increased.

The subsequent qualitative study supported and explained the obtained evidence as it showed that the PAB limited Twitter use, made users more cautious, and made them feel bad. It restricted self-presentation and required more effort; it also made some users hesitant to continue using it and definitely changed the way some users were using it.

There were further sub questions that needed to be answered in order to build up the answer to the main research question, they were answered as follows:

a. *How can the UTAUT be extended to explain the effect of antisocial behaviour on Twitter?*

After reviewing the literature, the UTAUT model was chosen as a base model for this investigation, and was extended to create the TAUR model, which includes the Perception of Antisocial Behaviour as a risk factor, in addition to Self-Presentation and Protective Self-Presentation as supportive constructs. The TAUR model was then validated in the first phase of the study using the expert reviews, which provided support and improvement to the TAUR model. After the initial validation during the expert reviews, it was concluded that all the extensions should be treated as main factors and integrated within the UTAUT such that: Self-Presentation would have an effect on each of the Performance Expectancy, and the Social Influence. Protective Self-Presentation and Perception of Antisocial Behaviour would have an effect on both the Behavioural intention to continue to use Twitter, and on the actual use. In addition, Perception of Antisocial Behaviour was also considered as a moderating factor to be able to measure its indirect effect between the other factors.

b. *How do self-presentation and protective self-presentation affect the factors of the proposed model?*

The subsequent quantitative phase of the study, which assessed the model using SEM, gave an evidence the Self-Presentation was a strong motive for using Twitter, as it has a positive significant impact on Performance Expectancy, which suggests that Twitter users in the sample utilise it for the presenting themselves, and this was supported in both cultures. However, Self-Presentation effect on Social Influence was only significant in the Saudi sample. Protective Self-Presentation on the other hand was found to have a significant negative effect on the actual use of Twitter, implying that the more Twitter users are cautious when they are using it, their use level will decrease, and this result was supported in both cultures.

c. *Does the original relationship in the UTAUT model hold for the proposed model with regard to Twitter?*

The results from the hypotheses testing revealed that the UTAUT was applicable to Twitter. It was found that each of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions were all influential factors on the Behaviour Intention and the use. However, in case of the Anglophone sample, the Social Influence factor was not supported, making it partially applicable for the Anglophone culture.

d. *Is the proposed model transferable to the Saudi culture? And what are the cultural differences between the Anglophone countries and Saudi Arabia?*

The results from the statistical analysis showed that the TAUR model was transferable to the Saudi culture as all hypotheses within the base UTAUT model were supported. Several notable differences were found between the two targeted cultures. Key findings included that social influence was more salient within the Saudi culture, while it was not significant for the Anglophone culture. Self-Presentation, on the other hand, was salient for the Anglophones, as were Facilitating Conditions. This is possibly justified by the cultural differences between the Anglophones and the Saudis, as suggested by Hofstede's cultural framework, in which the national cultural scores for the two cultures are different in some dimensions including power distance, and individualism, which are broadly related to how expressive and independent people are in both cultures.

10.3 Research Contribution

This study set out to answer the research question about the impact of antisocial behaviour on Twitter, it has contributed to the body of knowledge in the fields of technology acceptance research, social media, and cross-cultural research theoretically, methodologically, and practically.

The main contribution is the Technology Acceptance and Use under Risk (TAUR) model, and the instrument used to evaluate it. The study proposed, validated and evaluated an extended model, which was applied to individuals' personal and voluntary use of Twitter. The extended model considered the perception of antisocial behaviour as a risk factor, in addition to self-presentation related constructs, which resulted in a new model that had not been used in previous research. The TAUR model, and its developed instrument can be taken forward to address different platforms, or possibly different risks.

Furthermore, the TAUR model was evaluated empirically using Structural Equation Modelling in two different cultures, producing a model for the Anglophone culture, and

another one for the Saudi culture. Which can guide researchers investigating either of the two cultures.

The evaluation of the model comprised a large scale empirical study on the impact of antisocial behaviour on Twitter. It provided empirical evidence of that impact, which had not fairly been covered by previous research. The study also followed a sequential approach in explaining the results, by implementing a follow-up interview to explain the empirical results, thus providing a more in-depth understanding by combining both methods.

In addition, the study tested the viability of the UTAUT model on Twitter, and on a non-Western culture, since the model was established in a Western culture, and for task-oriented organisational information systems. Therefore, the study further validated the UTAUT measures in a social media context; it also supported the interrelationships between its factors. It gave additional support to its applicability to non-Western cultures. Furthermore, it led to a discussion and highlighted the need for future development in technology acceptance models and thus it gave added value to technology acceptance research.

Moreover, the study confirmed the transferability of the UTAUT on Twitter for Saudi Arabia. It also highlighted cultural differences between Saudi Arabia and the Anglophone countries. These differences were drawn from the empirical evidence and were explained making use of Hofstede's national cultural dimensions' scores.

10.4 Research Limitations

The research employed a theoretical model that had been extensively tested by previous studies, and it proposed an extended model using factors drawn from the literature. Instrument design was undertaken carefully and was piloted in different stages, however, there are a number of limitations.

The study considered only two cultures, which are the Anglophone and the Saudi Arabian. Other cultures might yield different results and insights. However, due to the limited scope and time dedicated to the study, only two cultures were considered.

Another limitation of this research relates to the sample size. Although the samples were adequate to conduct the statistical analysis, the two samples were not identical in size, which is recommended when comparing the results of two groups. Another issue was with the Anglophone sample: despite the cohesion in the cultural scores for the component countries, it mostly contained participants from the UK. While this is acceptable, it would have been preferable to have had the whole sample from a single country, but this was hindered by the difficulty and substantial time required to collect the data.

10.5 Future Work

While this study used a theoretical model that fitted the data very well and explained the relationships between the factors, the impact of online antisocial behaviour was investigated only within the UTAUT model combined with self-presentation. Therefore, even if the proposed model provided some evidence and an explanation of the impact on Twitter use, there are many other possible ways of modelling the impact of antisocial behaviour online. The study offers a somewhat specific context. Thus, future research might consider other aspects of use, or try different theories or models. Furthermore, there may be other factors that might be related in terms of social media that were not covered by the classical technology acceptance models.

Another consideration is that although the technology acceptance models provided a useful theoretical base for investigating technology use, they were developed a long time ago when computerised systems were different from those now in use. New technologies include complex use contexts and heavy users' interactions. Web 2.0 and the rise of social media, for instance, allow users to contribute and to interact with each other. This complex use suggests a need to update theories and models on technology use, not to mention, for example, virtual and augmented reality. Therefore, there is scope to study how users' acceptance and the use of new technologies could be improved to better measure and predict users' attitudes towards newer technologies, and how a certain model might be affected by external factors, similar to that investigated in this research but in a different context.

This study included only two cultures, a Western and Middle-Eastern Arabic culture. Asian cultures from the Far East, Europe or others might exhibit different behaviours and, therefore, this study could be extended to consider other cultures as well. Moreover, the TAUR model included the risk of antisocial behaviour online; other kinds of risks can be modelled in a similar way by applying the TAUR model in different contexts.

10.6 Research Implications and Recommendations

Implications from this study include a set of recommendations to reduce abusive behaviour in the Twitter environment. A review by participants for the reasons this problem exists could provide a starting point to solving or minimising it.

The fact that Twitter has a public profile and is, by nature, designed to broadcast is certainly advantageous and considered one of its key features. However, it can invite unwanted interaction. Twitter users in this study were left either having to choose to make their accounts private and lose the advantage of having an easily accessible social media presence

or keeping their account public and then dealing with the consequences. This made some users feel that maintaining their accounts and participating was quite time-consuming and difficult as they had to become careful in their expressions and be very cautious and neutral with what they shared. It is possible that adding additional privacy settings might help with this issue. For example, selective visibility options for tweets might be very useful for those who wish to keep their accounts public but also want to share something with certain followers and not with the general public. A previous study found that the more users considered Twitter useful for both work and social life, the more they were willing to use it (Agrifoglio et al., 2010). This study supported that finding as 44.5% of the Anglophone users and 26.3% of the Saudi users used it for both work and personal life. Thus, it might be beneficial if they could choose to select their audience when tweeting certain ideas.

Another issue that arose was about content filtering. According to the participants, exploring a hashtag could be quite disturbing sometimes, as it might include inappropriate content and there is no content filtering on Twitter[13]. Therefore, introducing additional intelligent algorithms that could be enabled, based on the users' preferences, might help to make the Twitter experience more pleasant.

This study also suggests that a major issue to counteract the problem of online hostility is to spread awareness about it and how to control it. This study did not investigate how Twitter is already seeking to do that. However, within the small samples that were interviewed, many participants complained about the lack of policies and rules against abuse. While Twitter has already established a set of rules[14], many users are still unaware of them and they feel that they do no work. This implies that more creative ways of spreading awareness might be helpful, and policing the platform collectively, crowdsourcing and spreading awareness might be powerful mechanisms to control and limit online hostility on Twitter.

Finally, as social media becomes ever more embedded in our lives and important in our societies, understanding the impact of antisocial behaviour on social media participation will become increasingly important. This work has shown how existing models of technology acceptance might begin to be adapted for this new generation of social technology, granting new insight into users' behaviour across cultures, and ultimately leading to new social media policies or tools that could potentially mitigate some of these negative effects.

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[13] Twitter released the Quality Filter to all users in mid-2016, but up to the date when the interviews were conducted, none of the participant was aware of it.
[14] Twitter Rules. Available online. url: https://support.twitter.com/articles/18311#, accessed 10 December 2016.

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Appendix A Experts Invitation Letter

The following email was sent to all potential experts to invite them to participate in the study.

