

POSTERS VERSUS LURKERS: IMPROVING PARTICIPATION IN ENTERPRISE SOCIAL NETWORKS THROUGH MANAGEMENT INTERVENTIONS

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Abstract

Enterprise social networks (ESNs) are gaining prominence in contemporary organisations. A recurring problem for ESN community managers is maintaining a sustainable level of active participation by community members. ESNs often fail if there are few or no contributors of content. In such a scenario, ESN community managers need to apply intervention strategies in order to enhance users' participation.

In ESN communities, the largest user group is those who only read others' content (i.e. lurk), while members who actively create content (i.e. post) constitute the smallest user group. Understanding the behaviour of poster and lurker user groups, as well as the key perceived benefits that encourage posting and the possible barriers that cause members to lurk, is crucial in addressing the problem of user participation in ESNs. However, limited knowledge exists on the key drivers that cause users to either lurk or post, and even less knowledge exists on the management interventions that can improve participation across dissimilar groups in ESNs.

This research investigated the phenomenon of underutilised ESNs and developed a model that facilitates an understanding of the socio-psychological processes governing employees' participation following the application of three commonly-used management interventions (i.e. promotional messages, management pressure techniques and social media policy (SMP)). The study was built on established theories in the literature. The social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution were exploited to identify the key motivations for users' participation in four dimensions: the extrinsic benefits and intrinsic benefits that encourage posting, and the extrinsic costs and intrinsic costs that encourage lurking.

The study examined three commonly-used interventions to understand how they influence different users' beliefs and subsequent participation. We then turned to two behavioural change theories from social psychology, namely, the elaboration likelihood model (ELM) (Petty et al. 1986) to examine promotional messages, and social influence theory (Kelman 1958) to examine management pressures techniques. Lastly, we drew on the policy-behaviour compliance literature to examine the SMP.

We tested our model and collected data from 366 members in two Google+ corporate communities in a large Australian retail organisation. The findings demonstrate the general viability of the proposed model in explaining: (i) the cost and beneficial determinants of lurking/posting behaviour; and (ii) the positive and negative influences of already-implemented interventions on lurkers' and posters' beliefs and subsequent participation.

The research makes several contributions. First, it provides an empirically validated theoretical model that improves the understanding of the socio-psychological processes governing employees' participation in ESNs in the presence of management interventions. Through the theoretical lens of social influence theory (Kelman 1958), the study shows that compliance-based influences (i.e., management pressure techniques) can be extended to the ESN context. In addition, through the theoretical lens of the ELM (Petty et al. 1986), the study extends the concept of persuasive influence in IS research and demonstrates that promotional messages affect posters' and lurkers' beliefs about participation in ESNs. Second, the study identifies that posters and lurkers are motivated and hindered by different factors. In turn, our research contributes a more detailed understanding of how and why corporate staffs participate (or do not participate) in social networks. Third, the study demonstrates that the three commonly-used management interventions do in fact affect posters' and lurkers' salient beliefs about participation in ESNs. It shows how lurking and posting behaviours change when these specific interventions are applied. Forth, the study establishes that management interventions do not – always – yield the results that ESN community managers hope for. Rather, some interventions have an adverse effect in that they increase lurkers' perceived costs of participation. Finally, the study has several implications for ESN community managers who are recommended to alter the design and content of interventions in order to position the ESN as a favourable environment for lurkers.

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List of Abbreviations

ESNs: Enterprise Social Networks

ELM: Elaboration Likelihood Model

SET: Social Exchange Theory

IMG: Image

INT: Intrinsic Interest

FUL: Fulfillment

LOKP: Loss of Knowledge Power

AQ: Argument Quality

SC: Source Credibility

SMP: Social Media Policy

VMP: Verbal Management Pressure

Non-VMP: Non-Verbal Management Pressure (rules)

PLS: Partial Least Square

SEM: Structural Equation Modelling

SPSS: Statistical Product and Service Solutions

R²: R-squared

QUT: Queensland University of Technology

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

QUT Verified Signature

Signature:

Date:

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2016

List of Publications

Refereed Conference Proceedings

- **Alarifi**, A., and Sedera, D. 2013. "Enhancing Enterprise Social Network Use: A Control Theory Study" in the 24th Australasian Conference on Information Systems (**ACIS**): Melbourne, Australia.
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Journal Papers

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Chapter 1: Introduction

This chapter provides a synopsis of the thesis, beginning with the research background and motivations followed by the research focus. It then presents the questions and objectives this research sets out to achieve. The significance of this research is discussed in terms of its theoretical and practical contributions. Next, the chapter provides an overview of the research design. The last section outlines the remaining chapters of the thesis.

1.1 Research Background and Motivations

Organisations are increasingly investing in creating an open collaborative culture to enhance communication, innovation, experience and knowledge sharing among employees (Richter et al. 2013b). To help achieve these objectives, a new class of information technology, commonly known as enterprise social networks (ESNs), has gained prominence in contemporary organisations (Qualman 2012). An ESN is a private social network (e.g. Yammer, Google+ corporate communities, IBM's Connection, Socialcast, Jive, and Chatter) that facilitates short message communication and the establishment of social connections within organisations (David et al. 2013; Zhao et al. 2009). The emergence of ESNs has been considered a paradigm shift with respect to internal communications as it allows organisations to create a space in which co-workers can connect, collaborate and exchange information (Zhao et al. 2009). A detailed discussion on ESNs is forthcoming in Chapter 2 (Section 2.1.3).

Although social networks like Facebook and Twitter are highly utilised in the public domain, ESNs remain underutilised in the work environment, with recent studies showing that many ESN initiatives struggle to gain momentum and wider adoption by users (Kügler et al. 2014; Malinen 2015; McAfee 2009). In ESNs, one of the most fascinating yet most pressing challenges is the network's dependency on members to create content. If there are few or no contributors of content, the online community will eventually fail (Matzat et al. 2014). It seems intuitively obvious that a silent community undermines any benefits from ESNs. A recent study by Gartner estimated that through 2015, 80 percent of ESNs will fail due to unengaged employees (Gartner. 2013).

Practitioners (e.g. Adamson (2014), Perez (2014) and Pisoni (2013)) have proposed interventions to enhance user participation in ESNs such as promotional messages and social media policy (SMP). However, these suggestions require an appropriate empirical and theoretical base. To enhance ESN members' participation, understanding the types of interventions to use (e.g. promotional messages) and the best ways to implement interventions is an attractive research area for both academics and practitioners particularly when the technology use is voluntary in nature (Kane et al. 2014). Research on management interventions to promote users' online participation in a work setting is still scarce (Schneider et al. 2013). We know very little about outcomes of these interventions in prompting users' online participation.

For decades, behavioural researchers have studied employees' behavioural scripts, norms and motivations across many disciplines. Understanding how the behavioural and psychological aspects influence employees in their everyday tasks is a step forward to help organisations achieve their goals. In the Information Systems domain, many studies have been undertaken to determine why, how and in what conditions employees accept, use or resist a technology (Sykes et al. 2009; Venkatesh 2000; Venkatesh et al. 2008a). Similarly, a better understanding of employees' use (or not use) of ESNs will contribute to the successful implementation of these platforms.

Lurkers are the silent members of an online community who usually do not contribute any content (Nonnecke et al. 2000). At the same time, they constitute the vast majority of any online community (Sun et al. 2014). According to the "90-9-1" principle of collaborative websites, 90% of the members only read others' content (i.e. lurk), 9% of the members edit the content, and 1% of the members actively create new content (i.e. post) (Arthur 2006). This study defines lurkers as *members who did not create any content (post or comment) in the last month*. In contrary, posters are defined as *members who posted or commented at least once in the last month* (the lurking and posting threshold is discussed in more detail in Sections 2.3.1 and 3.2). Content creation (i.e. posting) has been acknowledged as a crucial component for the sustainability of any online community, and researchers have therefore focused on the behaviour of posters and 'how' or 'why' they use or share their knowledge on ESNs (e.g. Antonius et al. (2014), Beck et al. (2014b) and Kügler

et al. (2012)); however, the understanding of lurkers' motives has not been widely explored and remains a niche area in research (Lai et al. 2014; Malinen 2015).

In online communities, user motivations to participate differ across user groups (Zhang et al. 2013) and therefore exert varying degrees of influence on the participation behaviour. In a survey conducted in online forums in Korea, Koh et al. (2007) found that posters and lurkers were motivated by different reasons. In addition, strategies to influence users to participate could have different outcomes in different user groups. For instance, interventions to enhance user participation (e.g. written or spoken management pressure techniques) might not yield the hoped-for results because strategies that encourage lurkers to be more active may not translate into posters' willingness to continue being active posters. Such mixed effects have been largely ignored in the existing literature because of the independent investigation of lurking and posting behaviours (Park et al. 2014).

The phenomenon of underutilised ESNs while management is implementing interventions to enhance user participation remains unaccounted for. Beyond the motivations of employees' initial acceptance of the ESN, we have very little understanding of why users then post or lurk. Accordingly, in the context of ESNs, this study contributes to the body of knowledge by presenting and empirically validating a model to understand lurkers' and posters' key motives and the influence of management interventions on users' key motives and participation behaviour. The following section explains the research focus in greater detail.

1.2 Research Focus

The motivations of lurkers and posters differ across a range of environmental, organisational, contextual, individual and technological factors. In this research, we focus on the key individual-level factors of the two user groups. Apart from practicality aspects such as the time and resources available to the study, there are other reasons for focusing on the individual-level factors. First, by definition, an information system is a socio-technical system that includes people, processes and information with the purpose of enabling organisations in attaining their business objectives (Huber et al. 2007; Laudon et al. 2012; Robey et al. 2013). IS researchers have repeatedly emphasised the pivotal role of individuals' use of an IS (Burton-Jones et al. 2006) in determining its success or failure (Karahanna and Straub 1999).

In addition, ESNs are voluntary settings which mean understanding how users feel (e.g., gains, concerns) about participating is crucial to successful ESN implementation in organisations.

Second, compared to other commonly used enterprise technologies in organizations, an ESN is rather easy and intuitive to use (Zhang et al. 2010). Some technological factors (e.g. ease of use, compatibility) may not be of significance because members are already familiar with this class of social networks such as Twitter (Von Krogh 2012). Third, the literature suggests that unless users see that the perceived benefits outweigh the perceived costs of participating; online communities remain underutilised (Beck et al., 2014b). This highlights the importance of investigating the extent of the influence of those perceived benefit and cost factors, particularly, in driving employees' lurking behaviour. For example, the antecedents (cost factors) of lurking behaviours are crucial to understanding the low participation problem in corporate social software (Yan et al. 2013a). However, the key antecedents of posting and lurking behaviours in ESNs are still vague and need further exploration (Sun et al. 2014). In this research, we employ the social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution to identify the key individual-level factors to participate in an ESN (refer to Section 2.4 for further detail on the theoretical background of the study).

Understanding how interventions influence employees' use of the IT artefact has significant managerial implications and increases the potential to achieve IT implementation success (Venkatesh et al. 2008a). This research claims that lurkers' and posters' participation in the ESN is shaped not only by their individual factors, but by organisational stimuli as well. A study of intra-organisational blog usage by Wattal et al. (2010) indicates that examining management interventions to enhance employees' use of social software is crucial as these platforms are subjected to organisational rules and procedures. In addition, Wisdom et al. (2014), in their review of the literature on employees' adoption of innovations, emphasise that in order to have an effective theoretical understanding, management factors that either facilitate or impede usage should be considered. Among the key interventions that are suggested in the literature to impact on enterprise social software, we examine promotional messages, management influences and SMPs because they have been identified as the most commonly-used interventions to influence employees to

participate in ESNs (All 2014; Qualman 2012; Yuan et al. 2013). This research argues that the understanding of which interventions have more effect and which interventions have less effect on the motivation–participation relationship can help organisations form a better strategy to promote user participation. To date, we know very little about ‘what’ and ‘how’ management interventions impact users’ perceptions and/or users’ online participation.

Aligning the employees’ behaviour toward the organisation’s goals has been always a difficult task for management (Kirsch 1996; Soh et al. 2011). Scholars in the field of behaviour change research stress that changes in individuals’ beliefs and (consequent) behaviours undergo two key processes, namely, persuasion-based and compliance-based influence processes (Wang et al. 2013). In this research, we employ two behavioural change theories from social psychology, namely, the elaboration likelihood model – ELM – (Petty et al. 1986) and social influence theory (Kelman 1958), to examine persuasion-based interventions (i.e., promotional messages) and compliance-based interventions (i.e., management pressure techniques), respectively. We, also, examined the influence of a governance tool (i.e., Social Media Policy). We discuss the theoretical background of the study in more detail in Section 2.4.

1.3 Research Questions

Despite the growth in number of ESNs in contemporary organisations (Kane 2015), very few organisations have been successful in motivating the long-term, active participation of members in these platforms. An important objective of this research is to identify the key factors that drive ESN members to either lurk or post after they have already been introduced to the platform. Guided by social exchange theory (Blau 1964) and Kankanhalli et al.’s (2005) model of knowledge contribution, we develop an extended model of employees’ motivations to participate, categorised in two dimensions (i.e., cost factors that cause members to lurk and benefit factors that cause members to post). As such, this research explores the following research question (RQ1):

RQ1: What are the salient drivers of lurkers’ and posters’ participation in ESNs?

In organisations’ efforts to promote the sustainable use of an ESN, a number of interventions (i.e. promotional messages, SMPs, and management pressure techniques) are put in place to encourage employees to participate in the ESN.

However, we have very limited knowledge of whether these interventions are actually encouraging members to contribute or, worse, are turning off posters from engaging in the community. Consequently, the second objective of this research is to assist decision makers (particularly ESN community managers) to know whether these interventions can directly or indirectly enhance user participation and the extent of that influence. The study investigates three types of interventions that are commonly used to encourage user participation: (i) a persuasion-based intervention (i.e. promotional messages) that can influence users' beliefs about the ESN; (ii) a compliance-based intervention (i.e. management pressure techniques) that can directly influence users' participation behaviours in the ESN; and (iii) a governance tool (i.e. SMP) that guides users' beliefs about the ESN. As such, this research explores the following research question (RQ2):

RQ2: How do promotional messages, management pressure techniques and SMP influence employees' perceptions of the ESN and their posting and/or lurking behaviours?

In summary, these research questions were developed to fill the gap in empirical studies in five particular areas. First, the current implementations of ESNs focus mainly on the behaviours of posters, without considering lurkers' motives and usage behaviours (Lai et al. 2014; Malinen 2015). There is limited research on the key perceived benefits and possible barriers to content creation in ESNs. Second, there is a need to look beyond the employees' initial acceptance of the ESN to the next phase which has been largely under-investigated (Zhang et al. 2013). Third, the extant literature on interventions to enhance user participation largely pre-dates the creation of ESNs. Web 2.0 platforms (e.g. ESNs) are different from traditional online communities (e.g. bulletin board systems, discussion lists and online forums) (Hinchcliffe et al. 2012; Qualman 2012). Fourth, understanding how management interventions (employed to enhance employees' participation) influence both posting and lurking behaviours and, concomitantly, understanding the influence processes that shape ESN users' beliefs and behaviours is still a niche research area (Park et al. 2014). Fifth, there is a need to provide practitioners with the theoretical base and empirical evidence on the effectiveness of the most common interventions to enhance user engagement in ESNs (Schneider et al. 2013).

1.4 Research Significance

This research has significant implications. From the theoretical perspective, it provides an empirically validated theoretical model that helps in understanding the

socio-psychological processes governing employees' participation in ESNs in the present of three management interventions. There is a theoretical deficiency in explaining employees use of corporate social software (Kügler et al. 2015a). This research responds to calls by scholars in this area (e.g., Ren et al. (2012), Aral et al. (2013), Kane et al. (2014) and Kügler et al. (2015b)) for further research to understand "how and why people use (or do not use) social networks and how this use results in performance variation between users" (Kane et al. 2014, p. 281). Previous research has focused on users who speak up and are visible to others (i.e. posters); however, there has been little research into lurkers (Lai et al. 2014). The findings of this research will provide a better understanding of employees' posting and lurking behaviours in ESNs as well as insights into whether or not posters and lurkers are motivated and hindered by different factors. For example, an important benefit of investigating lurkers user group is identifying key predictors of lurking in ESNs and how this group respond to or perceive the management interventions aim to boost users participation. In addition, the research will provide insights into whether or not posters and lurkers are motivated and hindered by different factors. For instance, do users' motivations to post are slightly different (or completely opposite) from their motivations to lurk.

The study further develops the concepts of persuasive and compliance based influences in IS research. Through the theoretical lens of social influence theory (Kelman 1958) and the ELM (Petty et al. 1986), the study validates and evidences whether or not persuasion-based intervention (promotional messages) or compliance-based interventions (written or spoken management pressure techniques) can influence employees' beliefs and posting and lurking behaviours in ESNs. In addition, the study investigates a governance tool (i.e., social media policy - SMP) on users' beliefs of the ESN.

As suggested by researchers such as Hong et al. (2006) and Venkatesh and Bala (2008a), in order to increase the explanatory power of the research model, this research study investigates a specific class of ESNs and the most widely used and popular option (Qualman 2012), that is, the function of microblogging services. To the best of the author's knowledge, there has not been an empirical examination of persuasive-based and compliance-based management interventions and their analogous effects on posters' and lurkers' perceptions and participation behaviours in

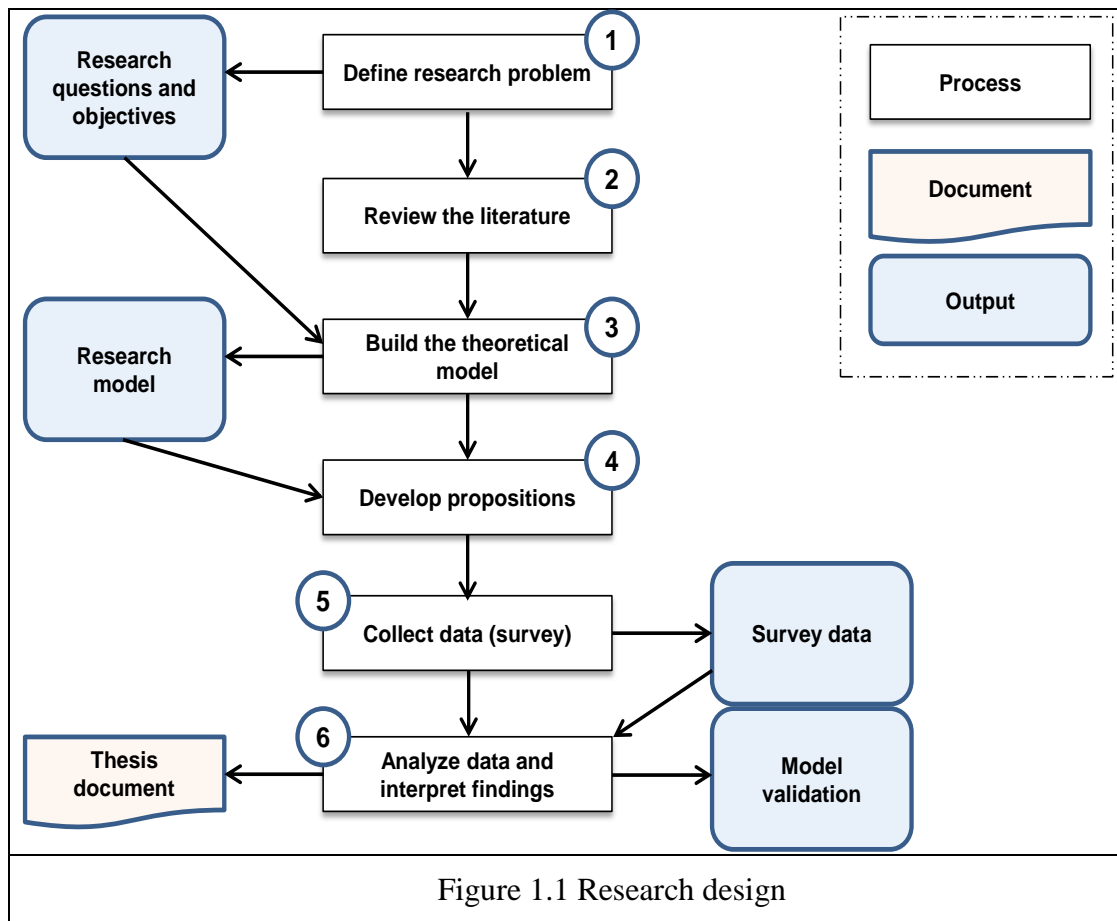
corporate use of social software. The study provides the first empirical examination of social media policy in corporate use of social networks.

In terms of the practical contributions, the study benefits practitioners by enabling them to identify the direction and level of influence of already implemented interventions with the aim to boost employees' participation. By taking the perspective of ESN community managers, the study provides insights that could contribute to better corporate-wide strategies to improve user participation. As this study looks at the system live implementation, it supports community managers to identify and manipulate the appropriate interventions to maintain users' participation. For example, if these interventions are promotional messages, community managers can alter the message source, content or design to make it more appealing to the ESN members. Finally, this study contributes in bridging the gap between the practical application of best practices and scientific research by providing a theoretical model and empirical evidence to help community managers better understand why, how and in what conditions employees participate in ESNs.

1.5 Research Design Overview

The study employed a quantitative approach and chose an observational, cross-sectional survey design (Straub et al. 2004b). As illustrated in Figure 1.1, the research design including the data collection process entailed six steps. After the research problem was defined and the research questions were identified (Chapter 1), a comprehensive cross-disciplinary literature review was performed (Chapter 2). Informed by several theoretical frameworks and the literature on online participation, extrinsic and intrinsic motivations, behaviour change, and lurking behaviour, the research model was constructed and four propositions were developed (Chapter 3). The measurement items used in the study were adopted mainly and wherever possible from among the previously validated measures in the literature. A survey was built to validate the study's model and test the propositions (Chapter 4). Based on the data analysis, findings addressing the research objectives were obtained (Chapter 5).

In order to validate the survey instrument, 11 pre-tests were conducted, followed by a pilot test with 50 participants of an ESN (i.e. a Google+ corporate community). Finally, the main survey was launched in a firm-hosted ESN as the final validation. The research design is discussed in more detail in Chapter 4.



1.6 Thesis Outline

The thesis is presented in six chapters. This first chapter provide an introduction to the thesis. Chapter 2 comprises four sections. Section 2.1 and 2.2 provide an overview of the literature on the corporate use of social software and an identification of the gaps in ESN research in particular. Section 2.3 is a review of the literature on lurking and posting behaviours in online communities and the working definition of the ‘lurking’ phenomenon. Lastly, section 4 presents the theoretical lenses employed to inform the research conceptual model, namely, the social exchange theory (Blau 1964), Kankanhalli et al. (2005) model of knowledge contribution, the ELM (Petty et al. 1986), the social influence theory (Kelman 1958) and policy–behaviour compliance literature.

Chapter 3 is a detailed description of the development process of the research conceptual model and the four propositions. To guide the discussion in this chapter, the proposed research conceptual model is presented. Then, the second section explains the use of lurking and posting behaviours in ESNs as the dependent variable. Guided by social exchange theory (Blau 1964) and Kankanhalli et al.’s

(2005) model of knowledge contribution, the third section identifies, justifies and discusses the relationships (Proposition-1) of four relevant parameters (as independent variables) on lurking/posting behaviour in an ESN. The fourth section discusses the three commonly-used management interventions (promotional messages, management pressure techniques and SMPs) aim to motivate users' participation (Propositions 2, 3 and 4).

Chapter 4 presents a detailed account of how the research model was empirically tested. The first section provides a background to the survey method and a justification for the use of this method in the study's research context. The second section provides a detailed discussion of the cross-sectional online survey method. The work by Preece and Nonnecke (2000) (2001) (2004) on understanding the reasons for lurking is well acknowledged in the literature. Preece and Nonnecke found "just reading/browsing is enough" to be the dominant reason for lurking in online discussion communities. Despite the significance of this reason in explaining why users lurk, there is, to the best of the author's knowledge, no research that provides a conceptualisation of this reason. Thus, the present research conceptualised "perceived fulfilment" as a new construct (discussed in detail in Chapter 4, Section 4.2.1.4). The new construct's measures were created and then validated before inclusion in the survey instrument. Next, the chapter discusses the sample selection and some general guidelines for the survey design. The chapter then concluded by describing the content validation procedures and the pre-test and pilot tests that were employed before proceeding with the full-scale survey.

Chapter 5 covers the process undertaken to analyse the data collected using the survey instrument (Chapter 4) for the purpose of validating the study's research model (Chapter 3). The chapter begins with an overall discussion of the data analysis design, followed by an overview of the data preparation procedures. It then presents the descriptive statistics about the data. The next section examines the reliability and validity of the measurement models before testing the research propositions. The last section discusses the research findings.

Finally, Chapter 6 concludes the thesis by summarising this research and the theoretical and practical contributions of the study, particularly in relation to forming better strategies to promote user participation. The limitations of the research are outlined, and recommendations for further work are suggested.

Chapter 2: Literature Review

This chapter provides a comprehensive literature review relevant to the research topic. The chapter begins by introducing the enterprise social network (ESN) and its characteristics and usage compared to other online communities (e.g., public social networks [PSNs]). In order to position our research, we provide a critical review of the extant literature on ESNs to identify the gaps in our current theoretical understanding of use (or non-use) in ESNs. Next, we discuss the phenomenon of lurking and posting in online communities, followed by a review of the industrial and academic research on interventions that aim to improve user participation in online communities. In the same section, we review several theoretical frameworks on behavioural change in the literature. The last section provides a synthesis of this chapter.

2.1 Enterprise Social Networks: An Overview

2.1.1 Social networks

Social networks are “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” Boyd and Ellison (2007a, p.211). Social networks are considered to be rich information resources that provide significant social capital support (Ellison et al. 2013). They are Web 2.0-based applications that depict core dynamic capabilities such as interactivity (i.e., the generation, consumption and sharing of content by users), modality (i.e., the convergence of audio, video and textual streams), voluminous content creation, high visibility (i.e., high public exposure in real time) and really simple syndication (RSS) (i.e., the instantaneous updating of content) (Bradley et al. 2011; Coyle et al. 2012; Hinchcliffe et al. 2012; Kang et al. 2013; Kaplan et al. 2010; Kietzmann et al. 2011; OReilly 2007; Qualman 2012). With other unique features like availability (i.e., twenty-four hours a day, seven days a week), multiple platforms support, direct interaction (e.g., tweeting, re-tweets, ‘clicking likes’, or commenting between users and groups) at no cost, among many others (Macnamara et al. 2012; Qualman 2012), social networks have “dramatically altered how people communicate, with one

another and they are now mainstream tools of communication for individuals in all age groups” (Cardon et al. 2014). Therefore, the use of social networks has been gaining much attention from academics and practitioners (Ellison et al. 2013; Vodanovich et al. 2010).

Social networks create mass user bases, which are said to be growing more than three times the overall growth rate of the Internet (Koch et al. 2012; Muscat 2012). The growing engagement with and dependency on social media tools is driving organisations to increase their spending on social software. In the United States alone, business spending on social software is expected to reach \$4.6 billion in 2016, despite the recent world recession (Perez 2012).

2.1.2 Enterprise social networks

Organisations are increasingly using social networks (i.e., PSNs and ESNs) in their daily operations to enhance their operations and business processes (Qualman 2012). The two forms of organisational usage are: (i) internal purposes like communicating, collaborating and sharing information with employees (using an ESN), and (ii) the more commonly studied, external purposes such as sensing and responding to the needs of customers (using a PSN like Facebook) (Bunce et al. 2012). However, academic research on the internal use of social networks is still scarce, with nearly all academic research about social media “confined to public social networking platforms” (Cardon et al. 2014, p. 3).

While public social networks such as Twitter and Facebook are open systems, ESNs are organisationally-bound, private social networks that cannot be accessed by outsiders (Turban et al. 2011). In more specific terms, ESNs are voluntary systems in which members: (i) use IDs that are linked to (semi-) public profiles (that can only be accessed behind the organisation’s firewall) showing their activities (e.g., content created by the user, content provided by other members, and/or system-level data); (ii) establish connections with other members in the organisation, which can be viewed and commented on by others; and (iii) comment, consume and/or interact with streams of content generated by others (Ellison et al. 2013; Leonardi 2013).

ESNs mimic the functionality of well-known PSNs such as Facebook or Twitter (Behrendt et al. 2014) and include a bundle of wide-ranging services such as social tagging systems, wikis, blogs, social bookmarking systems, microblogging, private

email and instant messaging (Fulk et al. 2013). ESNs revolve around microblogging services, that is, the sending of short text messages within the network to support a broad range of information sharing, communication and coordination (Riemer et al. 2010; Stieglitz et al. 2014) and marketed by platform providers by more general term enterprise social networks (Richter et al. 2013a). In the present study, the term “ESN” refers in particular to microblogging services that “facilitate short message communication and the establishment of social connections within organizations” (Riemer et al. 2013, p. 3).

There are two main types of ESNs: custom and packaged ESN platforms. A small number of organisations build their own ESN, such as IBM’s “Beehive”, Deloitte’s “Dstreet”, Hewlett-Packard’s “Watercooler”, PG’s “PeopleConnect” and SAP’s “Harmony” (Liu et al. 2014). However, most organisations employ vendor platforms (Qualman 2012). Popular examples of vendor platforms include Yammer, Socialcast, Jive and Google+ corporate communities (Riemer et al. 2013).

The characteristics and capabilities of ESNs have triggered the massive transformation of traditional (codified, centralised and controlled) knowledge management systems that were previously used by organisations as knowledge sharing tools among their employees (Antonius et al. 2015; Schneider et al. 2013). Compared to traditional systems, ESNs are “more effective in meeting individual needs” (Antonius et al. 2015). Thus, it is logical to assume that users’ participation behaviour in ESNs could be different to their behaviour in traditional knowledge management systems (Lai et al. 2014).

2.1.3 Organisations use of ESNs

ESNs allow organisations to create a digital space in which co-workers can connect, collaborate and exchange information (David et al. 2013; Kane et al. 2014; Riemer et al. 2013; Stieglitz et al. 2014; Zhao et al. 2009). Studies have found ESNs to be more open and participative compared to traditional methods of communication (Denyer et al. 2011); these features, in turn promote communication among employees (Leonardi 2013). Therefore, the use of ESNs has gained prominence in contemporary organisations (Qualman 2012) and several scholars have identified the various business impacts of using an ESN (e.g., Ali-Hassan et al. (2015), Kuegler et al. (2015)).