Dear XXX,

I hope all is well with you. This is Nora Almuhanna, a PhD student under the supervision of Prof Wendy Hall and Dr David Millard, ECS, Web and Internet Science group.

I am conducting an expert reviews at this stage of my research which is about technology acceptance and use under the risk of antisocial behaviour online. The main purpose of this step is to validate my proposed research model.

I would be very grateful if I could interview you as your expertise and opinions would be of great value to my research.

The interview will be one hour long or hopefully less, I will explain the research model to you and then ask you few questions about it.

Kindly let me know whether you accept to be part in this research or not, and if you do when is the best time for you?

I have attached the participant information sheet and a brief summary if you want to take a look.

Thank you very much for your time.

Best regards,

Nora

Appendix B Ethics Forms for Expert Reviews

B.1 Consent Form

UNIVERSITY OF Southampton

CONSENT FORM (*V.1*)

Study title: Technology Acceptance and Use with Risk: Twitter and Antisocial Behaviour Problem

Researcher name: Nora AlMuhanna

Supervisors: Wendy Hall and David Millard

Ethics reference: 16133

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (dated 21 June 2015 V.1) and have had the opportunity to ask questions about the study.	☐
I agree to take part in this research project and agree for my data to be used for the purpose of this study	☐
I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected	☐
I agree to record my voice during my participation in this study	☐

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name)……

Signature of participant……

Date……

[21 June 2015] [V. 1]

B.2 Participant Information Sheet

UNIVERSITY OF Southampton

Participant Information Sheet

Study Title: Technology Acceptance and Use with Risk: Twitter and Antisocial Behaviour Problem

Researcher: Nora AlMuhanna **Ethics number**: 16133

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

This research is required as part of the researcher's PhD degree in computer science. It aims to investigate the impact of online antisocial behaviour on the Web, more specifically, on social networks like Twitter. Such investigation would help us to gain better understanding about this phenomena and design better systems. This research is under the direction of the School of Electronic and Computer Science, University of Southampton, UK, and is fully funded by Saudi Arabian Cultural Bureau.

Why have I been chosen?

You are invited to participate in this study because your opinion and expertise as an expert in the area of either computer science or sociology will help me to validate and assess the proposed research model.

What will happen to me if I take part?

I will first ask you to sign a consent form, and then I am going to review the research model with you, and after that I will start to collect data from you by an interview with open-ended questions about the model. I will record your voice during the interview only.

Are there any benefits in my taking part?

This research is not designed to help you personally, but your feedback as an expert will help me to validate my research model and probably gather more useful information around it.

Are there any risks involved?

No.

Will my participation be confidential?

Yes. Your information will be stored and used on secure systems and will be used for the purpose of this study only, your responses are voluntary, and will not be linked to your name or to your organization's name. All responses will be compiled and analysed together.

What happens if I change my mind?

You have the right to terminate your participation in the research at any stage, you do not need to give any reasons, and without your legal rights being affected. Your data will be deleted directly if you decide to withdraw at any time.

What happens if something goes wrong?

In the unlikely case of concern or complaint, please contact Research Governance Manager (02380 595058, rgoinfo@soton.ac.uk).

Where can I get more information?

For further details, please contact either myself or my study supervisors, Professor Wendy Hall and Dr David Millard.

Nora Almuhanna (na8g14@soton.ac.uk)
Wendy Hall (wh@ecs.soton.ac.uk)
David Millard (dem@ecs.soto.ac.uk)

Would you like to take part in this research?

□ Yes, I agree to take part in this research and I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected.

□ No, I disagree

[21 June 2015] [Version 1]

Appendix C Expert Review Closed-ended Questions

To what extent do you agree with the following?
SA: strongly agree, **A**: agree, **N**: Neutral, **D**: disagree, **SD**: strongly disagree.

	Factors	SA	A	N	D	SD
1.	People use Twitter because it is useful in their different tasks.					
2.	People use twitter because it increases their chances of obtaining a raise/ being famous/ or any other personal gain.					
3.	People use twitter to share their stories and opinions.					
4.	People use twitter because it is easy to use.					
5.	People use twitter because they enjoy using it.					
6.	People use twitter because they think that other people who are important to them think they should use it.					
7.	People use twitter because it would enhance their chance to meet other users who have common interests.					
8.	People use twitter because they know that have control over their account (block, report, mute)					
9.	Availability of instructions on how to use Twitter encourages people to use it.					
10.	People feel comfortable using Twitter knowing that they can comment about or possibly delete unpleasant tweets.					
	Moderators					
11.	Effort expectancy will be moderated by experience.					
12.	Social influence will be moderated by experience.					
13.	Facilitating conditions will be moderated by experience.					
14.	Performance expectancy will be moderated by age.					
15.	Effort expectancy will be moderated by age.					
16.	Social influence will be moderated by age.					
17.	Facilitating conditions will be moderated by age.					
18.	Performance expectancy will be moderated by gender.					
19.	Effort expectancy will be moderated by gender.					
20.	Social influence will be moderated by gender.					
21.	Facilitating conditions will be moderated by gender.					
22.	Performance expectancy will be moderated by perception of antisocial behaviour.					
23.	Effort expectancy will be moderated by perception of antisocial behaviour.					
24.	Social influence will be moderated by perception of antisocial behaviour.					
25.	Facilitating conditions will be moderated by perception of antisocial behaviour.					

Appendix D T-test Results for Expert Reviews Questionnaire

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Perceived usefulness	12	4.00	.853	.246
Outcome expectation	12	4.25	.452	.131
Self-presentation objective	12	4.42	.669	.193
Perceived ease of use	12	4.25	.965	.279
Enjoyment	12	4.08	.669	.193
Subjective norm	12	3.83	.389	.112
Community identification	12	3.75	.754	.218
Perceived behavioural control	12	3.42	.793	.229
Facilitating conditions	12	3.42	.900	.260
Protective self-presentation awareness	12	3.83	.718	.207
Experience_EE	12	4.58	.515	.149
Experience_SI	12	4.17	.577	.167
Experience _FC	12	4.25	.754	.218
Age_PU	12	3.83	.835	.241
Age_EE	12	4.17	.577	.167
Age_SI	12	4.17	.577	.167
Age_FC	12	4.00	.426	.123
Gender_PU	12	**2.67**	.888	.256
Gender_EE	12	**2.67**	.651	.188
Gender_SI	12	3.58	.900	.260
Gender_FC	12	3.58	.900	.260
PerceptionAntisocialBehaviour_PU	12	4.25	.754	.218
PerceptionAntisocialBehaviour_EE	12	4.42	.515	.149
PerceptionAntisocialBehaviour_SI	12	4.33	.888	.256
PerceptionAntisocialBehaviour_FC	12	4.25	.754	.218

One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Perceived usefulness	4.062	11	.002	1.000	.46	1.54
Outcome expectation	9.574	11	.000	1.250	.96	1.54
Self-presentation objective	7.340	11	.000	1.417	.99	1.84
Perceived ease of use	4.486	11	.001	1.250	.64	1.86
Enjoyment	5.613	11	.000	1.083	.66	1.51
Subjective norm	7.416	11	.000	.833	.59	1.08
Community identification	3.447	11	**.005**	.750	.27	1.23
Perceived behavioural control	1.820	11	**.096**	.417	-.09-	.92
Facilitating conditions	1.603	11	**.137**	.417	-.16-	.99
Protective self-presentation awareness	4.022	11	.002	.833	.38	1.29
Experience_EE	10.652	11	.000	1.583	1.26	1.91
Experience_SI	7.000	11	.000	1.167	.80	1.53
Experience _FC	5.745	11	.000	1.250	.77	1.73
Age_PU	3.458	11	**.005**	.833	.30	1.36
Age_EE	7.000	11	.000	1.167	.80	1.53
Age_SI	7.000	11	.000	1.167	.80	1.53
Age_FC	8.124	11	.000	1.000	.73	1.27
Gender_PU	-1.301-	11	**.220**	-.333-	-.90-	.23
Gender_EE	-1.773-	11	**.104**	-.333-	-.75-	.08
Gender_SI	2.244	11	**.046**	.583	.01	1.16
Gender_FC	2.244	11	**.046**	.583	.01	1.16
PerceptionAntisocialBehaviour_PU	5.745	11	.000	1.250	.77	1.73
PerceptionAntisocialBehaviour_EE	9.530	11	.000	1.417	1.09	1.74
PerceptionAntisocialBehaviour_SI	5.204	11	.000	1.333	.77	1.90
PerceptionAntisocialBehaviour_FC	5.745	11	.000	1.250	.77	1.73

Appendix E Questionnaire Constructs Measurements

Factor	Citation	Measure
Performance Expectancy	Perceived usefulness (F. Davis, 1989), Taylor & Todd, (1995)	1. I find Twitter useful in my daily life (e.g. communicate with others, get news, announce something …etc.)
		2. Overall, using Twitter is beneficial.
	Outcome expectations (D Compeau et al., 1999; DR Compeau & Higgins, 1995)	3. Twitter increases my effectiveness on my social/professional tasks. (e.g. communicate quickly, get news …)
		4. Twitter increases my chances of getting a desired personal gain (e.g. being famous, getting a raise, promotion, or any other personal gain.)
Self-presentation	(Ma & Agarwal, 2007)	5. I share photos on Twitter.
		6. I share my stories with others on Twitter.
		7. I express my opinions in my tweets.
		8. I present information about myself in my Twitter profile.
		9. I use my name (or a special meaningful nickname) on Twitter to differentiate myself from others.
Effort Expectancy	Ease of use (Moore & Benbasat, 1991)	10. Learning to use twitter was easy for me.
		11. Overall, I believe that Twitter is easy to use.
	Enjoyment in using system (Hsu & Lin, 2008)	12. It feels good to communicate with and help others using Twitter.
		13. Overall, I enjoy using Twitter.
Social Influence	Subjective Norm (Icek Ajzen, 1991; F. Davis, 1989; Fishbein & Ajzen, 1974; Taylor & Todd, 1995) (Icek Ajzen, 2002)	1. The people in my life whose opinions I value approve using Twitter.
		14. People who are important to me think that I should use Twitter (e.g. friends, relatives, co-workers, bosses, …)
	Community identification	15. Participating in Twitter would enhance my chance to meet other users who have common interests.