Studies discussing benefits of ESNs (e.g., (Hinchcliffe et al. 2012), (Majchrzak et al. 2013), (Richter et al. 2011), and (Richter et al. 2013a) and (van Osch et al. 2015)) highlight the implications for internal communication and the ability of the ESN to facilitate work coordination, collaboration and opinion sharing. Examples of the business impacts emerging from ESNs include cost and time savings (Denyer et al. 2011), higher morale, better recruitment, better employee engagement (Leidner et al. 2010), improved task execution among employees and innovative performance (Kuegler et al. 2015). As well as organisational benefits, studies have identified benefits that are largely for employees. These benefits include access to expertise, information seeking, idea sharing (DiMicco et al. 2009), reputation building, community building, the giving and receiving of feedback (Jackson et al. 2007), discussions about concerns (da Cunha and Orlikowski 2008) and discussions about problems (Zhang et al. 2010).

It is important to acknowledge that, along with the identified benefits and success stories of ESNs, studies have also reported difficulties that range from time-wasting to the leaking of corporate secrets (Turban et al. 2011). For instance, it has been reported that the use of ESNs is associated with a number of risky behaviours like the posting of offensive content, workplace romances, sexual harassment and time-wasting (Landers and Callan 2014; Mainiero and Jones 2013; Koch, Leidner and Gonzalez 2013; El Ouiridi et al. 2015). One case study revealed that the information posted on ESNs by employees made organisations vulnerable to criminal attacks (Hart 2010). There are risks and negative aspects associated with the excessive and improper use of ESNs (Munnukka et al. 2014). However, the ESN literature seems to find that the positives aspects of ESN usage far outweigh any negatives. With the exception of a few studies (e.g., (Husin et al. 2011a; Husin et al. 2011b)), there has been limited research investigating the impact of working governing tools (e.g., social media policy and guidelines) in providing protection from any misuse (e.g., improper content, bullying, harassing).

Researchers suggest that organisations have invested in and adopted ESNs (Riemer et al. 2013) and then experienced a substantial positive change in the ways in which employees collaborate and communicate internally (Aral et al. 2013; Ortbach et al. 2014). As at 2012, it was found that four out of five organisations used enterprise social systems at varying stages of maturity (Majchrzak et al. 2013; Overby 2012). A

recent industrial survey revealed that 72% of over 4,200 global leading organisations had adopted at least one social software (Bughin et al. 2011; in (Ortbach et al. 2014)). Furthermore, a survey conducted at the end of 2013 by Deloitte (2013) showed that more than 90% of all Fortune 500 corporations had partially or fully used an ESN, representing a 70% increase compared to 2011 (Berger et al. 2014). It is expected that, by 2016, up to 50% of large organisations will have implemented ESNs (Mathiesen et al. 2013; Perez 2014). According to Forrester Research, the enterprise social software market value is expected to reach US\$6.4 billion in 2016 (Liu et al. 2014).

As more organisations employ ESNs in their daily internal communications and work practices, issues related to employees' adoption and use of ESNs (e.g., underutilisation of the platform, excessive and improper use of the platform, strategies to promote use of the platform) have arisen, representing an increasingly attractive research area for both academics and practitioners (Beck et al. 2014a; Boh et al. 2013). Organisations are facing many challenging "what to do" and "how to do" questions concerning employees' use (or non-use) of these platforms. These questions require strategies, roles and processes if they are to be fully addressed (Kasper et al. 2012; Kügler et al. 2015b). As previously illustrated, the aim of the present study is to investigate one of the most pressing challenges for ESN community managers, namely, underutilisation by community members. An ESN community with few or no messages (i.e., posts) will impair the vitality of the community and eventually fail.

2.2 Existing Studies on ESNs

A detailed literature review is essential to establish and maintain a good understanding of contemporary studies related to research area (Keen 1980). We conducted a literature review through a search of academic journals, conference proceedings, books, government reports, newsletters, workshops, seminars, and internet sources. We used different databases search engines such as SpringerLink, EBSCOhost, Informit, ProQuest and ACM Digital Library. We often used the following keywords: "Enterprise social network, systems, or software", "online participation", "promote, enhance, or encourage online participation" "lurkers or lurking", "posters or posting", "promotional or management interventions,

mechanisms, or tactics“, “knowledge creation or management”) to then review the abstract to ensure whether the result paper is relevant to our research area.

We focused on top refereed journals (e.g., MIS Quarterly, Information System Research, Decision Support Systems, MIS Quarterly Executive, European Journal of Operations Research, Journal of MIS, Journal of the Association for IS) as well as A-ranked conferences with leading professional and scientific computing societies such as AIS conferences (e.g., ICIS, ECIS, and PACIS), IEEE conferences (e.g., HICSS), and ACM conferences (e.g., CHI, and CSCW). However, we found that academic main stream has limited studies on some contemporary issues related to organizational interventions (e.g., social media governance framework and policies, promotional messages). Therefore, we conducted a review of industrial annual reports, blogs, broadcasts, and consultants reports and case studies by private organizations such as Gartner, Clearswift, American Life Project and KPMG.

2.2.1 Main research areas on corporate use of social networks

In the relatively short period of time in which ESNs have been available, a growing body of academic literature has investigated the corporate use of social networks. Based on our review of the literature, academic studies fall into in five broad areas as shown in Table 2.1.

Table 2.1 Research areas on corporate use of social networks

| Research Area | Main Themes | Author/s |
|---|---|---|
| Business opportunities | Organisations & social business | (Zhang et al. 2010), (David et al. 2013), (Turban et al. 2011), (Mathiesen et al. 2013),(van Osch et al. 2015), (Hinchcliffe et al. 2012) |
| | Corporate transformations and social networks | (Qualman 2012), (Leonardi 2013), (Richter et al. 2011), (Majchrzak et al. 2013) |
| Platforms design and features | Design features and collaborative technologies in workplace | (Zhang et al. 2011),(Wen et al. 2012), (Cialdini et al. 2009), (Tajfel et al. 1978) |
| Strategic & governance issues and risks | Return on investment and corporate use of social software | (Weinberg et al. 2011), (Herzog et al. 2013), (Macnamara 2011) |
| | Role of social media policy | (Husin et al. 2011a; Husin et al. 2011b), (Lyssand 2010), (Vaast et al. 2013) |
| | Risks associated with employees' use of social networks | (Dreher, 2014), (Landers & Callan, 2014) |

| | | |
|--|---|---|
| Communication mediums | ESN impact on network-wide and groups informal/formal communications at work | (Zhao et al. 2009), (Ebner et al., 2010), (Riemer et al. 2012), (Riemer et al. 2013), (Behrendt et al. 2014) |
| Employees' motivations and usage behaviour | Users' characteristics | (Berger et al. 2014) |
| | ESN usage behaviours | (Kügler et al. 2015b), (Kügler et al. 2014), (Kuegler et al. 2015) |
| | Employees' acceptance of corporate social software | (Kugler et al. 2013b), (Cleveland 2012), (Kügler et al. 2015a) |
| | Employees' motivations to use corporate social networks | (DiMicco et al. 2008; DiMicco et al. 2009), (Antonius et al. 2014), (Kügler et al. 2014; Ortbach et al. 2014) |
| | External influences (feedback and peer pressure) on employees' use of corporate blog services | (Brzozowski et al. 2009), (Moon et al. 2008) |
| | External influences (e.g. user's hierarchical level) on ESN use | (Stieglitz et al. 2014), (Ortbach & Recker, 2014a) |

Furthermore, researchers have investigated different types of enterprise social software, including wikis (Beck et al. 2014b; Hester 2011; Majchrzak et al. 2012; Newman et al. 2009), bookmarking tools (Damianos et al. 2007; Warr 2008) and blogging tools (Yardi et al. 2008; Yardi et al. 2009). A significant body of research has focused on employees' use of microblogging tools (Kügler et al. 2015b; Kugler et al. 2013b; Ortbach et al. 2014; Richter et al. 2013a; Stieglitz et al. 2014; Stocker et al. 2012) as the most widely used and popular services provided by ESNs (Qualman 2012). Nearly all the research studies presented above in Table 2.1 were conducted on ESNs. Moreover, most streams of research have focused on the individual user and social behavioural aspects to explain ESN adoption and use. The next section provides further discussion on why ESN research has tended to focus on behavioural aspects.

2.2.2 The behavioural aspects of ESN research

IS researchers have repeatedly emphasised that the successful implementation of any IS is largely determined by user acceptance and use of the system (Venkatesh et al. 2000). In fact, the lack of employee use is the most likely issue that causes organisational system failure (Karahanna and Straub 1999). For decades, several theoretical lenses—including the expectation–confirmation model (ECM) (Bhattacharjee 2001), the theory of reasoned action (TRA) (Fishbein and Ajzen

1975), the theory of planned behaviour (TPB) (Ajzen 1991), the technology acceptance model (TAM) (Davis 1989; Davis et al. 1989), TAM2 (Venkatesh and Davis 2000) and many others—have been employed to understand and predict an individual’s intention to use new technology (Ajzen 2011). Understanding the determinants of use (and non-use) is critical because it provides leverage points with which to create favourable perceptions and, consequently, foster user motivations and usage (Venkatesh et al. 2000).

In line with these arguments, and apart from the practicality aspects (e.g., the time and resources available), the present study focuses on key individual-level factors to understand the problem of ESN underutilisation for three main reasons. Firstly, by definition, an IS is a socio-technical system that includes people, processes and information with the purpose of enabling organisations in attaining their business objectives (Huber et al. 2007; Laudon et al. 2012; Robey et al. 2013). From the technology perspective, just like public social networks (e.g., Twitter), ESNs are easy and intuitive to use (Zhang et al. 2010); in addition, as we investigated the live implementation of an ESN, some technological factors (e.g., compatibility and ease of use) may not be of significance because members are already familiar with the platform (refer to Section 4.2.2.1 for further detail on the participation criteria of the research study) (Kügler et al. 2015b). However, from the people perspective, and because ESNs are voluntary settings, understanding how users feel and behave is crucial to successful ESN implementation in organisations.

Secondly, it is necessary to understand and explore the innate leading drivers of posting and lurking behaviours in ESNs. In particular, the antecedents of lurking behaviours are key to understanding the low participation problem in corporate social software; yet these antecedents are still vague and need further exploration (Sun et al. 2014). Thirdly, unless employees see that the perceived benefits outweigh the perceived costs of participating in ESNs, the ESN will remain underutilised. This highlights the importance of investigating the extent of the influence of those individual-level benefits and cost factors in driving employees’ participation behaviour. To conclude, we believe that an examination of individual-level factors can inform strategies to change participation behaviours and therefore contribute to the successful implementation of these platforms.

Existing studies on employees' motivations and usage behaviour regarding ESNs have mainly concentrated on three key perspectives: (i) employees' usage behaviours in ESNs, (ii) employees' acceptance of (or motivations to use) ESNs, and (iii) external influences on employees' use of ESNs. The following sub-sections discuss each of these perspectives in turn.

2.2.3 Employees' usage behaviours in ESNs

The vast majority of existing ESN research looks at single dimensional usage behaviour, focusing in particular on employees' intention to use or the actual usage of ESNs (e.g., (Chin et al. 2014), (Choi et al. 2014), (DiMicco et al. 2008; DiMicco et al. 2009), (Koch et al. 2012), (Kugler et al. 2013a; Kügler et al. 2012), (Riemer et al. 2013), (Sahib et al. 2009)). However, there are a few exceptions that examine other use cases.

To compare usage patterns in ESNs, Richter and Riemer (2013a) conducted a detailed comparison of multiple case studies, and found three different use cases in ESNs: work coordination, information storage, and social praise. These use cases provide different "possibilities of ESN when appropriated into team, project or large enterprise contexts" (Richter et al. 2013a, p. 1). They concluded that a better understanding of the multiple forms of use and/or applications of ESNs can help decision-makers to incorporate ESNs into employees' day-to-day work practices.

Kügler et al. (2014) set out to investigate employee's post-acceptance ESN use behaviour. Based on the qualitative data, they identified another set of use behaviours. Thus, they conceptualised and operationalised four distinct sets of use behaviours: consumptive use, contributive use, hedonic use, and social use. They aimed to provide practitioners with a deeper understanding of employees' use to consume, contribute, socialise and entertain themselves (Kügler et al. 2014). Similarly, Ortbach et al. (2014) proposed a conceptual model to understand three sets of participation behaviour by academics: knowledge acquisition, knowledge socialisation, and knowledge contribution on the ESN.

In relation to post-usage research, two recent studies took a further step and examined whether different usage behaviours could have different outcomes. To understand the impact of two sets of usage behaviours on employees' performance in ESNs, (Kuegler et al. 2015) investigated intra-team versus inter-team use behaviour

(where intra-team behaviour referred to “the extent to which individuals use [an ESN] for knowledge sharing, collaboration, and communication with their team members” and inter-team behaviour referred to interactions with co-workers outside the team). They found that intra-team use yielded employee performance outcomes that were different from the outcomes of inter-team use, signifying a relationship between ESN use and employee performance. In the same vein, Ali-Hassan et al. (2015) conducted a large-scale survey in a multinational IT company on the corporate use of social media tools (including blogs, wikis, social tagging and microblogging services). They investigated the impact of three sets of use behaviours, namely, social, hedonic and cognitive use, on job performance and found positive as well as negative impacts on job performance. For instance, while hedonic use had a direct negative impact on routine performance, it was shown to (indirectly) have a positive influence on innovative performance.

Although these studies examine different sets of use behaviours, they fall short in two areas. First, they are overwhelmingly qualitative studies; thus, there is still a need to test and validate these propositions and understand (and explain) the extent of the effect of these use behaviours. Second, they don’t explain the antecedents that form these specific use behaviours and examine the linkages (and the extent of those linkages) between antecedents and the different modes and variances of ESN use. For example, what motivates the hedonic use of an ESN and how are those motivations different from social use motivations? Does a more hedonic use mean more (or less) consumptive use? It is also important to understand whether the same antecedents could play a positive (or negative) role in forming one or multiple use behaviours.

2.2.4 Employees’ acceptance and motivations to use ESNs

Investigating employees’ motivations to use (or participate in) an ESN has been the primary focus of existing ESN research. For example, using the unified theory of acceptance and use of technology (UTAUT) by Venkatesh et al. (2003), Cleveland (2012) proposes the determinants of users’ acceptance of Yammer as an ESN for knowledge creation and reuse in ICT projects. In a similar study, Kügler et al. (2013b), by means of qualitative data and the theoretical lenses of innovation diffusion theory (IDT) and social capital theory (SCT), propose the determining factors (i.e., relative advantage, ease of use, result demonstrability, compatibility,

reputation, perceived critical mass, trust, collaboration norms and community identification) influencing employees' ESN usage in two professional services firms. Guided by the research on knowledge exchange, Ortbach et al. (2014) developed a conceptual model that links two motivations (i.e., post quality and posting self-efficacy) in a number of participation behaviours by academics on an ESN. However, these studies need further testing to validate their conceptual models.