	(Hsu & Lin, 2008)	16. Users on Twitter keep close ties with each other.
		17. Twitter creates a communication channel to share social lives and information.
Facilitating Conditions	Perceived behavioural control (Icek Ajzen, 1991; Taylor & Todd, 1995)	18. I feel that I have control over my Twitter account (e.g. I can delete, retweet, undo retweet, etc...)
		19. I feel comfortable using Twitter on my own.
		20. Knowing that I can block/mute/report annoying accounts makes me feel more comfortable when using twitter.
	Facilitating conditions (R. Thompson et al., 1991)	21. It was easy for me to find Twitter support page and all the different instructions and tips on how to use it.
		22. A specific person (group) from Twitter is available for assistance with technical/social difficulties.
Protective self-presentation	(Rui & Stefanone, 2013; Rui & Stefanone, 2013)	23. In some cases, I would not tweet to avoid unpleasant consequences.
		24. In some cases, I tweet with caution to avoid unpleasant consequences.
		25. If I receive an unpleasant tweet I would write a tweet to comment about it.
		26. If I receive an unpleasant tweet from a person I would ask him/her to delete it.
		27. If I receive an unpleasant tweet I would ignore it.
		28. If I receive an unpleasant tweet I would report it to twitter admins.
		29. If I receive an unpleasant tweet I would block the account.
		30. If I read an unpleasant tweet about something/someone I care about I would report it (e.g. about your country, religion, favourite celebrity ...etc.)
		31. If I read an unpleasant tweet about something/someone I care about I would block the account (e.g. about your country, religion, favourite celebrity ...etc.)
		32. If I read an unpleasant tweet about something/someone I care about I would ask them to delete it (e.g. about your country, religion, favourite celebrity ...etc.)
		33. I have encountered unpleasant tweets in the timeline.

Appendix E

Perception of antisocial behaviour	(J Rui & Stefanone, 2013)	34. I have encountered unpleasant tweets when I have explored a hashtag.
		35. I have felt unhappy with the content of tweets that have involved me.
		36. I have felt unhappy with the content of Tweets that have involved someone else.
		37. I have felt unhappy with the content of tweets in some hashtags.
	(Moor et al., 2010)	1. Antisocial behaviour on Twitter is a problem for me.
		2. I think that antisocial behaviour on Twitter is a problem for some Twitter users.
Behavioural intention	(F. Davis, 1989),(Venkatesh, et al., 2003)	3. I have considered deleting my account.
		4. I intend to continue to use Twitter in the future.
		5. I predict I will continue to use Twitter in the future.
		6. I plan to continue to use Twitter in the future.

Appendix F Online Questionnaire Participant Information Sheet

F.1 English Version

UNIVERSITY OF Southampton

Participant Information Sheet

Study Title: Technology Acceptance and Use under Risk: Twitter and Antisocial Behaviour Problem

Ethics number: 17807

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

This research aims to investigate the impact of online antisocial behaviour on the Web, more specifically, on Twitter as social networks. Such investigation would help us to gain better understanding about this phenomena and design better systems. This research is under the direction of the School of Electronic and Computer Science, University of Southampton, UK.

Why have I been chosen?

This study focuses on understanding users' behaviour towards social networks like Twitter, and you are invited to participate as twitter user because your opinion will help to gain better understanding.

What will happen to me if I take part?
You will find an online questionnaire that will take about 10 minutes to complete.

Are there any benefits in my taking part?

This research is not designed to help you personally, but your feedback as a user will help me to gather useful information for my research. However, after completing the questionnaire, if you wish *you will be entered in a **prize draw**, where you have the opportunity to **win one of two £50 amazon.co.uk vouchers*** as an appreciation for your time. If you wish to take part you will need to provide your email address at the end of the study. This will be kept separately to the answers to your questions so there will be no way of linking your email address to your answers and you will be contacted by email if you win.

Are there any risks involved?
No.

Will my participation be confidential?
Yes. Your information will be stored and used on secure systems and will be used for the purpose of this study only, your responses are voluntary, and will not be linked to your username. All responses will be compiled and analysed together.

What happens if I change my mind?
You have the right to terminate your participation in the research at any stage, you do not need to give any reasons, and without your legal rights being affected. Your data will be deleted directly if you decide to withdraw at any time.

What happens if something goes wrong?
In the unlikely case of concern or complaint, please contact Research Governance Manager (02380 595058, rgoinfo@soton.ac.uk).

Where can I get more information?
For further details, please contact either myself or my study supervisors, Professor Wendy Hall and Dr David Millard.

Researcher (na8g14@soton.ac.uk)
Wendy Hall (wh@ecs.soton.ac.uk)
David Millard (dem@ecs.soto.ac.uk)

F.2 Arabic Version

UNIVERSITY OF Southampton

دليل المعلومات للمشاركين في الدراسة

عنوان الدراسة: تقبل واستخدام التكنولوجيا: مشكلة السلوك المسيء في تويتر

رقم تصريح لجنة الأخلاقيات: 17807

يرجى قراءة هذه المعلومات بعناية قبل اتخاذ القرار بالمشاركة في هذا البحث. إذا كنت سعيدا بالمشاركة سيطلب منك وضع علامة صح للموافقة في بداية الاستبيان.

ما هو هدف البحث؟

يهدف هذا البحث لدراسة تأثير السلوك السيء في الإنترنت على استخدام الشكبات الإجتماعية، وفي تويتر بالتحديد. دراسة هذا التأثير يساعدنا على فهم هذه الظاهرة بشكل أوسع، وتصميم نظم أفضل مستقبلاً. هذا البحث تحت إشراف كلية الالكترونيات وعلوم الحاسب، جامعة ساوثهامبتون، المملكة المتحدة.

لماذا تم اختياري؟

تركز هذه الدراسة على فهم سلوك المستخدمين في الشبكات الاجتماعية، ولكونك مستخدم لتويتر فإن رأيك سيساعدنا على الحصول على فهم أفضل.

ما الذي سيحدث إذا شاركت؟

سوف تجد استبيان على الانترنت وسوف يستغرق حوالي 10 دقيقة لإكماله.

هل هناك أي فائدة لي من المشاركة؟

لم يتم تصميم هذا البحث لمساعدتك شخصيا، ولكن إجاباتك كمستخدم لتويتر سوف تساعدنا لجمع معلومات مفيدة للبحث. ولكن تقديراً لوقتك وجهدك، فإنه في نهاية الاستبيان سيمكنك وضع بريدك الاكتروني حيث ستكون لديك الفرصة للفوز بقسيمة شرائية منamazon.co.uk بقيمة 50 جنية استرليني وسيتم السحب على قسيمتين شرائيتين لاثنين من المشاركين بشكل عشوائي. سيتم التواصل معك عن طريق البريد الإلكتروني في حالة فوزك، علماً بأن البريد الاكتروني لن يربط بإجابتك نهائياً وسيتم حذف جميع المعلومات بعد الانتهاء من السحب.

هل هناك أي مخاطر التي تنطوي على مشاركتي؟

لا.

هل ستكون مشاركتي سرية؟

نعم بالطبع. وسيتم تخزين المعلومات الخاصة بك واستخدامها على أنظمة آمنة وسوف تستخدم لأغراض هذه الدراسة فقط، مشاركتك تطوعية وليست إجبارية، وسيتم تجميع جميع الردود وتحليلها معاً كمجموعة.

ماذا سيحدث إن قمت بتغيير رأيي؟

لديك الحق في إنهاء مشاركتك في البحث في أي مرحلة، ولن تحتاج إلى إعطاء أي مبرر، وحقوقك القانونية لن تتأثر. سيتم حذف البيانات الخاصة بك مباشرة إذا قررت الانسحاب في أي وقت.

ماذا إن حدث خطأ ما؟

من غير المرجح أن يحدث أي خطأ، وبإمكانك الاتصال بمدير إدارة البحوث (rgoinfo@soton.ac.uk 595058 02380)

أين يمكنني الحصول على مزيد من المعلومات؟

للمزيد من التفاصيل، يرجى الاتصال إما بالباحثة أو بالمشرفين.

الباحثة (na8g14@soton.ac.uk)
وندي هول (wh@ecs.soton.ac.uk)
ديفد ميلارد (dem@ecs.soto.ac.uk)

Appendix G Online Questionnaire

Welcome!

Thank you very much for your interest in taking this questionnaire, I appreciate your time and valuable participation, it should take about 10 minutes.

This research aims to investigate the impact of online antisocial behaviour on the Web, more specifically, on Twitter. Such an investigation will help us to gain a better understanding about this phenomena and design better systems. This research is under the direction of the School of Electronic and Computer Science, University of Southampton, UK (Ethics number: 17807). If you wish, *you will be entered in a* **prize draw**, *where you have the opportunity to* **win one of two £50 amazon.co.uk vouchers** as an appreciation for your time. If you wish to take part you will need to provide your email address at the end of the study. This will be kept separate from the answers to your questions so there will be no way of linking your email address to your answers and you will be contacted by email if you win.

Participant Information Sheet is available from this link: https://goo.gl/L7sZaL

مرحباً!

شكرًا جزيلًا على اهتمامك بالمشاركة في هذه الاستبانة، أقدر وقتك ومشاركتك القيمة، يستغرق الاستبيان حوالي 10 دقائق.

يهدف هذا البحث إلى دراسة أثر السلوك المسيء للآخرين في الإنترنت على استخدام الشكبات الإجتماعية (في تويتر تحديداً). دراسة هذا الأثر يساعدنا على فهم هذه الظاهرة بشكل أوسع، وتصميم أنظمة أفضل مستقبلاً. هذا البحث تحت إشراف كلية الالكترونيات وعلوم الحاسب، جامعة ساوثهامبتون، المملكة المتحدة (تصريح لجنة الأخلاقيات رقم: 17807).
في نهاية الاستبانه يمكنك وضع بريدك الاكتروني حيث ستكون **لديك الفرصة للفوز بقسيمة شرائية من amazon.co.uk بقيمة 50 جنية استرليني** وسيتم السحب على قسيمتين شرائيتين لاثنين من المشاركين بشكل عشوائي.
سيتم التواصل معك عن طريق البريد الإلكتروني في حالة فوزك، علماً بأن البريد الإلكتروني لن يربط بإجابتك نهائياً وسيتم حذف جميع المعلومات بعد الإنتهاء من السحب.

يمكنك الإطلاع على معلومات البحث والمشاركة في الدراسة من خلال هذا الرابط: : https://goo.gl/WNsXoa

☐ Please tick (check) this box to indicate that you consent to taking part in this survey الرجاء وضع علامة صح للموافقة على المشاركة في هذه الاستبانة

Part 1: Demographic Information	
1.1 Do you use Twitter? هل تستخدم تويتر؟	• Yes نعم • No لا **If answered No:** Thank you for your time, this questionnaire is meant for Twitter users only. You are free to leave this webpage, you don't need to complete the questions. شكراً جزيلاً لك، هذا الاستبيان مخصص فقط لمستخدمي تويتر بإمكانك إغلاق هذه الصفحة والخروج إن أردت
1.2 What is your gender? ما هو جنسك؟	• Male ذكر • Female أنثى
1.3 What is your age? كم عمرك؟	• Under 18 أقل من • 18-24 years old ما بين • 25-30 years old ما بين • 31-35 years old ما بين • 36-40 years old ما بين • 41-45 years old ما بين • 46-50 years old ما بين • 51-55 years old ما بين

	• 56-64 years old ما بين • 65 years and older أكبر من
1.4 Where are you from? من أي دولة أنت؟	- countries dropdown list -
1.5 How would you rate your own computer and Internet skills? كيف تصنف مهاراتك في استخدام الكمبيوتر والإنترنت؟	• Low (e.g. turn on/off computer, use mouse and keyboard) ضعيفة مثال: أستطيع تشغيل وإطفاء الكمبيوتر، استخدام الفأرة ولوحة المفاتيح • Medium (e.g. chat using instant messaging or chat rooms, post messages to social networks) متوسطة مثال: أستخدم برامج المحادثة في الانترنت، أرسل رسائل في الشبكات الاجتماعية • High (e.g. send/open e-mail, shop online, find information using search engine, Bookmark web sites) عالية مثال: أرسل وأستقبل البريد الاكتروني، أتسوق من الانترنت، أبحث بمحركات البحث، أحفظ المواقع في المفضلة
1.6 For how many years approximately have you been using Twitter? منذ متى تقريباً بدأت باستخدام تويتر؟	• Never لم أستخدمه من قبل • Less than 1 year أقل من سنة • 1 year سنة واحدة • 2 years سنتان • 3 years سنوات • 4years سنوات • 5years سنوات • 6years سنوات • 7+ years سنوات فأكثر
1.7 Do you have more than one twitter account? هل لديك أكثر من حساب في تويتر؟	• Yes • No If your answer is **Yes**, Please answer the following questions *considering **your main personal Twitter account.*** إذا كانت إجابتك **نعم**، فضلاً أجب بقية الأسئلة واضعاً في اعتبارك ***حسابك الشخصي الرئيسي***
1.8 Which identity do you use Twitter? ماهي الهوية التي تستخدمها في تويتر؟	• Using my own identity هويتي الحقيقية • On behalf of another identity (e.g. organization, or company) هوية أخرى، مثال: بالنيابة عن شركة، منظمة، قسم ...إلخ • Anonymously (e.g. using factious profile) اسم مستعار
1.9 How many times do you typically access Twitter? كم مرة تقريباً تقوم بتصفح تويتر؟	• Hardly ever نادراً • Occasionally من فترة لأخرى • Few times a month شهرياً • Few times a week أسبوعياً • Few times a day يومياً
1.10 On average, how much time do you spend using Twitter per day? كم تستغرق من الوقت تقريباً في تصفح تويتر يومياً؟	• Almost never أبداً • Less than 30 min أقل من 30 دقيقة • 30 min to 1 hour مابين نصف ساعة إلى ساعة • 1-2 hours مابين ساعة إلى ساعتين • More than 2 hours أكثر من ساعتين
1.11 Why are using Twitter? ما هي طبيعة استخدامك لتويتر؟	• Personal use استخدام شخصي • Professional use استخدمه للعمل • Both كلاهما
1.12 What are the typical actions you perform on Twitter? (Tick all that applies) ماهي الأشياء التي تقوم بها عادة في تويتر؟ - قم باختيار كل ما ينطبق	☐ Tweet كتابة التغريدات ☐ Retweet or favourite إعادة التغريد و الإضافة للمفضلة ☐ Send direct message أرسل رسالة خاصة ☐ Read القراءة

The question used in the following parts of the questionnaire:

To what extent do you agree or disagree with the following statements?
إلى أي حد تتفق مع الجمل التالية؟

Al statements are measured using Likert scale (Strongly disagree غير موافق تماماً, Disagree غير موافق, Neutral محايد, Agree موافق, Strongly agree موافق تماماً.)

Statements 5.1-5.5 are measured using the scale (Never أبداً, Rarely نادراً, Sometimes أحياناً, Frequently كثيراً, Very frequently كثيراً جداً.) and had the flowing question:

Choose what better describes the frequency associated with the following statements
اختر الوصف المناسب للجمل التالية

Part2: Performance Expectancy

2.1. I find Twitter useful in my daily life (e.g. communicate with others, get news, announce something …etc.)
أجد تويتر مفيد في حياتي اليومية. على سبيل المثال التواصل مع الآخرين، الحصول على الأخبار، الإعلانات... إلخ
2.2. Overall, using Twitter is beneficial. تويتر مفيد بشكل عام
2.3. Twitter increases my effectiveness on my social/professional tasks. (e.g. communicate quickly, get news …)
تويتر يزيد فعاليتي اجتماعياً/مهنياً. على سبيل المثال التواصل بشكل أسرع، الحصول على الأخبار ...إلخ
2.4. Twitter increases my chances of getting a desired personal gain (e.g. being famous, getting a raise, promotion, or any other personal gain.)
تويتر يزيد فرصي في الحصول على فوائد شخصية أرغب بها. على سبيل المثال الشهرة، الحصول على الترقية، أو أي فائدة شخصية أخرى
2.5. It was difficult to learn how to use Twitter.
كان من الصعب علي تعلم كيفية استخدام تويتر
2.6. I often share photos on Twitter.
أشارك عادة بصور في تويتر
2.7. I share my stories with others on Twitter.
أشارك قصصي ومواقفي مع الآخرين في تويتر
2.8. I express my opinions in my tweets.
أعبر عن آرائي في تويتر
2.9. I present information about myself in my Twitter profile.
أقدم معلومات عن نفسي في ملفي الشخصي في تويتر
2.10. I use my name (or a special meaningful nickname) on Twitter to differentiate myself from others.
أستخدام اسمي الشخصي (أو أسم مستعار مميز) في تويتر كي أميز نفسي عن الآخرين.

Part 3: Effort Expectancy and Social Influence

3.1. Learning to use Twitter was easy for me.
كان تعلم استخدام تويتر سهل بالنسبة لي
3.2. Overall, I believe that Twitter is easy to use.
بشكل عام أعتقد أن تويتر سهل الاستخدام
3.3. It feels good to communicate with and help others using Twitter.
أشعر بشعور جيد حينما أتواصل مع الآخرين أو أساعدهم في تويتر.
3.4. Overall, I enjoy using Twitter.
بشكل عام، استمتع باستخدام تويتر
3.5. The people in my life whose opinions I value approve using Twitter.
الأشخاص الذين يهمني رأيهم يؤيدون استخدام تويتر
3.6. People who are important to me think that I should use Twitter (e.g. friends, relatives, co-workers, bosses, …)
الأشخاص المهمين بالنسبة إلي يعتقدون أنه ينبغي علي أن أستخدم تويتر. مثل الأصدقاء، والأقارب، والزملاء، والرؤساء،...
3.7. Participating in Twitter would enhance my chance to meet other users who have common interests.

المشاركة في تويتر تعزز فرصتي للتعرف على مستخدمين آخرين يشاركونني نفس الاهتمامات

3.8. Users on Twitter keep close ties with each other.
مستخدمو تويتر يحافظون على علاقات وثيقة مع بعضهم البعض

3.9. Twitter creates a communication channel to share social lives and information.
يقدم تويتر قناة تواصل لتبادل المعلومات والحياة الاجتماعية

Part 4: Facilitating Conditions

4.1. I feel that I have control over my Twitter account (e.g. I can delete, retweet, undo retweet, etc...)
أشعر بأني أستطيع التحكم في حساب تويتر الخاص بي. على سبيل المثال يمكنني الحذف، وإعادة التغريد، والتراجع عن إعادة التغريد، إلخ...