By means of qualitative work, DiMicco et al. (2008) conducted one of the earliest empirical studies of employees' motivations to use social networks at work (i.e., IBM's Beehive social network). Based on their qualitative work, it appeared that employees were motivated to use Beehive for three reasons: "connecting on a personal level, advancing their career within the company, and campaigning projects and ideas within the company" (DiMicco et al. 2008, p. 719). In a later investigation of IBM's Beehive social network, DiMicco et al. (2009) added two motivations: connecting and maintaining relationships with others on the site, and performing "people sensemaking" on the site.

We are aware of only two studies that propose and empirically validate models of motivations to use (or participate on) an ESN. In the first study, based on social-psychological and IS theories, Park et al. (2014) examined five antecedents of the intention to share and seek information on online investment communities in South Korea (i.e., perceived usefulness of information, entertainment value, seeking reputation, sense of belonging and perceived knowledge). They validated their model using an online survey and found that entertainment value, sense of belonging and perceived usefulness had a significant influence on both intention to share and intention to seek (Park et al. 2014). In the second study, using the TAM (Davis 1989), Antonius et al. (2014) examined the role of two individual beliefs (i.e., perceived usefulness and perceived ease of use) in the adoption of enterprise social software in an Australian organisation. They used an online survey and collected 300 responses. They found that perceived usefulness and ease of use had a significant influence on the decision to adopt enterprise social software, and they recommended applying conducive strategies around external intrinsic and extrinsic variables to positively influence the perceptions of usefulness and ease of use.

To conclude, the extant research on users' motivations to use (or participate on) an ESN is limited in three main respects. Firstly, the majority of the reviewed studies

provide propositions that are yet to be validated. To date, to the best of our knowledge, there are two theory-driven empirical studies on users' motivations to use ESNs. Secondly, the extant research contributes limited knowledge on users' salient motivations to use an ESN, and even less on the linkages between users' motivations and different participation behaviours (e.g., posting, reading, liking and sharing). Thirdly, the proposed use motivation models tend to focus on extrinsic motivations or values (e.g., perceived usefulness, information quality). In reality, employees use an ESN not only for performing job-related activities but also for so-called water cooler chatting, entertainment, social arrangements and as a conversation medium for relationship building signifying a relationship between intrinsic motivations (e.g., fun) and ESN use.

2.2.5 External influences on employees' use of ESNs

Having discussed the extant literature on employees' usage behaviours and the deterrents of employees' use of ESNs, we now review the research on the external influences that encourage employees' use. The studies by Brzozowski et al. (2009) and Moon et al. (2008) are the earliest research on this topic. Brzozowski et al. (2009) analysed the year-long dataset of an online forum in a large technology company. The objective was to determine the effect of two forms of external influences (i.e., feedback, and managers' and co-workers' participation) on employees' participation behaviour. They found that recent manager activities and others' feedback in the form of posted comments were highly correlated with a user's subsequent participation (Brzozowski et al. 2009). Similarly, an empirical analysis of Hewlett-Packard's social forum logs showed that peer activities (i.e., posts) positively influenced other users in becoming active participants in the forum (Moon et al. 2008). Further, few studies have investigated other contextual and technological factors in earlier collaborative systems such as : Warr's (2008) examination of 'gamification' mechanisms, Zhang et al.'s (2011) examination of design features in collaborative systems and Zhang et al.'s (2013) study of community response.

However, research on external influences that encourage users' participation on ESNs is rare (Kügler et al. 2015b). Ortbach et al. (2014) propose a conceptual model of the relationship between certain strategic tactics by others and ESN usage. They developed the model of ESN usage and five impression management tactics

identified by Jones and Pittman (1973) (i.e., self-promotion, ingratiation, exemplification, intimidation and supplication) on an ESN platform at an Australian university. They expected their research to further the understanding of ESN use and to provide practitioners with an assessment instrument to gauge ESN use and improve users' participation (Ortbach et al. 2014). The literature includes one empirical examination of the external influences on ESN usage. It is a qualitative analysis of the messages posted on the Yammer ESN at Deloitte Australia. Stieglitz et al. (2014) examined the impact of users' hierarchical level and communication activity (i.e., the frequency of a user's postings) on their ability to elicit responses from other Yammer users. Compared to the users' hierarchical level, Stieglitz et al. (2014) found that communication activity had a bigger influence on eliciting responses from others. They concluded that their findings demonstrate the potential of ESNs for cultivating organic, user-driven communication and knowledge sharing in organisations.

In conclusion, most academic research on interventions (i.e., external influences) to promote users' online participation (e.g., (Bock et al. 2006), (Koh et al. 2007), and (Won-Seok et al. 2002)) largely pre-dates the establishment of ESNs. Research on external influences that encourage employees' use or participation in a work setting has been mainly conducted on earlier social tools such as blogs, online forums and wikis (Schneider et al. 2013), making this research perspective of existing ESN studies the least researched topic of the three key perspectives discussed above. Limited knowledge is thus available regarding how to foster the positive ramifications (or mitigate the potential adverse effects) of user participation on ESNs.

2.3 Lurking and Posting Behaviours

2.3.1 Posters, lurkers, and in-between

In the Jargon Dictionary (2001), a lurker is defined as "one of the 'silent majorities' in an electronic forum, one who posts occasionally or not at all but is known to read the group's postings regularly". Although this definition doesn't provide a quantitative standard of lurkers, it does highlight two important characteristics of lurkers: they rarely post, but they regularly read others' posts (Sun et al. 2014). In general, lurkers are the largest user group (Lai et al. 2014; Malinen

2015) who never or rarely post in the community to which they belong; rather, they regularly browse others' posts and try to find the answers to their questions (Muller et al. 2010). Most researchers have developed their own definition of lurking (Ridings et al. 2006; Tagarelli and Interdonato 2015). Among the various definitions, lurkers have been defined as:

- the “persistent but silent audience” (Rafaeli et al. 2004)
- members who only occasionally post a message (Nonnecke & Preece 2003)
- members who post messages only once in a long while (Golder & Donath 2004)
- members who never post (Gensollen 2007; Lai et al. 2014; Muller et al. 2010; Nonnecke et al. 2006; Preece et al. 2004; Ridings et al. 2006)
- members who posted in the last four months or who had posted three or fewer messages since the implementation of the ESN (Ganley, Moser & Groenewegen 2012)
- members who posted once in the last three months (Nonnecke & Preece 2000)
- members who do not post more than one message in a 6 week period (Han et al. 2013)
- members who do not make a contribution in the first 12 months after subscribing (Stegbauer and Rausch 2002)

It can be observed from this list of definitions that researchers on online communities are conflicted regarding the provision of a specific threshold for lurking behaviour. While some (e.g., Rafaeli et al. (2004)) do not quantify the lurking threshold, others (e.g., Ridings et al. (2006) and Nonnecke and Preece (2000)) specify different criteria that span from “never posting” irrespective of the timeframe to posting once, twice or three times during different timeframes. In an effort to provide more specific criteria for the lurking threshold, Chen (2004) proposed the following quantitative standards to identify potential lurkers: (i) the lurker logged into the community at least once every week in a 6 week timespan, (ii) the lurker's posting frequency per week is below the average of the group members, and (iii) the lurker's posting frequency per week divided by the login frequency count is above the average of the group members. However, these criteria haven't been widely used, perhaps because of the socio-psychological factors and other factors such as the size and nature of the

online communities that could influence lurkers' behaviours. In addition, online communities are highly varied in terms of their domains (Yan and Davison 2013). In a recent review of the lurking literature, Sun et al. (2014), p 111 concluded that lurking is a context-dependent behaviour and depends on how active or inactive the community is; for example, "lurkers in technical communities may be considered posters in synthetic communities".

Our rationale for selecting the threshold that differentiates lurking from posting behaviours lay in the following considerations:

- The lurking threshold should be set in relation to the average number of posts in that online community during a specific timeframe. Therefore, specifying a ceiling limit of posts or comments by which to identify lurkers seems to be more practical. A similar approach was used by Rau et al. (2008) and Hung et al. (2015).
- The timeframe in which the lurkers' activities (i.e., the number of posts or comments) is calculated should consider the inherent characteristics of the social network (e.g., the volume of content creation, the sense of live feedback interactions). The timelines of social networks travel fast, particularly for large communities.
- The community type, size, topics discussed and other contextual factors are to be considered in specifying the lurking threshold. For instance, a member may be considered to lurk in one community and actively post in another (Cranefield et al. 2015).
- Behavioural and social psychologists (e.g., De Guinea and Markus (2009), Clear (2012) and Lally et al. (2010)) have found that the timeframe for individuals to form a habit ranges from 21 to 66 days (Gardner et al. 2012). Orbell and Verplanken (2010) provided evidence that, after one month, a behaviour, through regular repetition, becomes automatic or habitual. We believe a one month timeframe is short enough for participants to recall their activities (i.e., the number of posts or comments) and long enough, according to behavioural psychology studies, for individuals to form a habit (i.e., lurking behaviour).

Accordingly, based on our sample mean (i.e., the number of posts and comments) and the nature, activities and dynamics of the communities in which we collected our

data (refer to Chapter 5, Section 5.3 for further details), this study defines lurkers as *members who did not create any content (post or comment) in the last month*. In addition, based on Ridings et al.'s (2006) definition of posters as “community members who actively contribute content”, we define posters *as members who posted or commented at least once in the last month*.

It is important to note that there are other categories of online user groups which the literature identifies as neither lurkers nor posters. For instance, Kim (2000) identifies three categories of online user groups: novices (“who were once lurkers, but have become new members who need to learn about the community and its values” (Bishop 2007, p. 1885)), regulars (“who were once novices, but now are established in the community and comfortably participating in community life” (Bishop 2007, p. 1885)), and leaders (“who are volunteers and staff who keep the community running and go on to become posters” (Bishop 2007, p. 1885)). In addition, Takahashi et al. (2003) further classify lurking behaviour into: active lurking (sharing the information or knowledge gained online with others) and passive lurking (using the information gained online but not sharing it). Walker et al. (2010), p. 162 propose two posting categories: initial posters (the posters who “asked a new question or raised a new issue but did not continue the thread”) and responding posters (the posters “whose first post was a direct response to someone else asking a question”). However, irrespective of these in-between member categorical stages (the member lifecycle), the lurker user group often constitutes the vast majority of online communities (Schneider et al. 2013). The “90–9–1” principle of collaborative websites posits that 90% of network members only read others’ content (i.e., lurk), 9% of members edit the content, and 1% of members actively create new content (i.e., post) (Arthur 2006).

2.3.2 Significance of lurking behaviour

The academic perspective on lurking has been mixed. Although the general online literature considers lurking as a passive but nonnegative approach to enjoying an online community (Nonnecke et al. 2006), some studies see lurking as problematic behaviour that needs to be changed. The definitions proposed in those studies reflect the negative connotations of lurking (e.g., Fogg (2002), Sánchez et al. (2010), Smith et al. (1999) and Zhou (2011)). Lurking has been considered as an obstruction, unnecessary for communication, and as “the scourge that prevents

successful collective efforts’’ (Antin et al. 2010). In the same vein, Lim et al. (2001), p. 58 argue that “the existence of ‘lurkers’ may lead to [the] group fading, as some active participants may be disheartened to continue with the discussion when they fail to get any feedback, verbal or non-verbal, from others’’. Generally, the lurking literature agrees that although a certain number of lurkers is acceptable for big communities, “too many lurkers would impair the vitality of the community” (Sun et al. 2014).

Lurking is alternatively seen as a valid and essential behaviour in any online community (Djajakusuma et al. 2015). The reasons for this vary: for instance, lurkers increase the popularity of an online community and generate website traffic and hits (Koh et al. 2007). Nonnecke et al. (2004) researched participation in an online discussion board and found that lurking was a way for newcomers to learn about the online community. For some members, the ability to lurk was an important factor in their willingness to join the community (Nonnecke et al. 2006). Furthermore, in an investigation of lurking in an online course, Beaudoin (2002), p. 151 found that lurkers felt “they were learning just as much or more from reading others’ comments than from writing their own”. Preece et al. (2004) stress that lurkers are not self-interested individuals and they may even be willing to contribute; however, already-developed beliefs and values were holding them back from doing so (Grigore et al. 2011). Lurkers constitute the audience that consumes the knowledge created by the posters; and lurkers “seem to profit to a similar extent from accessing online communities as posters” (Schneider et al. 2013).

In ESNs, one of the advantages of classifying participation behaviours into posting and lurking is to make it easy to understand the issues associated with each behaviour (e.g., why it happens and how it responds to different interventions) as it reflects the reality of online participation in ESNs. Academics as well as practitioners could benefit from reviewing the actions of posters and lurkers and the different aspects identified in our research model to, for example, initiate different strategies in order to improve ESN usage.

2.3.3 Why lurkers lurk

Previous studies have identified many individual (extrinsic and intrinsic), contextual and technological reasons for lurking behaviour (Table 2.2). In particular, the work by Preece and Nonnecke (2000) (2001) (2004) on understanding the

reasons for lurking is well acknowledged in the literature (e.g., (Bishop 2007; Bishop 2011), (Muller 2012; Muller et al. 2010) , (Rau et al. 2008), (Ridings et al. 2006) and (Sun et al. 2014)). Preece and Nonnecke initially identified 79 reasons for lurking and then, in a survey of 219 lurkers, condensed these to 19 reasons. From the 19 reasons, Preece and Nonnecke (2004) identified five important reasons for not posting: (1) lurkers think that just reading/browsing is enough, (2) lurkers are still learning about the group, (3) lurkers think they are being helpful by being altruistic observers, (4) there is no requirement to post, and (5) lurkers are simply not able to use the software functionalities.

Table 2.2 Examples of the reasons why lurkers don't post

| |
|--|
| 1. Just reading / browsing is enough |
| 2. Still learning about the group |
| 3. Shy about posting |
| 4. Nothing to offer |
| 5. No requirement to post \ needs |
| 6. Others respond the way I would |
| 7. Want to remain anonymous |
| 8. Had no intention to post from the outset |
| 9. No value |
| 10. If I post, I am making a commitment |
| 11. Wrong group for me |
| 12. Poor quality of messages or group/community |
| 13. Not enough time to post |
| 14. Concern about aggressive or hostile responses |
| 15. There are too many messages already |
| 16. Long delay in response to postings |
| 17. Group treats new members badly |
| 18. Low sense of group belonging |
| 19. Being helpful by being altruistic lurkers |
| 20. Language problems (e.g., English is the second language) |
| 21. Low sense of knowledge worth |
| 22. Trust concerns |

Source (Grigore et al. 2011; Liang et al. 2008; Munar et al. 2014; Nonnecke et al. 2000; Preece 2000; Preece 2001; Preece et al. 2004; Schneider et al. 2013; Teichmann et al. 2015)

The literature on online behaviours suggests that posters and lurkers are motivated by different factors (Koh et al. 2007). For example, Wasko and Fara (2005) found that posters mainly contributed knowledge for extrinsic reasons (such as enhanced reputation), whereas a study by Preece et al. (2004) found an intrinsic factor (“just reading is enough”) was the dominant reason for lurking. Similarly, in a content analysis of 15,505 enterprise microblogging messages, Beck et al. (2014a) found that

the user characteristics differed between knowledge seekers and knowledge contributors: the knowledge seekers' characteristics were more important in determining the knowledge exchange. In addition, Lai et al. (2014) examined the knowledge sharing intention of posters and lurkers in recreation-oriented interest communities in public websites and found that the poster and lurker user groups differed in their motivations to share knowledge. While the posters' main motivations were intrinsic, extrinsic motivational factors (i.e., reciprocity) were the most influential factors in the lurker user group (Lai et al. 2014). A recent study to understand how knowledge-sharing intention was formed in the use of three IT-oriented technical websites in Taiwan, Hung et al. (2015) concluded that lurkers and posters demonstrated strong differences. The enjoyment in helping others was the primary motivation for posters, whereas perceived compatibility, ease of use and reciprocity shaped the lurkers' attitudes (Hung et al. 2015).

On the other hand, the literature notes some similarities between posters and lurkers (e.g., Dennen (2008), Liang et al. (2008) and Mo & Coulson (2010)). For example, both types of users are interested in improving their understanding of particular subjects (Preece et al. 2004) and both lurkers and posters benefit from participation to the same extent (Mo & Coulson 2010; van Uden-Kraan et al. 2008). Students who lurked in the online discussion forums of educational courses were found to read and reflect on the content in these communities without posting any content themselves (Dennen 2008).

To conclude, the literature suggests that "there is not a grounded rule about the benefits and other outcomes from the lurking behavior, when compared to posting" (de Carvalho et al. 2015, p. 3) and further research is needed to examine how lurkers' and posters' experiences are different (Koh et al. 2007; Schneider et al. 2013; Yan et al. 2013a; Yan et al. 2013b).

2.3.4 How to influence lurkers

As previously demonstrated, the unique characteristics of lurkers make them an essential user group in any online community (to increase the popularity of an online community, generate website traffic and hits, etc.). Thus, encouraging lurkers to contribute is an attractive research area for both academics and practitioners (Djajakusuma et al. 2015; Schneider et al. 2013) yet few studies have been conducted on the phenomenon of lurking particularly in a work setting. This is not to suggest

the transformation of all members to posters. Clearly, having too many posters could cause chaos and disruption in online communities with a massive flow of information that increases the participation costs such as reading, sorting and understanding (Takahashi et al. 2003). However, online communities that have few or no posters will eventually fail as there will be no more content to be consumed (Matzat et al. 2014).

In sum, identifying lurking behaviour, understanding ‘why’ members lurk after they have already been introduced to the platform and examining ‘how’ to encourage lurkers to be more active members are the most significant challenges for online-community managers (Djajakusuma et al. 2015; Sun et al. 2014; Tagarelli et al. 2014). However, researchers have largely focused on the behaviour of posters and ‘how’ or ‘why’ they use or share their knowledge on ESNs (e.g., Sahib et al. (2009) and Beck et al. (2014b)) without considering the motives and usage behaviours of the larger user group, namely, lurkers (Lai et al. 2014; Malinen 2015). We are not aware of any empirical study which focuses on the behaviour of poster and lurker user groups in ESNs and provides a comparative group analysis of ‘why’ or ‘why not’ participate in ESNs. Furthermore, encouraging members to participate could have different outcomes in different user groups (i.e., posters and lurkers). A more detailed review of the literature on interventions to improve user participation is presented next.

2.4 Theoretical Background

2.4.1 Participation in online communities

Since the emergence of the notion of the online community three decades ago, the literature suggests that it is only by participation that people can interact in cyberspace (Koh et al. 2007). Given that participation is essential for sustainable online communities (Bagozzi & Dholakia 2006), the literature asserts the lack of user contributions to be the main reason for the failure of online communities (Ling et al. 2005; Malinen 2015). In response, numerous studies have investigated the antecedents of online participation behaviours from various theoretical perspectives (Zhang et al. 2013).

The literature on online participation typically summarises user participation into two behaviour types: lurking and posting (e.g., Beck et al. (2014a), de Carvalho et al. (2015), Koh et al. (2007), Okleshen et al. (1998), Preece and Nonnecke (2000)

(2001) (2004) , Ridings et al. (2006), Sun et al. (2014), Wasko and Fara (2005), Yan et al. (2013a)). Koh et al. (2007) categorise participation in an online community as passive participation (what we call lurking) or active participation (what we call posting) and add that “without viewing and posting, a virtual community is not sustainable”. According to Tonteri, Kosonen, Ellonen and Tarkiainen (2011), posting and lurking practices account for the full range of motivational needs that a user meets by being part of the online community. Similarly, most microblogging activities in ESNs take the form of either viewing other posts (i.e., lurking) or posting.

Past studies have identified many factors that influence knowledge sharing, and these are usually classified into personal factors (Kankanhalli et al. 2005; Lin et al. 2012; McLure Wasko et al. 2000; Wasko et al. 2005), contextual factors (King et al. 2008; Renzl 2008; Wickramasinghe et al. 2012) and technological factors (Hsu et al. 2008; Ma et al. 2007). These factors include, among others, reciprocity, reputation (Hung et al. 2011; Hung et al. 2015; Kankanhalli et al. 2005; Lai et al. 2014; Lin et al. 2012; McLure Wasko et al. 2000; Oh 2012; Wasko et al. 2005), knowledge-sharing self-efficacy (Hsu et al. 2007; Lai et al. 2014; Lin et al. 2009; Tseng et al. 2010), sense of self-worth (Bock et al. 2005; Yan et al. 2013a), enjoyment in helping others (Kankanhalli et al. 2005; Lai et al. 2014; Wasko et al. 2005), perceived compatibility (Hung et al. 2015; Kuo et al. 2011), trust (Chandra et al. 2009; Chandra et al. 2012; Hsu et al. 2007; Renzl 2008; Sánchez-Franco et al. 2014), identification (Behrendt et al. 2014; Kankanhalli et al. 2005; Tseng et al. 2010), personal outcome expectations (Chiu et al. 2006; Hsu et al. 2007; Hung et al. 2015), community-related outcome expectations (Chiu et al. 2006; Hsu et al. 2007; Lai et al. 2014), and use satisfaction (Cheung et al. 2013; Lim et al. 2013).

As employees’ activities are expected to be task-oriented, instead of using the term “participation”, organisational research on virtual communities often uses the terms “knowledge sharing” or “knowledge contribution”. It is important to note that research has been overwhelmingly focused on traditional (i.e., codified) knowledge management systems (e.g., (Alavi et al. 2001), (Gray 2001), (Kankanhalli et al. 2005), (Kulkarni et al. 2007), (McLure Wasko et al. 2000; Wasko et al. 2005)). Table 2.3 summarises the relevant research on online participation studies and its theoretical lenses.

Table 2.3 Examples of online participation studies and theoretical lenses

| Theoretical Lens | Key Idea | Reference |
|---|---|---------------------------|
| Social identity theory | How group norms and social identity influence participation in online communities as well as the motivational antecedents and mediators of group norms and social identity | Dholakia et al. (2004) |
| Irretrievable investments | How reputation, relational capital, and personalisation influence continuance intention above and beyond satisfaction with the network | Tiwana and Bush (2005) |
| Social capital theory | Impact of individual motivations and social capital (i.e. structural, cognitive and relational capital) on knowledge contribution in online networks | Wasko and Faraj (2005) |
| Social exchange theory and the social capital theory | Impact of the social and individual cost and benefit factors in knowledge sharing | Kankanhalli et al. (2005) |
| Theory of commitment and socialisation to groups | Influence of the existence of responses to a newcomer's initial post and the characteristics of the initial post and the responses to the newcomer's posting of another message | Joyce and Kraut (2006) |
| Motivational model | Influence of formal leadership role, personal and community benefits, and community characteristics on members' participation | Butler et al. (2007) |
| Expectation confirmation theory | Contextual antecedents and technological antecedents of an individual's continuance intention | Chen (2007) |
| Theory of legitimate peripheral participation | Mechanisms that sustain long-term voluntary developer participation in open source software communities | Fang and Neufeld (2009) |
| Commitment theory | Types of commitment and types of member behaviours | Bateman et al. (2011) |
| Elaboration likelihood model | Posits that human attitudes can be changed by two "routes" of influence, namely, the peripheral route and central route | (Petty et al. 1986) |
| Social influence theory | Determinants of online community user participation from a social influence perspective | (Zhou 2011) |
| Expectancy-value theory and a social learning process | Relationship between motivation and sustained participation in knowledge sharing in transactional virtual communities | (Sun et al. 2012) |
| UTAUT | Effects of major factors of participation in internet innovation intermediary platforms | Chu (2013) |

Source: Lin et al. (2015), Zhang et al. (2013) and Zhang et al. (2015)

In relation to social software, there is a growing research interest on user online participation and knowledge sharing in different contexts using different theoretical lenses. For example, Majchrzak et al. (2013) used the affordances lens, Beck et al. (2014a) used a multi-level model of knowledge exchange in electronic networks of practice, Yan et al. (2013b) used self-perception theory, Wang et al. (2012) used the TAM, and Vassileva (2012) used multiple theories from the area of social psychology and behavioural economics (El Ouiridi et al. 2015). Further, research on online participation behaviour attracts scholars from a wide range of different disciplines. For example, in the field of hospitality and tourism management, Kang et al. (2014) employed a theoretical model that represents the correlations between four types of benefits (functional, social, psychological and hedonic) to increase the active participation of users in restaurants' Facebook fan pages. However, theory-driven empirical studies on user participation in ESNs is rare (Kügler et al. 2015b).

In relation to ESNs, the first choice of theoretical base would appear to be IS adoption models such as TAM (Davis 1989; Davis et al. 1989), TAM2 (Venkatesh et al. 2000), extended TAM for a WWW context (Moon et al. 2001), extended TAM for online consumer behaviour (Koufaris 2002), UTAUT (Venkatesh et al. 2003), TAM3 (Venkatesh et al. 2008a) and UTAUT2 (Venkatesh et al. 2012). Although these theoretical frameworks are very well established in IS research and have been successful in understanding individual use and adoption of information technologies (Sykes et al. 2009), they are limited in relation to users' participation behaviour in ESNs in four areas. First, they only partially explain the participation behaviour. For example, they do not directly account for possible barriers to participation that could cause users to lurk. Even though an ESN may provide functional values (e.g., it is useful or knowledgeable), employees may still reject it if they perceive certain costs (e.g., feeling afraid, loss of knowledge, the time and effort required). Second, they focus on the factors in initial usage which may be different from the factors in continued use (Karahanna et al. 1999), which is essential for sustainable online communities (Zhang et al. 2013). Third, as prediction models, they focus on the intention to use rather than actual usage. Research suggests that examining actual usage as the dependent variable may provide greater insights than examining the intention to use a technology (Venkatesh et al. 2008b). Fourth, they are general models and attempt to address a wide range of technologies; however, as suggested

by Venkatesh and Bala (2008a), a model that focuses on a specific class of technology will provide more explanatory power.

Compared to other communication technologies commonly used in organizations (e.g., emails, , bulletin board systems, and discussion lists), an ESN is a different form of technology in terms of uses, practices, benefits and objectives (Leonardi 2013). It is less complex and is flat in terms of its structure. More importantly, participation in an ESN is voluntary in nature (refer to the discussion in Section 2.1.2, for details on ESN characteristics). In a voluntarily setting, users' motivations or perceived values of information technologies have different weights in impacting usage (Beaudry et al. 2010).

After reviewing the theories on factors that influence human behaviours, particularly those that have been previously employed to understand online participation behaviour, we identified the social exchange theory (Blau 1964) as the appropriate theoretical lens for the present study. Further, in order to account for benefit-relevant factors and cost-relevant factors in participation, we relied on the literature on extrinsic and intrinsic motivations. By bridging the two streams of research on the individual antecedents of two distinct types of online behaviour (i.e., lurking and posting), we believed we could develop a nuanced understanding as to why employees lurk or post after they have already been introduced to the ESN. This model aligned well with our first research objective. We discuss both components of our theoretical lenses in turn.

2.4.1.1 Social exchange theory

Social exchange theory (Blau 1964) is one of the most popular theoretical frameworks used in the literature on online participation to explain user participation (Liang et al. 2008). According to social exchange theory, an individual interacts with others based on their self-interested analysis of the expected benefits and costs of that social exchange (Kankanhalli et al. 2005). It assumes that: (i) people maximise the benefits and minimise the costs when they interact with others, (ii) people help others with a general expectation of future return, and (iii) such future returns are not tangible (Kankanhalli et al. 2005; Liang et al. 2008).

In the last decade, social exchange theory has been used in numerous studies to understand why individuals are willing to share their knowledge and the extent to

which they perceive the contribution of their knowledge to involve benefits and costs (e.g., Allam et al. (2012), Hung et al. (2011), Kankanhalli et al. (2005), Oh (2012), Park et al. (2014), and Sánchez-Franco et al. (2014)). In a review of empirical studies that reported a correlation between knowledge-sharing behaviour and independent factors in a ten year period, Liang et al. (2008) found 29 studies that examined several factors in knowledge-sharing behaviour using social exchange theory.

Our rationale for selecting this theory to understand employees' participation behaviour in ESNs lay in the following considerations:

- (i) It accounts for cost and benefit motivations that could drive users to either lurk or post;
- (ii) It relates to online participation in a voluntary setting with no expectation of obtaining rewards or avoiding punishment. Many studies that have used social exchange theory in these settings have been published in top-tier journals (Liang et al. 2008);
- (iii) There is ample empirical support for using this theory in a live setting (after users have been introduced to the online platform);
- (iv) Using social exchange theory provides the ability to link users' motivations to participation rather than the intention to participate;
- (v) It has been tested extensively in several empirical settings including work settings (e.g., Hung et al. (2011), Kankanhalli et al. (2005) and Oh (2012)).

The extant research highlights various factors affecting users' participation (Choi et al. 2014). Next, we look at the literature on extrinsic and intrinsic motivations to account for benefit-relevant and cost-relevant factors in user participation.

2.4.1.2 Extrinsic and intrinsic motivations

Motivation theories suggest that individuals always initiate behaviours to satisfy the full range of their needs (Deci 1975; Deci et al. 1985). Broadly, needs-based motivations fall into two major groups: intrinsic and extrinsic motivations (Wu et al. 2013). Extrinsic motivations refer to "the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself" (Davis et al. 1992, p. 1112), such as improved job performance or enhanced image. With intrinsic motivations, users interact with a system "for no

apparent reinforcement other than the process of performing activity per se” (Davis et al. 1992, p. 1112), such as perceived fun. IS researchers have identified extrinsic and intrinsic motivations to create content in public and corporate online communities (Beck et al. 2014b). In public use, the motivations have been found to include, among others, social connections and entertainment (Boyd et al. 2007b); in corporate use, the motivations have been found to include, among others, personal brand building and reciprocity (Kankanhalli et al. 2005; Wasko et al. 2005).

As shown previously, in online communities, user motivations to participate differ across user groups (Zhang et al. 2013) and therefore exert varying degrees of influence on the participation behaviour. In a survey conducted in online forums in Korea, Koh et al. (2007) found that active participants (i.e., posters) and passive participants (i.e., lurkers) were motivated by different reasons. The literature suggests that taking a purely positive approach and examining only beneficial motivations to understand technology use may leave important facets undiscovered (Cenfetelli 2004). Cost factors such as the codification effort (Beck et al. 2014b; Kankanhalli et al. 2005) have been found to significantly hinder knowledge-sharing behaviour and cause online community members to lurk. Another example of a cost factor is when users are afraid that sharing knowledge with others will lead them to lose their knowledge power.