4.2. Knowing that I can block/mute/report annoying accounts makes me feel more comfortable when using Twitter.
معرفة أنه بإمكاني حظر/ كتم/ الإبلاغ عن الحسابات المزعجة يجعلني أشعر براحة أكبر عند استخدامي لتويتر

4.3. A specific person (group) from Twitter is available for assistance with technical/social difficulties.
هناك شخص معين (أو مجموعة) من تويتر يقدم المساعدة أثناء مواجهة الصعوبات التقنية أوالاجتماعية.

4.4. It was easy for me to find Twitter support page and all the different instructions and tips on how to use it.
كان من السهل علي إيجاد صفحة الدعم في تويتر و جميع التعليمات المختلفة حول كيفية استخدامه.

4.5. In some cases, I would not tweet to avoid unpleasant consequences.
في بعض الحالات أمتنع عن التغريد لتجنب العواقب غير الحميدة

4.6. In some cases, I tweet with caution to avoid unpleasant consequences.
في بعض الحالات أغرد بحذر لتجنب العواقب غير الحميدة

4.7. If I receive an unpleasant tweet I would write a tweet to comment about it.
إذا تلقيت تغريدة مسيئة أقوم بكتابة تغريدة أخرى للتعليق على الموضوع

4.8. If I receive an unpleasant tweet from a person I would ask him/her to delete it.
إذا تلقيت تغريدة مسيئة من شخص ما سأطلب منه أن يقوم بحذفها.

4.9. If I receive an unpleasant tweet I would ignore it.
إذا تلقيت تغريدة مسيئة من شخص ما سأقوم بتجاهلها.

4.10. If I receive an unpleasant tweet I would report it to twitter admins.
إذا تلقيت تغريدة مسيئة من شخص ما سأقوم بالإبلاغ عنها للمسؤولين في تويتر.

4.11. If I receive an unpleasant tweet I would block the account.
إذا تلقيت تغريدة مسيئة من شخص ما سأقوم بحظر حسابه.

4.12. I would ignore the tweets directed to me if I didn't like them.
سأقوم بتجاهل التغريدات الموجهه لي إذا لم تعجبني.

4.13. If I read an unpleasant tweet about something/someone I care about I would report it. (E.g. about your country, religion, favourite celebrity ...etc.)
إذا قرأت تغريدة مسئية عن شخص أو شيْ يهمني أمره سأقوم بالإبلاغ عنها. مثال بلدك، دينك، شخصية مشهورة مفضلة لديك، ... إلخ

4.14. If I read an unpleasant tweet about something/someone I care about I would block the account. (E.g. about your country, religion, favourite celebrity ...etc.)
إذا قرأت تغريدة مسئية عن شخص أو شيْ يهمني أمره سأقوم بحظر الحساب. مثال بلدك، دينك، شخصية مشهورة مفضلة لديك، ... إلخ

Part 5: Perception on Antisocial Behaviour and Behavioural Intention

5.1. I have encountered unpleasant tweets in the timeline.
سبق وأن قرأت تغريدات مسيئة في الخط الزمني (صفحتي الرئيسية) في تويتر

5.2. I have encountered unpleasant tweets when I have explored a hashtag.
سبق وأن قرأت تغريدات مسيئة عندما قمت بتصفح بعض الأوسمة أو الهاشتاق

5.3. I have felt unhappy with the content of tweets that have involved me.
سبق وأن ساءني محتوى بعض التغريدات التي تدور حولي

5.4. I have felt unhappy with the content of Tweets that have involved someone else.
سبق وأن ساءني محتوى بعض التغريدات التي تدور حول أشخاص آخرين

5.5. I have felt unhappy with the content of tweets in some hashtags.
سبق وأن ساءني محتوى التغريدات في بعض الأوسمة أو الهاشتاق

5.6. Antisocial behaviour on Twitter is a problem for me.
الإحساس بوجود السلوك المسيء للآخرين في تويتر يشكل مشكلة بالنسبة لي

5.7. I think that antisocial behaviour on Twitter is a problem for some Twitter users.
أعتقد بأن الإحساس بوجود السلوك المسيء للآخرين في تويتر مشكلة لبعض مستخدمي تويتر

5.8. I have considered deleting my account.
سبق وأن فكرت بحذف حسابي في تويتر

5.9. I intend to continue to use Twitter in the future.
أنوي الاستمرار في استخدام تويتر في المستقبل

5.10. I predict I will continue to use Twitter in the future.
أتوقع أنني سوف استمر في استخدام تويتر في المستقبل

5.11. I plan to continue to use Twitter in the future.
أخطط أن أستمر في استخدام تويتر في المستقبل

Please leave your email address below if you wish to be entered into a prize draw to win £50 amazon.co.uk voucher. *Emails will be kept separately, there will be no way of linking your email address to your answers. You will be contacted by email if you win.*
فضلاً قم بكتابة بريد الالكتروني إذا رغبت في دخول سحب على قسيمة شراء بقيمة 50 باوند استرليني من أمازون
لن يتم ربط إجاباتك ببريدك الاكتروني و سيتم التواصل معك في حالة فوزك بالقسيمة

Tick the following box if you are interested in the topic and would possibly participate in a follow up interview.
قم بوضع علامة صح على المربع في حالة كانت لديك الرغبة والاهتمام في المشاركة في مقابلة شخصية حول الموضوع

☐ Yes I am interested نعم أنا مهتم

Appendix H Questionnaire Items Coding Sheet

PE1	I find Twitter useful in my daily life (e.g. communicate with others, get news, announce something , ... etc.)
PE2	Overall, using Twitter is beneficial.
PE3	Twitter increases my effectiveness on my social/professional tasks. (e.g. communicate quickly, get news, ... etc.)
PE4	Twitter increases my chances of getting a desired personal gain (e.g. being famous, getting a raise, promotion, or any other personal gain.)
SP1	I often share photos on Twitter.
SP2	I share my stories with others on Twitter.
SP3	I express my opinions in my tweets.
SP4	I present information about myself in my Twitter profile.
SP5	I use my name (or a special meaningful nickname) on Twitter to differentiate myself from others.
EE1	Learning to use Twitter was easy for me.
EE2	Overall, I believe that Twitter is easy to use.
EE3	It feels good to communicate with and help others using Twitter.
EE4	Overall, I enjoy using Twitter.
EE5	It was difficult to learn how to use Twitter.
SI1	The people in my life whose opinions I value approve using Twitter.
SI2	People who are important to me think that I should use Twitter (e.g. friends, relatives, co-workers, bosses, â€¦)
SI3	Participating in Twitter would enhance my chance to meet other users who have common interests.
SI4	Users on Twitter keep close ties with each other.
SI5	Twitter creates a communication channel to share social lives and information.
FC1	A specific person (group) from Twitter is available for assistance with technical/social difficulties.
FC2	It was easy for me to find Twitter support page and all the different instructions and tips on how to use it.
FC3	I feel that I have control over my Twitter account (e.g. I can delete, retweet, undo retweet, etc...)
FC4	Knowing that I can block/mute/report annoying accounts makes me feel more comfortable when using Twitter.
PSP1	In some cases, I would not tweet to avoid unpleasant consequences.
PSP2	In some cases, I tweet with caution to avoid unpleasant consequences.
PSP3	If I receive an unpleasant tweet I would write a tweet to comment about it.
PSP4	If I receive an unpleasant tweet from a person I would ask him/her to delete it.
PSP5	If I receive an unpleasant tweet I would ignore it.
PSP6	If I receive an unpleasant tweet I would report it to Twitter admins.
PSP7	If I receive an unpleasant tweet I would block the account.
PSP8	If I read an unpleasant tweet about something/someone I care about I would report it. (e.g. about your country, religion, favourite celebrity, ...etc.)
PSP9	If I read an unpleasant tweet about something/someone I care about I would block the account. (e.g. about your country, religion, favourite celebrity, ...etc.)
PAB1	I have encountered unpleasant tweets in the timeline.

PAB2	I have encountered unpleasant tweets when I have explored a hashtag.
PAB3	I have felt unhappy with the content of tweets that have involved me.
PAB4	I have felt unhappy with the content of Tweets that have involved someone else.
PAB5	I have felt unhappy with the content of tweets in some hashtags.
PAB6	Antisocial behaviour on Twitter is a problem for me.
PAB7	I think that antisocial behaviour on Twitter is a problem for some Twitter users.
BI1	I intend to continue to use Twitter in the future.
BI2	I predict I will continue to use Twitter in the future.
BI3	I plan to continue to use Twitter in the future.
Use	How many times do you typically access Twitter?

Appendix I Exploratory Factor Analysis Results

	Factor							
	1	2	3	4	5	6	7	8
PE1						.867		
PE2						.672		
PE3						.658		
SP1			.672					
SP2			.829					
SP3			.623					
SP4			.534					
EE1				.957				
EE2				.634				
EE5				.713				
SI1							.732	
SI2							.726	
SI4							.338	
FC1								.419
FC2								.454
FC3								.757
FC4								.629
PSP6					.485			
PSP7					.580			
PSP8					.705			
PSP9					.788			
PAB1	.449							
PAB2	.737							
PAB4	.870							
PAB5	.910							
PAB6	.395							
BI1		.894						
BI2		.909						
BI3		.900						

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Appendix J Hypothesis Assessment

J.1 Assessment the Main Hypotheses

	Hypothesised path	Anglophone Sample (N=200)			Saudi Sample (N=540)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1	PE → BI	0.572	6.117	<0.001	0.325	5.035	<0.001	n.s.
H2	EE → BI	0.201	2.548	0.011	0.174	3.345	<0.001	n.s.
H3	SI → BI	-0.121	-1.602	0.109	0.187	3.094	0.002	0.005
H4	FC → Use	0.519	3.707	<0.001	0.229	4.217	<0.001	0.036
H5	BI → Use	0.378	2.439	<0.001	0.189	4.255	<0.001	n.s.
H6	SP → PE	0.534	3.344	<0.001	0.356	5.572	<0.001	<0.001
H7	SP → SI	0.160	1.594	0.111	0.127	2.156	0.031	n.s.
H8	PSP → BI	0.019	0.304	0.761	-0.005	-0.114	0.909	n.s.
H9	PSP → Use	-0.287	-2.329	0.020	-0.106	-2.277	0.023	n.s.
H10	PAB → BI	0.028	0.474	0.635	0.018	0.405	0.685	n.s.
H11	PAB → Use	0.086	0.918	0.359	0.102	2.208	0.027	n.s.