Kankanhalli et al.’s (2005) model of knowledge contribution is one of the most commonly cited models of knowledge contribution (He et al. 2009; Liang et al. 2008; Wang et al. 2010). Kankanhalli et al. (2005) used social exchange theory as a theoretical base upon which to develop an extended model to explain the use of electronic knowledge repositories by knowledge contributors. They identified, operationalised and validated a model of employees’ motivations to contribute. The model comprised the cost dimension (codification effort, loss of knowledge power), extrinsic benefits dimension (organizational reward, reciprocity, and image) and intrinsic benefits dimension (self-efficacy, and enjoyment in helping others). The present study employed Kankanhalli et al.’s (2005) model of knowledge contribution to account for the benefit-relevant and cost-relevant factors that drive users to either lurk or post in ESNs. This is discussed in further detail in Chapter 3 (Section 3.3.1) in relation to the research model and propositions.

2.4.2 Management interventions

Although not all members need to contribute for an ESN to be successful, an ESN community with little or no message posting will have difficulty achieving its objectives. In such a scenario, lurking is a problem as “no one wants to be part of a community where no one says anything” (Preece et al. 2004). Hence, in academia, motivating users to participate in online activities has been one of the most widely studied topics in online participation research (e.g., (Bock et al. 2006),(Lee et al. 2013), (Kankanhalli et al. 2005),(Nah et al. 2011), (McLure Wasko et al. 2000; Wasko et al. 2005) (Ren et al. 2012; Ren et al. 2007) and (Won-Seok et al. 2002)). In an extensive review of the literature on user participation in online communities, Malinen (2015), p. 235 concluded that “the most frequently recurring research question throughout the reviewed studies has been, How to encourage users to participate?”.

Studies that investigate possible interventions to motivate users’ online participation have mainly concentrated on four key areas: practitioners’ suggestions; persuasion-based interventions such as promotional messages; compliance-based interventions such as written or spoken management pressure techniques; and governance tools such as SMPs. A review of the literature on each of these areas is presented next.

2.4.2.1 Practitioners’ suggestions for boosting ESN participation

Encouraging participation is one of the greatest challenges faced by practitioners, and many blogs, industrial reports, broadcasts and consultancy reports demonstrate ways in which online communities can be facilitated (Hinchcliffe et al. 2012; Qualman 2012). Practitioners (e.g., Adamson (2014), Li (2015b), Perez (2014) and Pisoni (2013)) have proposed several interventions to enhance user participation in ESNs, including promotional messages, management pressure techniques and SMPs. Almost all the existing research on SMPs, for example, has been conducted by practitioners such as Gartner, Clearswift, American Life Project and KPMG (Jaeger et al. 2012; Rudman 2010).

Based on his experience as the co-founder and CTO of Yammer, Pisoni (2013) highlights that the biggest challenges faced by ESN managers are not technical but behavioural. He suggests several solutions to boost participation such as giving praise, liking someone’s post, giving unsolicited advice and encouraging transparency by showing unfinished work, accepting mistakes and working “out

loud”. Additionally, many enterprise social network consultants and business strategists emphasise the importance of managers’ participation and support to drive a successful ESN (Li 2015b). Dion Hinchcliffe, a Chief Strategy Officer at Adjivi, highlights that ESNs need to be supported by an executive-level sponsor who is “powerful and influential in the organisation, creating the air cover for it to succeed so others can do experiments and get the resources they need” (Li 2015b). According to Dell’s Director of Social Media, Richard Margetic, without the leadership of Dell’s senior executive “there’s no way we would have been able to become a social business” (David 2013). However, these proposals require an appropriate empirical and theoretical base. We know very little about the outcomes and the extent of influence of these proposals in prompting users’ online participation.

2.4.2.2 Persuasion-based interventions

Several theoretical approaches have been proposed to understand and possibly alter human cognitive strategies and actions, such as the push-pull mooring model from migration theory (Bansal et al. 2005), the motivation–opportunity–ability model of human behaviour (MacInnis et al. 1991), the control theory of users’ actions (i.e., the controlee) (Kirsch 1996), the health belief model (Sarstedt et al. 2011) and many others. Persuasion frameworks, such as the heuristic-systematic model of information processing (Chin 1998), the ELM (Petty et al. 1986) and the persuasion knowledge model (Friestad and Wright 1994), are particularly appropriate when the technology use is voluntary in nature (Kane et al. 2014).

Traditionally, scholars in the area of persuasion have focused on influencing individuals to change their attitudes, motivations, and subsequently their behaviour for their own benefit (e.g., exercise more, eat healthier) or for the benefit of the society (e.g., save electricity, share rides) (Vassileva 2012). Persuasion frameworks have provided different explanations about how cognitive involvement leads to persuasion, in other words, the changes in the ways people feel, think, then act (Oinas-Kukkonen et al. 2008). Based on earlier theories of human behaviour and attitude change, persuasion frameworks have largely focused on either the relationship between attitudes and behaviours or on the persuasion process itself. Oinas-Kukkonen and Harjumaa (2008) summarised the key approaches of persuasion in IS (Table 2.4).

Table 2.4 Key approaches to human–computer persuasion

| Theory | Key Idea | Reference |
|---------------------------------|---|------------------------|
| Influence techniques approach | Individuals respond automatically to one piece of information instead of reacting in a controlled way and on the basis of thorough analysis of all the information | (Cialdini et al. 2009) |
| Coactive approach to persuasion | Differences can be bridged by reducing psychological distances in order to secure preferred outcomes | (Simons et al.) |
| Persuasive technology framework | Identify how people are persuaded when interacting with computer technology | (Fogg 2002) |
| ELM | A person’s motivation and ability determine whether (s)he will be persuaded through the central route (relying on arguments) or through the peripheral route (relying on cues); ELM integrates many persuasion theories | (Petty et al. 1986) |
| Cognitive consistency theory | If attitudes and behaviour are not consistent, people change their attitudes or behaviour to achieve cognitive consistency | (Tajfel et al. 1978) |
| Information processing theory | The persuasive impact of messages is the multiplicative product of six information processing steps | (Miller 1973) |

Source: (Oinas-Kukkonen et al. 2008)

In the work environment, management can use different persuasive strategies (e.g., promotional messages, social cues, managers’ involvement, peer support, material inducements like incentives or rewards, and setting an example for others) to draw employees’ attention to an IS and persuade them to use it (Li 2013; Sánchez et al. 2010). Therefore, persuasion frameworks are more applicable to voluntary technologies such as ESNs (Kane et al. 2014). Among the interventions which community managers can use to enhance user participation in ESNs are promotional messages. Promotional messages are the most widely-used intervention in ESNs (All 2014; Qualman 2012; Yuan et al. 2013). For the purposes of the present study, we define promotional messages as persuasive communication sent by management through emails or online posts to encourage users’ participation and to provide information about the ESN (e.g., its benefits, qualities and recently discussed topics).

To understand how motivations to participate could potentially be influenced through interventions such as promotional messages, we reviewed many theories on the factors that influence human behaviours. Persuasion researchers suggest that it is

imperative to understand employees' cognitive processes toward the IS in order to enhance the efficiency and effectiveness of the organisational stimuli (Oinas-Kukkonen et al. 2009). Among the many persuasion models that have been previously employed to understand how to persuade employees to use an IS, the ELM (Petty et al. 1986) stands out for its ability to relate a management intervention (i.e., promotional message) to human beliefs.

2.4.2.2.1 Elaboration likelihood model

We employed the ELM (Petty et al. 1986) in order to propose central and peripheral routes of influence that facilitate an understanding of how management interventions such as promotional messages will influence users' motivations for either lurking or posting behaviours in an ESN. Our rationale for selecting this model lay in the following considerations:

- (i) Using the ELM provides the ability to relate a management intervention (i.e., promotional message) to human beliefs;
- (ii) The ELM suggests that beliefs change first before behaviour (in other words, the user first receives and understands the message before he or she acts);
- (iii) Using the ELM provides the ability to explore and explain the "black box" of influence processes within the ESN context, namely, understanding the two outcomes (the central and peripheral routes) of promotional messages on human beliefs and subsequent participation across different users (i.e., lurkers and posters); and
- (iv) Ample empirical support is available (e.g., Angst et al. 2009; Bhattacharjee et al. 2006; Chuang et al. 2014; Luo et al. 2013; Sussman et al. 2003).

The ELM posits that human attitudes can be changed by two "routes" of influence, namely, the peripheral route and central route (Petty et al. 1986). The difference between the two routes is the amount of cognitive effort involved or the "elaboration" required by the individual (e.g., simple cues or task-relevant arguments) (Bhattacharjee et al. 2006; Petty et al. 1986). In the central route, the person needs "to think critically about issue-related arguments in an informational message and scrutinize the relative merits and relevance of those arguments prior to forming an informed judgment about the target behavior" (Bhattacharjee et al. 2006, p. 808). In the peripheral route, which involves less cognitive effort, "subjects rely on cues regarding the target behavior" (Bhattacharjee et al. 2006, p. 808). Examples of the relevant information to be communicated in the central route include the system's

features or qualities, the potential benefits of using the system, the availability of system support and the costs of and returns from using the system. In the peripheral route, individuals rely on cues in messages regarding the target behaviour (such as whether or not a promotional message was sent by a manager or an expert, or the number or status of the people copied into the message), rather than the quality of the information presented in the message (Bhattacharjee et al. 2006). The central and peripheral routes are often operationalised using “argument quality” and “source credibility”, respectively (Bhattacharjee et al. 2006).

The ELM has been examined in a range of different disciplines including social psychology (e.g., Petty et al. (1986)), organisational behaviour (e.g., Elangovan et al. (1999)), health (e.g., Cameron (2009)) and marketing (e.g., Recker et al. (2007) and Petty et al. (1999)), and has become increasingly popular in IS research. While the majority of ELM studies use “attitude” as the dependent variable, some scholars have examined the impact of the peripheral and central routes on “beliefs”. IS researchers have applied the ELM on the beliefs held by users. For example: (i) Bhattacharjee and Sanford (2006) studied IT acceptance and explained how perceived knowledge usefulness was formed by processes of outer influence (i.e., training); (ii) Sussman and Siegal (2003) demonstrated how the argument quality and source credibility of the messages received by users can influence the perceived usefulness of the information in those messages; (iii) Jin et al. (2009) surveyed 240 users of a bulletin board system in a university in China and found that user satisfaction was determined by information quality and source credibility; and (iv) a few studies have applied the ELM to examine other beliefs, such as the work by Pee (2012) on trust and Wu et al. (2011) on curiosity.

We argue that examining the two ELM persuasion-based routes (i.e., operationalised using argument quality for the central route and source credibility for the peripheral route) of promotional messages could help to explore and explain how such interventions influence users’ beliefs about the ESN and the subsequent participation behaviour across different users (i.e., lurkers and posters). In doing so, we expand the dependent variable in ELM research to include motivations for lurking or posting behaviours in an ESN. Furthermore, we are not aware of any empirical study which employs the ELM in a comparative group analysis (i.e., lurking and posting groups) of the online participation problem.

2.4.2.3 Compliance-based interventions

Since different individuals are influenced by different things, it can be expected that persuasive techniques alone will not align ESN users' beliefs and behaviours with the firm's expectations. Even for voluntary systems, certain interventions (e.g., management pressure) could lead to the creation of favourable perceptions among users (Venkatesh et al. 2008a). In the IS literature, extensive research has been published on mandating behaviour change. Examples include research on: exercising formal authoritative tactics to overcome IS implementation barriers (Ngwenyama et al. 2013), implementing a portfolio of formal controls by managers (controllers) to ensure that employees (controlees) will achieve organisational goals in enterprise system projects (Soh et al. 2011) and integrating a model of IS security effectiveness (i.e., security practices like deterrent efforts or preventive measures, and organisational factors like top management support) to prevent abuses in the organisation's IS security (Kankanhalli et al. 2003), among many others.

Two interventions have been shown to be effective to mandate behaviour change in IS research: management pressure and policy documentation (Herath et al. 2009). Management pressure has been conceptualised and operationalised as organisational compliance-based interventions (Venkatesh et al. 2008a). Similarly, policy documentation has been operationalised as a formal governing intervention not only to restrict detrimental use (Bartridge 2005) but to guide users to best use the technology in an effective manner (Barney 1991; Doherty et al. 2011). Both interventions are discussed next in turn.

2.4.2.3.1 Management pressure

In general, users will comply when they perceive "pressure to behave in a certain way, to either gain rewards or avoid punishment" (Wang et al. 2013, p. 300). Social influence or pressure on user behaviours was emphasised more than five decades ago by Burns et al. (1961), p. 35 as follows: "In working organizations, decisions are made either in the presence of others or with the knowledge that they will have to be implemented, or understood, or approved by others". Most dominant technology theories include social influence as an important antecedent of system use (Agarwal 2000). IS researchers have repeatedly underlined the importance of social influence in technology adoption and use (Davis et al. 1989; Eckhardt et al. 2009; Venkatesh et al. 2008a; Venkatesh et al. 2000; Venkatesh et al. 2003).

Furthermore, previous studies have highlighted management pressure as an important facet of social influence and as an intervention that can influence employees' behaviour in a significant manner (Boss et al. 2009). Venkatesh et al. (2008a) emphasised that management pressure interventions in the post-implementation phase are particularly relevant to creating favourable perceptions among users of both mandatory and voluntary systems. Eckhardt et al. (2009) found that the role of social pressure from different workplace referent groups (i.e., pressure from supervisors and colleagues) had a significant impact on IT adoption and non-adoption intention. In facilitating the assimilation of collaborative system technologies, Bajwa et al. (2008) found the influence of decision-makers to be critical in the assimilation process.

In research on online participation, Beenen et al. (2004) (in Brzozowski et al. 2009) found that users were more likely to contribute when they were explicitly asked. Thus, social influence has been employed to facilitate participation in online forums (e.g., Brzozowski et al. (2009)). An empirical analysis of Hewlett-Packard's social forum logs showed that peer activities (e.g., posts) positively influenced other users in becoming active participants in the forum (Moon et al. 2008). Chang et al. (2013) found that social influence was an important determinant of players' continuous intention to play online games.

In sum, as previously illustrated, practitioners recommend the use of management pressure and involvement as a way to boost users' participation (Qualman 2012; Yuan et al. 2013). To understand how to influence employees to participate through management pressure intervention, we employed the social influence theory (Kelman 1958) from social psychology. We drew on Kelman's conceptualisation of compliance to understand the ability of management pressure to align employees' participation with the ESN managers' expectations.

2.4.2.3.2 Social influence theory

According to Kelman's (1958) theory, people's beliefs and (consequent) behaviours are influenced by three theoretical processes:

- i. compliance – compliance occurs when individuals “perceive pressure to behave in a certain way, to either gain rewards or avoid punishment” (Wang et al. 2013, p 300), such as management pressure and subjective norms;

-
- ii. internalisation – internalisation occurs when an individual “consciously or unconsciously assimilates others’ opinions and acts in accordance with those opinions” (Wang et al. 2013, p 300), such as a user transforming the community’s vision and values into their own beliefs;
 - iii. identification – identification occurs when individuals “adopt behaviors that conform to those of a respected social group in order to establish or sustain a beneficial relationship with that group” (Wang et al. 2013, p 300), such as a sense of belonging and a sense of attachment.

However, a compliance-based process is the dominant conceptualisation of social influence in IS research (Wang et al. 2013). Based on Kelman’s theory, Karahanna and Straub (1999) found that the social influence exerted by supervisors significantly impacted users’ perceptions of the usefulness of a technology. In Venkatesh et al.’s (2003) UTAUT model, social influence derived from subjective norm is a key determinant of user intention. Furthermore, Pentina et al. (2008), Zhou (2011) and Shen et al. (2010) adopted Kelman’s social influence theory to understand the factors affecting online community behaviours.

Building on Kelman’s (1958) conceptualisation of the compliance, identification and internalisation processes of attitude change, and distinct and separate from identification and internalisation-based social influence, compliance-based processes are likely to be effective in getting people to comply with the firm’s expectations. Based on Kelman’s conceptualisation of compliance, this study posits that management pressure can align participation behaviour across different users (i.e., lurkers and posters) in the ESN. Consistent with other IS researchers (e.g., Venkatesh and Davis (2000)), certain types of social and managerial pressure could influence individuals’ behaviours in order to ensure that users react in a desired fashion (Boss et al. 2009). For example, in the ESN context, a manager might mandate that each employee must post a certain number of entries each month or that they must broadcast their project deliverables. Understanding how management pressure influences both posters’ and lurkers’ behaviours in online communities is still a niche area in research, especially in a work setting. This is discussed in more detail in Chapter 3 (Section 3.4.2) in relation to the research model and propositions.

2.4.2.4 Social media policy

A policy is a means of standardising use (Alinaghian et al. 2010; Bia et al. 2007). Policies allow people to “understand their roles and responsibilities within predefined limits” (Bartridge 2005) and organisations use policies as guidelines to dictate the rules and regulations (Vroom et al. 2004). Policies that are specifically related to the use of IT are referred to as IT policy (i.e., a tool that articulates the rights, duties and responsibilities of technology stakeholders and identifies the scope of acceptable use of a technology) (Straub & Nance 1990). A policy is an important formal governing intervention not only to restrict detrimental use (Bartridge 2005) but to guide users to best use the technology in an effective manner (Barney 1991; Doherty et al. 2011). Therefore, IT policy plays an important role in IS success as it enables organisations to reduce risks and enhance competitive advantages (Checchi et al. 2002).

The academic literature on behavioural issues relating to policy usually covers the domains of information privacy and security (Xue et al. 2011), particularly policy-behaviour compliance in mandatory IT settings. Most of the compliance-based interventions investigated in IS research (e.g., (Doherty et al. 2011), (Guo 2012), (Hekkala et al. 2012), (Herath et al. 2009), (Hu et al. 2012), (Hung et al. 2012), (Ifinedo 2011) and (Siponen et al. 2010)) were used to mitigate informational and behavioural security challenges (e.g., unsafe internet connection, malware, spam, identity theft, leaking information, reputation damage) (He 2012). Several theoretical lenses have been employed to understand interventions (e.g., penalties, pressures and policies) such as protection motivation theory (Rogers et al. 1983), deterrence theory (Paternoster and Simpson 1996) and neutralisation theory (Herath et al. 2009).

As the IT policies for social media use, SMPs are often short, generic and easy to read (Hrdinová et al. 2010; Husin et al. 2011a). To make SMPs memorable and easy to understand, some firms use short videos (e.g., Department of Justice in Victoria, Australia) (Honigman 2014). A study on social media governance issues in Australian private and public sector organisations showed that an increasing number of organisations were employing SMPs to cover the use of social media by employees (Macnamara 2011). With a growing number of firms already using an SMP, it could act as an important intervention to provide guidance on best practices for participation in an ESN (‘know-how’ for collaboration, finding solutions, etc.)

and protection from any misuse (e.g., improper content, bullying or harassment). In a landmark study on online lurking, Preece et al. (2004) found that members were concerned about aggressive responses and poor treatment, and these concerns were the reasons for lurking. We believe that the use of an SMP could mitigate such fears.

In this research, we argue that an SMP could be viewed as a communication document that requires critical thinking to scrutinise the relative merits of the ESN and possibly encourages employees to engage (e.g., how to create or join a group, upload a document, update a profile). An SMP can also provide the sense of protection that mitigates employees' fears of any negative behaviour by others (e.g., concerns about aggressive or hostile responses) which could, as well, encourage employees to engage in the ESN. Thus, an SMP could have a dual effect of mitigating certain perceived costs and maximising members' perceived benefits, both of which could encourage participation. However, there is no empirical study, that we are aware of, examining the influence of an already operational governance tool (i.e., an SMP) on users' perceptions and lurking and posting behaviours in an ESN.

2.5 Literature Review Synthesis

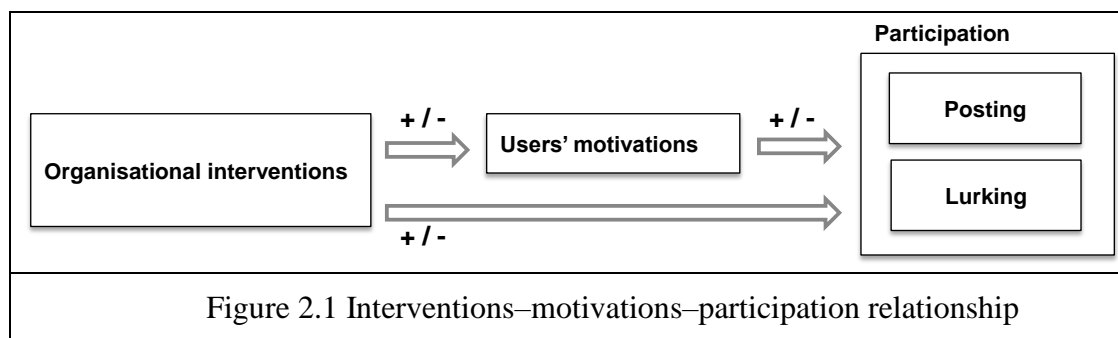
2.5.1 Research emphasis

IS researchers have repeatedly emphasised the pivotal role of individuals' use of an IS (Burton-Jones et al. 2006) in determining its success or failure (Karahanna and Straub 1999). As we previously discussed, the phenomenon of ESN underutilisation is mainly caused by a large number of community members being silent (i.e., lurking). Although not all members need to contribute in order for an ESN to be successful, an ESN community with few or no messages (i.e., posts) will have impaired vitality and eventually fail. Thus, an understanding of members' characteristics that drive them to either lurk or post is essential to address this problem.

With ESN participation being voluntary by nature, several organisational interventions have been proposed to influence employees' beliefs about an ESN and (consequently) improve their participation. The behavioural change literature suggests that, in order to persuade users, beliefs should be changed before the behaviour can be changed, particularly in voluntary settings. The most widely-used organisational interventions are classified in three broad areas: persuasion-based

interventions (e.g., promotional messages), compliance-based interventions (e.g., management pressure techniques), and governance tools (e.g., SMPs). However, understanding how organisational interventions influence employees' beliefs about an ESN requires first of all the identification of those beliefs. This step is important for examining the effectiveness of organisational interventions in shaping a positive perception of the platform and ultimately encouraging users' participation.

In online communities, user motivations to participate differ across user groups (Zhang et al. 2013) and therefore exert varying degrees of influence on the participation behaviour. In addition, interventions to influence users to participate could have different outcomes in different user groups (i.e., posters and lurkers). Therefore, we argue that the understanding of which interventions have more effect and which interventions have less effect on the motivation–participation relationship of posters and lurkers can help organisations form a better strategy to promote user participation. Figure 2.1 illustrates an overview of the interventions–motivations–participation relationship.



2.5.2 Limitations in the literature

The extant literature is limited regarding the understanding of why, how and in what conditions employees lurk or post in ESNs. The key limitations are outlined as follows:

- 1) Practitioners (e.g., Qualman (2012), Hinchcliffe and Kim (2012), Adamson (2014) and Pisoni (2013)) have proposed several interventions (e.g., give praise, like someone's post, give unsolicited advice, send promotional messages and write SMPs) to enhance user participation in ESNs. However, these proposals require an appropriate empirical and theoretical base;
- 2) Although motivating users to participate in online activities has been one of the most widely studied topics in online participation research (Ren et al.

2012), academic research on interventions to promote users' online participation (e.g., (Bock et al. 2006), (Koh et al. 2007) and (Won-Seok et al. 2002)) largely pre-dates the launch of ESNs. Previous research: (i) has often been conducted in traditional online communities (e.g., bulletin board systems, discussion lists and online forums), (ii) investigated oftentimes earlier social tools such as blogs, online forums and wikis (e.g., Brzozowski et al. (2009) and Moon et al. (2008)); or (iii) focused on public social networks (e.g., (Boyd et al. 2007b), (Riedl et al. 2013) and (Turel et al. 2012)).

- 3) The academic literature on employees' motivations to use ESNs focuses on posters and 'how' or 'why' they use or share their knowledge on ESNs (Beck et al. 2014a) without considering the motives and usage behaviours of the larger user group, namely, lurkers (Lai et al. 2014; Malinen 2015). Further, influencing users to participate could have different outcomes in different user groups. For example, interventions to improve user participation (e.g., promotional messages) might not yield the hoped-for results because strategies that encourage lurkers to be more active may not translate into posters' willingness to continue being active posters.
- 4) The proposed use-motivation models in literature have tended to focus on extrinsic motivations or values (e.g., perceived usefulness, information quality) with less attention paid to the intrinsic motivations (e.g., perceived fun).
- 5) Methodologically speaking, academic literature on employees' use of ESNs comprises either: (i) qualitative studies (Table 2.5), or (ii) propositions (research in progress) that need to be validated. There are limited empirical, quantitative and theory-driven studies on individual-level motivations to use (or not use) an ESN and the extent of that influence (with a few exceptions such as the work by Kügler et al. (2014) (2015a)). The literature contributes no knowledge on what motivates a specific usage (e.g., lurking) of an ESN, how this usage is different from other use case motivations (e.g., posting) and whether the same antecedents could play a positive (or negative) role in forming one or multiple use behaviours. There is little theoretically-grounded research on "what makes some online communities more successful than others" (Ren et al. 2012) particularly in the work environment.

Table 2.5 Examples of the qualitative studies on ESNs

| Author(s) | Description |
|---|--|
| Kügler et al. (2013b), (2012), and Punj et al. (1983) | Proposed conceptual models of the determinants of ESN usage (by means of qualitative data) |
| Meske and Stieglitz (2013) | Interviewed decision-makers in small and medium-sized enterprises to identify issues and concerns regarding their adoption of ESNs |
| Stocker et al. (2012) | Reviewed three case studies and identified the state of the art on microblogging services regarding their use and benefits |
| Richter et al. (2013b), (2013c) | Provided recommendations and implementation strategies (e.g. improving employee-to-employee communication) on ESNs in Germany, Austria and Switzerland |
| Riemer et al. (2013), (2012) | Identified different types of communicative work practices in their genre analysis of Yammer messages at Deloitte Australia |

- 6) Several managerial interventions have already been implemented to boost ESN participation in organisations but we still have no way of knowing if these interventions are effective. For example, Preece et al. (2004) found that members lurked because they were concerned about the risk of aggressive responses and poor treatment. However, there is limited research investigating SMPs that are supposed to provide employees with a sense of protection. We are not aware of research that investigates SMPs in corporate use of social networks and the impact of these policies on users' beliefs of an ESN.

2.5.3 Research objectives

Thus, the extant literature on behavioural issues in corporate social networks is limited in addressing the problem of ESN underutilisation and maintaining sustainable levels of active participation. ESN community managers need assistance to identify the direction and level of influence of already-implemented interventions (e.g., promotional messages) with the aim to boost employees' participation. Against this backdrop, our research aims are:

-
- (i) to identify the key reasons that drive ESN members to either lurk or post after they have already been introduced to the platform; and
 - (ii) to examine whether the already-implemented interventions (i.e., promotional messages, management pressure techniques and SMP) improve users' beliefs or, worse, turn off posters' willingness to participate, as well as the extent of that influence.

This study responds to recent calls by scholars in this area (e.g., Ren et al. (2012), Aral et al. (2013), Kane et al. (2014) and Kügler et al. (2015b)) for further research to understand “how and why people use (or do not use) social networks and how this use results in performance variation between users” (Kane et al. 2014, p. 281) and to identify the barriers and enablers in the adoption of knowledge management by social software in firms. We present the first study of posting and lurking behaviours in ESNs, noting that such an examination has been largely ignored in the research to date which has tended instead to analyse posting and lurking behaviours independently (Park et al. 2014).

We used social exchange theory (Blau 1964) as our base to develop an extended model of employees' motivations to participate, categorised in two dimensions (i.e., costs and benefits). To account for the benefit-relevant and cost-relevant factors in participation, we used Kankanhalli et al.'s (2005) model of knowledge contribution to identify the salient motivations that drive ESN members to either lurk or post after they have already been introduced to the platform. We then turned to two behavioural change theories from social psychology, namely, the ELM (Petty et al. 1986) and social influence theory (Kelman 1958), to examine persuasion-based interventions (i.e., promotional messages) and compliance-based interventions (i.e., management pressure techniques), respectively. Finally, we examined the influence of governance tools (i.e., SMPs). The next chapter provides a detailed description of the development of our research model.

Chapter 3: Research Model and Propositions

The extant literature on ESNs was reviewed in the previous chapter in order to evaluate the current understanding of (i) participation behaviours across two user groups (i.e., lurkers and posters), (ii) users' motivations to either lurk or post, and (iii) management interventions to encourage user participation. In addition, several theoretical lenses on virtual communities and behavioural change frameworks were explained in the literature review.

This chapter presents the research model and four research propositions. It is structured as follows:

- I. The first section presents the proposed research model. To guide the discussion in this chapter, an overview of the analysis used to develop the research model and formulate the propositions for investigation in this study is provided.
- II. The second section explains the dependent variable that represents lurking and posting behaviours in ESNs, including an explanation and justification of the appropriate lurking threshold.
- III. Guided by social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution, the third section identifies, justifies and discusses the relationships of four relevant parameters (as independent variables) categorised into two cost factors (that drive employees to lurk) and two beneficial factors (that drive employees to post) (Proposition 1).
- IV. The fourth section discusses the commonly-used management interventions that aim to motivate users' participation. Building on several behavioural change frameworks, we discuss the relationships of three organisational interventions (i.e., promotional messages, management pressure, and SMPs) and examine whether (and to what extent) these interventions impact individuals' beliefs and subsequent participation across different user groups (i.e., lurkers and posters) (Propositions 2, 3 and 4).
- V. The chapter summary is presented in the last section.