Table J.1 Hypothesis analysis for Anglophone and Saudi models.

Anglophone sample:

H1. PE was found to be a positive influential factor on the BI to continue to use Twitter. The standardised regression weight of PE is 0.572 with a CR of 6.117. This suggests that the path between PE and BI is statistically significant at p<0.001, which gives a strong support for hypothesis H1 as proposed in the model.

H2. Another influential factor on BI to continue to use Twitter is EE, which also had a positive significant effect. The standardised regression weight of EE is 0.201, with a CR of 2.548. This suggests that the path between EE and BI is statistically significant at p < 0.001, therefore, H2 is supported.

H3. As mentioned earlier, SI was not found to be an influential factor on BI to continue to use Twitter as hypothesized. It had a negative effect with a standardised regression weight of -0.201, a CR of -1.602 and a p-value of 0.109. This suggests that the path between SI and BI is not statistically significant, therefore hypothesis H2 is not supported.

H4. FC was found to be a positive influential factor on the actual use of Twitter. The standardised regression weight of FC is 0.519 with a CR of 3.707. This suggests that the path between CF and use is statistically significant at p<0.001, which gives strong support for hypothesis H4.

H5. As hypothesized, BI had a strong positive effect on the actual use of Twitter. The standardised regression weight of BI is 0.378 with a CR of 2.439. This suggests that the path between BI and use is statistically significant at p < 0.001, which gives a strong support for hypothesis H5.

H6. SP had a strong positive effect on PE. The standardised regression weight of SP is 0.534 with a CR of 3.344. This suggests that the path between SP and PE is statistically significant at $p < 0.001$, therefore, hypothesis H6 is supported.

H7. Unlike its effect on PE, SP was not found to have a significant effect on SI. It has a standardised regression weight of 0.160, with a CR of 1.594 and a p-value of 0.111. Thus, H7 is not supported.

H8. PSP was found not to have a significant effect on BI. It has a very weak standardised regression weight of 0.019, with a CR of 0.304 and a p-value of 0.761. Therefore, H8 is not supported.

H9. As hypothesised, PSP was found to have a negative effect on the actual use of Twitter. The standardised regression weight was -0.287, with a CR of -3.329 and a p-value of 0.020, indicating statistical significance on the negative side. Therefore, H9 is supported.

H10. PAB was found not to have a significant effect on BI. It has a very weak standardised regression weight of 0.028, with a CR of 0.474 and a p-value of 0.635. Therefore, H10 is not supported.

H11. PAB was found not to have a significant effect on the actual use. It has a very weak standardised regression weight of 0.086 with a CR of 0.918 and a p-value of 0.359. Therefore, H11 is not supported.

Saudi sample:

H1. PE was found to be a positive influential factor on the BI to continue to use Twitter. The standardised regression weight of PE is 0.325 with a CR of 5.035. implying that the path between PE and BI is statistically significant at $p < 0.001$ level, therefore, H1 is supported.

H2. EE was found to have positive significant effect on the BI to continue to use Twitter. The standardised regression weight of EE is 0.174 with a CR of 3.345. This suggests that the path between EE and BI is statistically significant at $p < 0.001$ level, thus, hypothesis H2 is supported.

H3. SI was found to be an influential factor on the BI to continue to use Twitter as hypothesised. It had a standardised regression weight of 0.187, a CR of 3.094, and a p-value of 0.002. This suggests that the path between SI and BI is statistically significant, therefore, hypothesis H3 is supported.

H4. FC was found to be a positive influential factor on the actual use of Twitter. The standardised regression weight of FC is 0.229 with a critical ratio of 4.217. This suggests that the path between FC and use is statistically significant at $p < 0.001$ level, which gives a strong support for hypothesis H4.

H5. BI had a strong positive effect on the actual use of Twitter. The standardised regression weight of BI is 0.189 with a CR of 4.255. This suggests that the path

between BI and Use is statistically significant at p < 0.001 level, therefore, H5 is supported.

H6. SP had a strong positive effect on PE. The standardised regression weight of SP is 0.356 with a CR of 5.572. This suggests that the path between SP and PE is statistically significant at p < 0.001 level, therefore, hypothesis H6 is supported.

H7. SP was also found to have a significant effect on SI. It has a standardised regression weight of 0.127 with a CR of 2.156, and a p-value of 0.031. Thus, H7 is supported.

H8. PSP was found not to have a significant effect on BI. It has a very weak standardised regression weight of -0.005 with a CR of -0.114, and a p-value 0.909. Therefore, H8 is not supported.

H9. PSP was found to have a negative effect on the actual use of Twitter. The standardised regression weight was -0.106 with a CR of -2.277, and a p-values 0.023, indicating statistical significance on the negative side. Therefore, H9 is supported.

H10. PAB was found not to have a significant effect on BI. It has a very weak standardised regression weight of 0.018 with a CR of 0.405, and a p-values 0.685. Therefore, H10 is not supported.

H11. The analysis showed a significant positive effect between PAB and the actual use of Twitter. It has a standardised regression weight of 0.102 with a CR of 2.208, and a p-values 0.027. This implies that when PAB increases, use will also increase, which does not conform to the hypothesised relationship. Therefore, H11 is not supported.

J.2 Assessment of Moderation and Interaction Hypotheses

J.2.1 Moderators effect for the Anglophone sample

	Hypothesised path	Male (N=102)			Female (N=98)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.1	PE → BI	0.633	5.912	<0.001	0.447	3.146	0.002	n.s.
H2.1	EE → BI	0.175	1.939	0.053	0.213	1.868	0.062	n.s.
H3.1	SI → BI	-0.299	-3.335	<0.001	0.142	1.260	0.208	0.001
H4.1	FC → Use	0.188	1.547	0.122	0.337	2.606	0.009	n.s.
H6.1	SP → PE	0.388	2.379	0.017	0.570	1.964	0.049	n.s.
H7.1	SP → SI	0.026	0.278	0.781	0.219	1.369	0.171	n.s.
H8.1	PSP → BI	0.077	1.072	0.284	-0.082	-0.876	0.381	n.s.
H9.1	PSP → Use	-0.119	-1.294	0.196	0.056	0.614	0.539	n.s.
H10.1	PAB → BI	0.031	0.403	0.687	0.023	0.265	0.791	n.s.
H11.1	PAB → Use	0.251	2.570	0.010	-0.015	-0.133	0.894	n.s.

Table J.2 Gender moderation hypothesis assessment (Anglophone sample).

Gender hypotheses:

H1.1 Gender was found to have a moderating effect between PE and BI, where male Twitter users showed a stronger effect than females, β=0.633 for males, and β=0.447 for females. However, this difference between the two groups was not statistically significant. Therefore, hypothesis H1.1 is not supported.

H2.1 Gender effect between EE and BI was found stronger for females (β=0.213) than males (β=0.175). However, it was not statistically significant, with p-values of 0.053 for males, and p=0.641 for females. Therefore, H2.1 is not supported.

H3.1 It was found that gender has a moderating effect on the relationship between SI and BI. This effect was statistically significant (p-value = 0.001), as gender was found to have a significant negative effect, but only for male Twitter users, with a standardised regression weight of β=-0.299 at p<0.001 level. Unlike the males, effect was non-significant for the females and positive with a standardised regression weight of 0.142.

H4.1 Gender was found to have a positive moderating effect on FC and use, however, this effect was only significant for females, with a standardised regression weight of 0.337 and p-value of 0.009, while the male group had a standardised regression weight of 0.188, and a p-value of 0.122 indicating a non-significant effect. Nevertheless, H4.1 is not supported as the observed difference is not statistically significant.

H6.1 Gender was found to have a moderating effect on SP and PE, where female Twitter users showed a stronger effect than males, β=0.570 for females, and β= 0.388 for males. However, this difference between the two groups was not statistically significant. Therefore, hypothesis H6.1 is not supported

H11.1 Surprisingly, the analysis revealed a significant positive effect between PAB and the actual use of Twitter for males only, with a standardised regression weight of 0.251, and a p-value of 0.010. however, we cannot say this path is moderated by gender as the difference between the groups is not statistically significant.

- For hypotheses H7.1-H10.1, gender effect was not statistically significant across gender groups nor the difference between them, therefore, H7.1-H10.1 are not supported.

	Hypothesised path	<30 years (N=92)			>=30 (N=108)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.2	PE → BI	0.511	3.447	<0.001	0.617	5.421	<0.001	n.s.
H2.2	EE → BI	0.232	2.030	0.042	0.157	1.501	0.133	n.s.
H3.2	SI → BI	0.039	0.327	0.744	-0.295	-3.252	0.001	0.025
H4.2	FC → Use	0.266	1.989	0.047	0.616	2.914	0.004	n.s.
H6.2	SP → PE	0.398	1.706	0.088	0.595	2.768	0.006	n.s.
H7.2	SP → SI	0.252	1.435	0.151	0.029	0.268	0.789	n.s.
H8.2	PSP → BI	-0.053	-0.603	0.547	0.046	0.703	0.482	n.s.
H9.2	PSP → Use	-0.073	-0.750	0.453	-0.101	-1.448	0.148	n.s.
H10.2	PAB → BI	0.009	0.105	0.917	0.050	0.612	0.540	n.s.
H11.2	PAB → Use	0.108	1.109	0.267	0.150	0.953	0.341	n.s.

Table J.3 Age moderation hypotheses assessment (Anglophone sample).

Age hypotheses:

H1.2 Age was found to have a moderating effect between PE and BI, where older Twitter users showed a stronger effect than younger ones, β=0.617 for older users, and β= 0.511 younger users. However, the difference between the age groups was not statistically significant, and therefore, hypothesis H1.2 is not supported.

H2.2 Age effect between EE and BI was only significant for younger Twitter users, with a standardised regression weight of β=0.232 and p-value of 0.042. while the older group had a standardised regression weight of 0.157, and a p-value of 0.990 indicating a non-significant effect. The difference between the two groups was also not significant, thus, H2.2 is not supported.

H3.2 Age was found to have a moderating effect between SI and BI, however, this effect was significantly negative for older Twitter users (β=-0.295 and p-value of 0.001), while the younger group had a weak standardised regression weight of 0.039, and a p-value of 0.744 indicating a non-significant effect. The difference between the two groups was also statistically significant (p-value=0.025), therefore, H3.2 is supported.

H4.2 Age had a moderating effect between FC and Use, where older Twitter users showed a stronger effect than younger ones, (β=0.616, and β=0.266 respectively). However, the difference between the age groups was not statistically significant, and therefore, hypothesis H4.2 is not supported.

H6.2 Age effect between SP and PE was only significant for the older Twitter users who showed a stronger and significant effect compared to the younger ones, β=0.595, p= 0.006 for the older group, and β=0.398, p=0.088 for the younger group.

However, the difference between the age groups was not statistically significant, and therefore, hypothesis H6.2 is not supported.

- For hypotheses H7.2-H11.2, age effect was not statistically significant across age groups nor the difference between them, therefore, H7.2-H11.2 are not supported.

J.2.2 Moderators effect for the Saudi sample

	Hypothesised path	Male (N=194)			Female (N=346)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.1	PE → BI	0.291	2.823	0.005	0.333	4.050	<0.001	n.s.
H2.1	EE → BI	0.180	1.984	0.047	0.173	2.728	0.006	n.s.
H3.1	SI → BI	0.231	2.406	0.016	0.163	2.120	0.034	n.s.
H4.1	FC → Use	0.519	6.014	<0.001	0.134	2.136	0.033	0.028
H6.1	SP → PE	0.367	3.846	<0.001	0.336	4.182	<0.001	n.s.
H7.1	SP → SI	0.179	1.876	0.061	0.080	1.142	0.253	n.s.
H8.1	PSP → BI	0.009	0.132	0.895	0.008	0.128	0.898	n.s.
H9.1	PSP → Use	-0.154	-2.267	0.023	-0.049	-0.819	0.413	n.s.
H10.1	PAB → BI	0.001	-0.004	0.997	0.017	0.300	0.764	n.s.
H11.1	PAB → Use	0.075	1.076	0.282	0.102	1.722	0.085	n.s.

Table J.4 Gender moderation hypothesis assessment (Saudi sample).

Gender hypotheses:

H1.1 Gender had a moderating effect between PE and BI, where female Twitter users showed a slightly stronger effect than males, β=0.333 for females, and β=0.291 for males. Nevertheless, this difference was not statistically significant, and therefore, H1.1 is not supported.

H2.1 Similarly, with EE, gender effect was found slightly stronger for males than for females, β=0.180 for males and β=0.173 for females. But this difference was not statistically significant, and thus H2.1 is not supported.

H3.1 Gender had a moderating effect between SI and BI, where contrary to the Anglophone sample, male Twitter users showed a stronger positive effect than females, β=0.231 for males, and β= 0.163 for females. However, this difference was not statistically significant, and therefore, H3.1 is not supported.

H4.1 Gender had a moderating effect between FC and use, where male Twitter users showed a stronger effect than females, β=0.519 for males, and β=0.134 for females. This difference in the regression weights between gender groups as also statistically significant (p-value= 0.028). Therefore, hypothesis H4.1 is supported.

H6.1 Gender had a moderating effect between SP and PE, where male Twitter users showed a slightly stronger effect than females, β=0.367 for females, and β= 0.

0.336 for males. However, this difference was not statistically significant, and therefore, H6.1 is not supported.

H9.1 Gender had a moderating effect between PSPA and Use, however, this effect was only significant for males, with a standardised regression weights of -0.154, and a p-value of 0.023. P-value for the effect on females did not imply any statistical significance (0.413). Nevertheless, this difference was not statistically significant, and therefore, H9.1 is not supported.

- For hypotheses H7.1, H8.1, H10.1 and H11.1, gender effect was not statistically significant across gender groups, nor the difference between them, therefore, they are not supported.

	Hypothesised path	<30 years (N=333)			>=30 (N=207)			$\Delta X^2/\Delta df$
		β	CR	p-value	β	CR	p-value	p-value
H1.2	PE → BI	0.340	3.765	<0.001	0.312	3.436	<0.001	n.s.
H2.2	EE → BI	0.086	1.284	0.199	0.304	3.844	<0.001	n.s.
H3.2	SI → BI	0.181	2.188	0.029	0.091	1.094	0.274	n.s.
H4.2	FC → Use	0.109	1.942	0.050	0.382	3.889	<0.001	0.020
H6.2	SP → PE	0.312	3.600	<0.001	0.426	4.264	<0.001	n.s.
H7.2	SP → SI	0.154	1.937	0.053	0.113	1.255	0.209	n.s.
H8.2	PSP → BI	0.033	0.587	0.557	-0.084	-1.168	0.243	n.s.
H9.2	PSP → Use	-0.090	-1.550	0.121	-0.092	-1.212	0.225	n.s.
H10.2	PAB → BI	-0.002	-0.037	0.970	0.072	1.001	0.317	n.s.
H11.2	PAB → Use	0.113	1.884	0.060	0.069	0.880	0.379	n.s.

Table J.5 Age moderation hypotheses assessment (Saudi sample).

Age hypotheses:

H1.2 Age effect between PE and BI was found slightly stronger for younger Twitter users than the older ones, β=0.340 for younger users, and β=0.312 older users. Nevertheless, this difference was not statistically significant, and therefore, H1.2 is not supported.

H2.2 Age had a moderating effect between EE and BI, however, this effect was only significant for older Twitter users, with a standardised regression weight of 0.304 at p-value < 0.001 level, while the younger group had a very weak standardised regression weight of 0.086, and a p-value of 0.199 indicating a non-significant effect. However, this difference was not statistically significant, and therefore, H2.2 is not supported.

H3.2 Age had a moderating effect between SI and BI, however, this effect was only significant for younger Twitter users, with a standardised regression weight of 0.181 and p-value of 0.029. while the older group had a weak standardised regression

weight of 0.091, and a p-value of 0.274 indicating a non-significant effect. Nevertheless, this difference was not statistically significant, and therefore, H3.2 is not supported.

H4.2 Age had a moderating effect between FC and use, however, this effect was only significant for older Twitter users, with a standardised regression weight of 0.382 and p-value <0.001. while the younger group had a standardised regression weight of 0.109, and a p-value of 0.053 indicating a non-significant effect. Nevertheless, this difference in the regression weights between age groups was statistically significant (p-value= 0.020). Therefore, H4.2 is supported.

H6.2 Age had a moderating effect between SP and PE, where older Twitter users showed a stronger effect than the younger ones, β=0.426 for older users, and β= 0. 0.312 for younger users. However, this difference was not statistically significant, and therefore, H6.2 is not supported.

- Similar to the Anglophobe sample, the age effect for the hypotheses H7.2-H11.2 was not statistically significant across age groups nor the difference between them, therefore, H7.2-H11.2 are not supported.

J.2.3 Interaction hypotheses

Hypotheses	Hypothesised path	Anglophone		SA		$\Delta X^2/\Delta df$
		β	p-value	β	p-value	p-value
H12.1	SP×PAB → PE	-0.340	0.000	-0.019	0.659	n.s.
H12.2	SP×PAB → SI	-0.215	0.002	-0.027	0.530	n.s.
H12.3	PE×PAB → BI	-0.366	0.000	0.070	0.235	n.s.
H12.4	EE×PAB → BI	-0.106	0.185	-0.120	0.014	n.s.
H12.5	SI×PAB → BI	0.092	0.262	0.051	0.364	n.s.
H12.6	FC×PAB → Use	-0.373	0.000	-0.117	0.007	n.s.
H12.7	BI×PAB → Use	-0.296	0.001	-0.126	0.010	n.s.

Table J.6 Interaction hypotheses assessment for the Anglophone and Saudi models.

Anglophone sample:

H12.1 The interaction effect of PAB on the relationship between SP and PE was found negative and statistically significant (β=-0.340, p<0.001). Therefore, PAB significantly dampens the relationship between SP and PE. Consequently, H12.1 was supported.

H12.2 The interaction effect of PAB on the relationship between SP and SI was found negative and statistically significant (β=-0.215, p<0.001). Therefore, PAB significantly dampens the relationship between SP and SI. Thus, H12.2 was supported.

H12.3 The interaction effect of PAB on the relationship between PE and BI to continue to use Twitter was found negative and statistically significant (β=-0.366, p<0.001). Therefore, PAB significantly dampens the relationship between PE and BI. Therefore, H12.3 was supported.

H12.4 The interaction effect of PAB on the relationship between EE and BI was not found to be statistically significant (β=-0.106, p=0.185). Therefore, H12.4 was not supported.

H12.5 The interaction effect of PAB on the relationship between SI and BI to continue to use Twitter was not found to be statistically significant (β=0.092, p=0.262). Therefore, H12.5 was not supported.

H12.6 The interaction effect of PAB on the relationship between FC and the actual use of Twitter was found negative and statistically significant (β=-0.373, p<0.001). Therefore, PAB significantly dampens the relationship between FC and Use. Consequently, H12.6 was supported.

H12.7 The interaction effect of PAB on the relationship between BI and the actual use of Twitter was found negative and statistically significant (β=-0.296, p<0.001). Therefore, PAB significantly dampens the relationship between BI and Use. Therefore, H12.7 was supported.

Saudi sample:

H12.1 The interaction effect of PAB on the relationship between SP and PE was found very weak and not statistically significant (β=-0.019, p=0.659). Therefore, H12.1 was not supported.

H12.2 The interaction effect of PAB on the relationship between SP and SI was also found weak and not statistically significant (β=-0.027, p=0.530). Therefore, H12.2 was not supported.

H12.3 The interaction effect of PAB on the relationship between PE and BI to continue to use Twitter was found weak and not statistically significant (β=-0.07, p=0. 235). Therefore, H12.3 was not supported.

H12.4 The interaction effect of PAB on the relationship between EE and BI to continue to use Twitter was found negative and statistically significant (β=-0.120, p=0.014). Therefore, PAB significantly dampens the relationship between EE and BI, and consequently H12.4 was supported.

H12.5 The interaction effect of PAB on the relationship between SI and BI to continue to use Twitter was not found to be statistically significant (β=0.051, p=0.364). Therefore, H12.5 was not supported.

H12.6 The interaction effect of PAB on the relationship between FC and the actual use of Twitter was found negative and statistically significant (β=-0.117, p=0.007).

Therefore, PAB significantly dampens the relationship between FC and Use. Consequently, H12.6 was supported.

H12.7 The interaction effect of PAB on the relationship between BI and the actual use of Twitter was found negative and statistically significant (β=-0.126, p=0.010). Therefore, PAB significantly dampens the relationship between BI and Use. And consequently, H12.7 was supported.

Appendix K Ethics Forms for the Follow-up Interviews

K.1 Consent Form (English)

UNIVERSITY OF Southampton

CONSENT FORM (*V.1*)

Study title: Technology Acceptance and Use with Risk: Twitter and Antisocial Behaviour Problem

Researcher name: Nora AlMuhanna

Supervisors: Wendy Hall and David Millard

Ethics reference: ERGO/FPSE/23093

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (dated 15 July 2016 V.1) and have had the opportunity to ask questions about the study. ☐

I agree to take part in this research project and agree for my data to be used for the purpose of this study ☐

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected ☐

I agree to record my voice during my participation in this study ☐

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name) ……

Signature of participant……

Date……

[15 July 2016] [V. 1]

K.2 Consent Form (Arabic)

UNIVERSITY OF Southampton

نموذج موافقة على المشاركة

عنوان الدراسة: تقبل واستخدام التكنولوجيا: مشكلة السلوك المسيء في تويتر

ترخيص لجنة أخلاقيات البحث: ERGO/FPSE/23093

من فضلك قم بتأشير المربعات التالية إن كنت موافق عليها:

☐ قمت بقراءة وفهم ملف معلومات المشاركة (المؤرخ 15 يوليو 2016) وكانت لدي الفرصة للسؤال عن الدراسة.

☐ أوافق على المشاركة في هذه الدراسة وعلى أن تستخدم المعلومات المقدمة مني لغرض هذه الدراسة.

☐ أعلم أن مشاركتي تطوعية بالكامل ولي الحق بالانسحاب في أي وقت بدون تقديم أي مبررات وبدون أن تتأثر حقوقي قانونياً.

☐ أوافق على تسجيل صوتي في حالة المقابلة الشخصية أو الهاتفية.

حماية المعلومات

أعلم بأن المعلومات التي سيتم جمعها مني خلال الدراسة سيتم تخزينها في أجهزة حاسب محمية بكلمة مرور و سوف تستخدم لغرض الدراسة فقط، جميع المعلومات التي سيتم جمعها لن تحتوي على أي معلومات شخصية و ستنسب لهوية مجهولة.

الاسم (اختياري) .....

التوقيع .....

التاريخ .....

[15 يوليو 2016] [النسخة 1]

K.3 Participant Information Sheet (English)

UNIVERSITY OF Southampton

Participant Information Sheet

Study Title: Technology Acceptance and Use with Risk: Twitter and Antisocial Behaviour Problem

Researcher: Nora AlMuhanna **Ethics number**: ERGO/FPSE/23093

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

This research aims to investigate the impact of online antisocial behaviour on the Web, more specifically, on Twitter as social networks. Such investigation would help us to gain better understanding about this phenomena and design better systems. This research is under the direction of the School of Electronic and Computer Science, University of Southampton, UK, and is fully funded by Saudi Arabian Cultural Bureau.

Why have I been chosen?

You have previously participated in an online questionnaire that focuses on understanding users' behaviour towards Twitter, at the end of the questionnaire, you left your email address and agreed to possibly participate on a follow-up interview, therefore, you are invited to participate in the study because your opinion will help this research to gain better understanding.

What will happen to me if I take part?

I will first ask you to sign a consent form, and after that I will start to collect data from you through an interview that involve few open questions about the research problem. I will record your voice during the interview only, you also have to choice to give a written response to the interview questions if you prefer.

Are there any benefits in my taking part?

This research is not designed to help you personally, but your feedback will help me to gather useful information for my research.

Are there any risks involved?

No.

Will my participation be confidential?

Yes. Your information will be stored and used on secure systems and will be used for the purpose of this study only, your responses are voluntary, and will not be linked to your name or to your email. All responses will be compiled and analysed together.

What happens if I change my mind?

You have the right to terminate your participation in the research at any stage, you do not need to give any reasons, and without your legal rights being affected. Your data will be deleted directly if you decide to withdraw at any time.

What happens if something goes wrong?

In the unlikely case of concern or complaint, please contact Research Governance Manager (02380 595058, rgoinfo@soton.ac.uk).

Where can I get more information?

For further details, please contact either myself or my study supervisors, Professor Wendy Hall and Dr David Millard.

Nora Almuhanna (na8g14@soton.ac.uk)

Wendy Hall (wh@ecs.soton.ac.uk)

David Millard (dem@ecs.soto.ac.uk)

Would you like to take part in this research?

□ Yes, I agree to take part in this research and I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected.

□ No, I disagree

[15 July 2016] [Version 1]

K.4 Participant Information Sheet (Arabic)

UNIVERSITY OF Southampton

دليل المعلومات للمشاركين في الدراسة

عنوان الدراسة: تقبل واستخدام التكنولوجيا: مشكلة السلوك المسيء في تويتر

رقم تصريح لجنة الأخلاقيات: ERGO/FPSE/23093

يرجى قراءة هذه المعلومات بعناية قبل اتخاذ القرار بالمشاركة في هذا البحث. إذا كنت سعيدا بالمشاركة أرجو الرد على البريد الالكتروني لتوضيح موافقتك.

ما هو هدف البحث؟

يهدف هذا البحث لدراسة تأثير السلوك السيء في الإنترنت على استخدام الشكبات الإجتماعية، وفي تويتر بالتحديد. دراسة هذا التأثير يساعدنا على فهم هذه الظاهرة بشكل أوسع، وتصميم نظم أفضل مستقبلاً. هذا البحث تحت إشراف كلية الالكترونيات وعلوم الحاسب، جامعة ساوثهامبتون، المملكة المتحدة.

لماذا تم اختياري؟

قمت سابقاً بالمشاركة في استبيان يخص هذه الدراسة، في نهاية الاستبيان قمت بترك بريدك الالكتروني و وافقت على إمكانية مشاركتك في مقابلات لاحقة تخص موضوع البحث ولذلك تمت دعوتك لهذه الدراسة بالإضافة لأن رأيك سيساعدنا على الحصول على فهم أفضل.

ما الذي سيحدث إذا شاركت؟

في البداية أرجو منك تأكيد موافقتك بالرد على البريد الالكتروني، بعد ذلك سأقوم بإرسال أسئلة المقابلة عن طريق البريد الالكتروني، ويمكنك الإجابة عليها كتابياً والرد عن طريق البريد الالكتروني.

هل هناك أي فائدة لي من المشاركة؟

لم يتم تصميم هذا البحث لمساعدتك شخصيا، ولكن إجاباتك كمستخدم لتويتر سوف تساعدنا لجمع معلومات مفيدة للبحث.

هل هناك أي مخاطر التي تنطوي على مشاركتي؟

لا.

هل ستكون مشاركتي سرية؟

نعم بالطبع. وسيتم تخزين المعلومات الخاصة بك واستخدامها على أنظمة آمنة وسوف تستخدم لأغراض هذه الدراسة فقط، مشاركتك تطوعية وليست إجبارية، وسيتم تجميع جميع الردود وتحليلها معاً كمجموعة.

ماذا سيحدث إن قمت بتغيير رأيي؟

لديك الحق في إنهاء مشاركتك في البحث في أي مرحلة، ولن تحتاج إلى إعطاء أي مبرر، وحقوقك القانونية لن تتأثر. سيتم حذف البيانات الخاصة بك مباشرة إذا قررت الانسحاب في أي وقت.

ماذا إن حدث خطأ ما؟

من غير المرجح أن يحدث أي خطأ، وبإمكانك الاتصال بمدير إدارة البحوث (rgoinfo@soton.ac.uk 595058 02380)

أين يمكنني الحصول على مزيد من المعلومات؟

للمزيد من التفاصيل، يرجى الاتصال إما بالباحثة أو بالمشرفين.

الباحثة (na8g14@soton.ac.uk)
وندي هول (wh@ecs.soton.ac.uk)
ديفد ميلارد (dem@ecs.soto.ac.uk)

[15 يوليو 2016] [النسخة 1]