3.1 Model Development

The development of the proposed research model was informed by: (i) social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution; (ii) the ELM (Petty et al. 1986); (iii) social influence theory (Kelman 1958); and (iv) the policy–behaviour compliance literature. Social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution led to the identification of the four factors that we believe to be the key factors in motivating ESN posting and lurking behaviours, namely, extrinsic benefit operationalised using “image”, extrinsic cost operationalised using “loss of knowledge power”, intrinsic benefit operationalised using “intrinsic interest”, and intrinsic cost operationalised using a new conceptualised construct named “perceived fulfilment”. The ELM (Petty et al. 1986) was used to examine the influence of persuasion-based interventions (i.e. promotional messages) on users’ beliefs (i.e. the four motivations). Social influence theory (Kelman 1958) was used to examine the influence of compliance-based interventions (i.e. management pressure techniques) on users’ participation. The policy–behaviour compliance literature was used to examine the influence of a governance tool (i.e. SMP) on users’ beliefs (i.e. the four motivations). Our rationale for selecting these theoretical frameworks is explained in Chapter 2 (Section 2.4.1.1 for the social exchange theory and Kankanhalli et al.'s model of knowledge contribution; Section 2.4.2.2.1 for the ELM; and Section 2.4.2.3.2 for the social influence theory).

Individually, the above-mentioned theoretical frameworks would not address our research questions. Kankanhalli et al.'s (2005) model was employed to explain – at the individual level – the extrinsic and intrinsic benefits and costs factors that motivated users to either post or lurk (i.e., the study’s first research question); however, Kankanhalli et al.'s model cannot explain the influence of persuasion/compliance-based management interventions on users’ participation experiences in ESNs (i.e., the study’s second research question).

Furthermore, as previously illustrated, the study’s second area of inquiry is the extent of the influence of three interventions not only on users’ posting/lurking behaviours, but also on their salient beliefs regarding participation in the ESN. Although the ELM could explain the influence of promotional messages on users’ beliefs, it cannot explain the influence of management pressure techniques on users’ posting/lurking behaviours. Together, however, we would be able to examine the direct influence of management pressure techniques on users’ behaviours (through social influence

theory) and the indirect influence of promotional messages (through the ELM) and of the SMP on users' beliefs about participating in the ESN.

Social science theorists (e.g., Dubin (1978)) stress that, for theories to be combined, they must be contiguous and “integrated based on logically consistent principles” (Tate et al. 2015, p. 710). All the theoretical frameworks explained earlier are from the discipline of social psychology. The operationalisation of all the theoretical frameworks is consistent with their original assumptions. Congruent with the originating theories, the unit of analysis is at the individual level. Except for the dependent variable of the ELM (refer to Section 2.4.2.2.1 for details), the operationalisations and the associations of the dependent and independent variables in our proposed model are in line with the original theories.

Figure 3.1 illustrates the proposed research conceptual model. The central thesis of the model is that, firstly, participation behaviour (the dependent variable) in an ESN is dependent on four motivations to participate, namely, image and intrinsic interest as benefits, and loss of knowledge power and fulfilment as costs (the independent variables). Secondly, the model proposes that the four motivations are influenced by the argument quality and the source credibility of the promotional messages sent by management to influence ESN participation. Thirdly, the model proposes that the four motivations are also influenced by SMP effectiveness. Lastly, the model proposes a direct influence of verbal management pressure and non-verbal management pressure (rules) on users' participation behaviour. The following sections discuss – in detail - each part of the proposed model in turn.

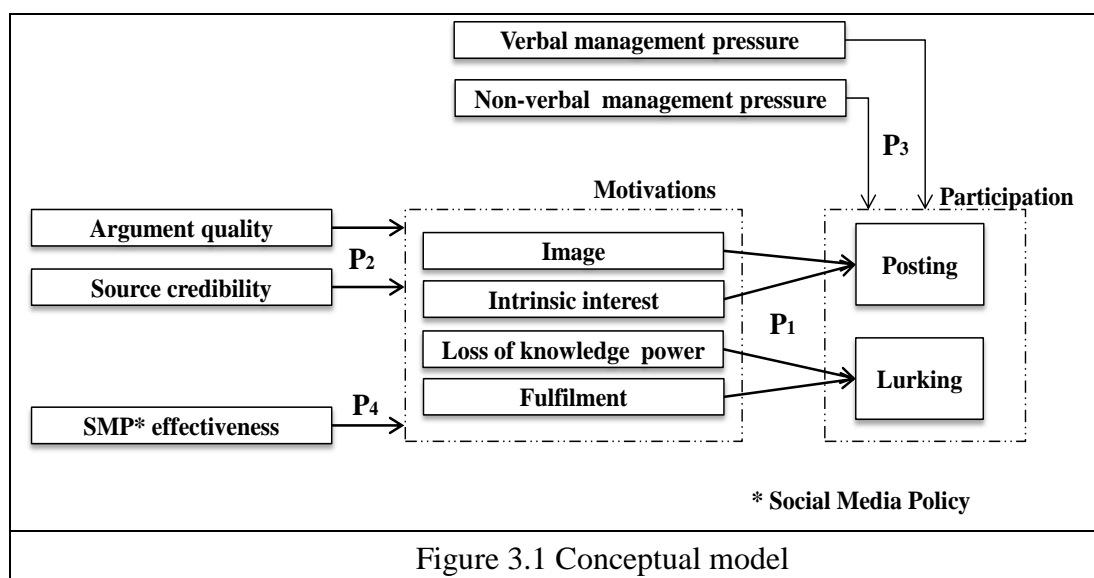


Figure 3.1 Conceptual model

3.2 The Dependent Variable – Participation Behaviours

The existence of any online community primarily depends on members' participation (i.e., creating content). Not surprisingly, it is at the core of many theories that set out to explain what motivates people to participate (or not participate) in online communities (de Carvalho et al. 2015).

The literature on online participation typically summarises user participation into two behaviour types: lurking and posting with lurkers constitute the largest user group (Lai et al. 2014). Similarly, most microblogging activities in ESNs take the form of either viewing other posts (i.e., lurking) or posting (de Carvalho et al. 2015; Malinen 2015; Schneider et al. 2013). In line with our sample mean (i.e., the number of posts and comments) and the nature, activities and dynamics of the communities in which we collected our data (refer to chapter 2, Sections 2.3.1 for further detail on the rationale for selecting the threshold that differentiates lurking from posting behaviours), this study defines lurkers as *members who did not create any content (post or comment) in the last month*. Based on Ridings et al.'s (2006) definition of posters as “community members who actively contribute content”, we define posters as *members who posted or commented at least once in the last month*.

Online participation is operationalised in terms of its quantity using measures such as the time spent, number of visits, number of posts and comments or amount of shared content (Malinen 2015). In this study, we employed different items to measure users' participation behaviours in terms of content creation (i.e., posts and comments) using two scales, namely, a 7-point Likert scale and a continuous scale. The measurement items of our dependent variable are explained in greater detail in Section 4.2.1.1. It is important to note that the dependant variable (participation) was then operationalized into binary variable of posting/lurking to identify which independent variable(s) leads to what behaviour. Refer to Section 5.5.2 for further detail.

3.3 The Independent Variables – Determinants of Participation

Having discussed users' participation and identified lurking and posting behaviours in ESNs, we now discuss the main determinants of these behaviours, building on the contributions of social psychology research.

The rapid growth of social networking has not gone unnoticed by academic researchers, yet few studies have been conducted to understand employee behaviours in internal social networks (Wu et al. 2013). The extant literature on behavioural issues in corporate social networks is limited in addressing the online participation

problems causing ESN underutilisation, particularly the challenges in maintaining a sustainable level of active participation. Recognising the limitations in the literature (Chapter 2, Section 2.5.2) and realising the problem of ESN underutilisation, we took a holistic view by considering not only the beneficial factors but also the cost factors that could motivate the behaviours of poster and lurker user groups. Therefore, our study's first objective was to identify the key reasons that drive ESN members to either lurk or post after they have already been introduced to the platform.

3.3.1 Cost and benefit factors

As explained in the literature review in Chapter 2 (Section 2.4.1.1), the main assumption of social exchange theory (Blau 1964) is that individuals interact with others based on their self-interested analysis of the expected benefits and costs of that social exchange (Kankanhalli et al. 2005). To account for benefit-relevant and cost-relevant factors during social exchange, we turned to the literature on extrinsic and intrinsic motivations.

Of the many models explaining the extrinsic and intrinsic motivations that stimulate and hinder contributions in a corporate setting, Kankanhalli et al.'s (2005) model of knowledge contribution is one of the most commonly cited models of knowledge contribution (He et al. 2009; Liang et al. 2008; Wang et al. 2010). Kankanhalli et al. (2005) used social exchange theory as a theoretical base on which to explain the use of electronic knowledge repositories by knowledge contributors. They operationalised and validated a model of employees' motivations to contribute, categorised into three dimensions: the cost dimension (codification effort, loss of knowledge power), extrinsic benefits dimension (organizational reward, reciprocity, image) and intrinsic benefits dimension (self-efficacy, enjoyment in helping others).

Drawing on social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution, our study examined a number of motivations for user participation, categorised in four dimensions: extrinsic benefits, extrinsic costs, intrinsic benefits, and intrinsic costs. The aim was to capture the salient motivations of poster and lurker user groups by examining the extrinsic and intrinsic benefits that make users post as well as the extrinsic and intrinsic costs that make users lurk. We adopted Kankanhalli et al.'s (2005) conceptualisation of "image" as the extrinsic benefit of posting and "loss of knowledge power" as the extrinsic cost of lurking. Although the intrinsic benefit of "enjoyment in helping others" is an important factor in predicting knowledge sharing in Kankanhalli et al.'s model, we decided it was better to extend this concept to capture broader aspects of users' own pleasure and

enjoyment. Therefore, we employed “intrinsic interest” as conceptualised by (Webster et al. 1993) as the intrinsic benefit of posting. Intrinsic interest represents an intrinsic type of motivation (Webster and Martocchio 1992; Webster et al. 1993), and research in IS has confirmed the significant effect of intrinsic interest in shaping people’s use of an IS (e.g. Ali-Hassan et al. (2011) and Scheepers et al. (2014)). Table 3.1 summarises the extrinsic and intrinsic construct definitions.

Table 3.1 Definitions of extrinsic and intrinsic constructs

| Construct | Definition | Reference |
|---|--|---------------------------|
| Image (as an extrinsic-benefit) | The extent to which an individual believes that posting on the ESN enhances his/her social self-concept in the ESN | (Wasko et al. 2005) |
| Loss of knowledge power (as an extrinsic-cost) | The perception of power and unique value lost due to knowledge posting in ESN | (Kankanhalli et al. 2005) |
| Intrinsic interest (as an intrinsic-benefit) | The extent to which members are involved in the activity for its own pleasure and enjoyment rather than for some utilitarian purpose | (Webster et al. 1993) |
| Perceived Fulfillment (as an intrinsic cost) | The extent to which members feel their needs of using the ESN are fulfilled through reading only | Self-developed |

The knowledge sharing literature suggests that the factors we have selected are significant drivers of participating (and non-participating) behaviour. Further, in the interests of (i) parsimony, (ii) highlighting the influences of all four dimensions (i.e., extrinsic and intrinsic benefits and costs), and (iii) relevance to ESN implementation, and because identifying the motivations was not the sole objective of the study (we also examined the influence of three management interventions), we did not include all the factors in Kankanhalli et al.’s model. Codification effort was excluded due to its lack of relevance to the ESNs as the users in our study had pre-existing familiarity with public social networks and had used the ESN for at least one month (as discussed in more detail in Chapter 4, Section 4.2.2.1, in relation to the sample selection). In addition, the codification effort proposed in Kankanhalli et al.’s model has been found to have a negative but non-significant effect on knowledge sharing (Beck et al. 2014b); therefore, it was expected that the codification effort would be minimal in our context. Similarly, the organizational reward factor in Kankanhalli et al.’s model was not applicable because, in this study, we examined promotional messages as an organizational intervention to improve participation. There were no economic incentives in the network investigated in our study.

3.3.1.1 The extrinsic benefit of “image”

Individuals engage in social interaction if they expect that they will get social rewards such as respect or status (Blauner 1964; Wasko et al. 2005). As an extrinsic benefit, image enhancement has an important influence on individuals' behaviours (McLure Wasko et al. 2000). Several studies on technology adoption have highlighted the importance of the motivation to maintain a favourable social status or image in driving system use (Moore et al. 1991; Plouffe et al. 2001; Turel et al. 2007; Venkatesh et al. 2000), particularly the use of knowledge management systems (Beck et al. 2014a; Sun et al. 2012).

Research on corporate online communities found that members actively participated when they believed participation enhanced their personal image (Beck et al. 2014b; Hung et al. 2011; Hung et al. 2015; Kankanhalli et al. 2005; Lai et al. 2014; Lin et al. 2012; McLure Wasko et al. 2000; Oh 2012; Wasko et al. 2005). In a recent review of empirical studies on the effect of rewards and incentives on user participation in online communities, Malinen (2015), p 234 reports that “immaterial incentives such as prestige and reputation have been identified as the most effective rewards”. These results are largely consistent with the finding by Wasko and Fara (2005) that posters mainly contributed knowledge for enhanced reputation.

On these grounds, we conclude that image plays a significant role in positively influencing posting behaviour in an ESN. This conclusion is further strengthened by two recent studies on employees' use of an enterprise social software in which Kügler et al. (2015a) found that image enhancement played a major role in employees' social connectedness in an enterprise social software context. Similarly, Beck et al. (2014b), p. 26 found that reputation positively affects knowledge creation and knowledge integration in an enterprise wiki and “that when employees perceive that they stand to gain in stature within the organization, they are more likely to contribute to the wiki”.

Although research in the realm of social software usage has validated the importance of enhanced image in explaining user participation behaviour, we are not aware of any study that empirically examines the influence of image on employees' participation in ESNs across the poster and lurker user groups. We argue that image has a greater influence on the posters than on the lurker user group.

3.3.1.2 The extrinsic cost of “loss of knowledge power”

As previously indicated (Chapter 2, Section 2.4.1.1), social exchange theory assumes that people maximise the benefits and minimise the costs when they interact with others (Kankanhalli et al. 2005; Liang et al. 2008). Accordingly, in online communities, participation occurs when the perceived benefits outweigh the perceived costs of participation (Beck et al. 2014b). Molm (1997) suggests two forms of social exchange costs: opportunity costs (e.g., the time and effort required to participate) and actual loss of resources (e.g., the loss of knowledge power) (Kankanhalli et al. 2005; Markus 2001). Compared to other corporate social systems such as wikis (Beck et al. 2014b) and to knowledge management systems (e.g., (Kankanhalli et al. 2005)), it can be assumed that participation in microblogging communities such as ESNs requires fewer opportunity costs such as codification effort and time. In particular, the ESN members in this study had pre-existing familiarity with the platform as they had used the ESN for at least one month (as discussed in Chapter 4, Section 4.2.2.1, in relation to the sample selection).

The actual loss of resources, on the other hand, is an important form of cost associated with social exchange (Kankanhalli et al. 2005; Markus 2001). Above all, Gray (2001) highlights that loss of knowledge power is important in understanding why employees don't participate in knowledge management systems. Huang et al. (2008) surveyed 159 employees of different organisations in eastern China and found that the perceived risk of the loss of knowledge power had a significant negative impact on knowledge sharing attitudes. Kankanhalli et al. (2005) identified the loss of knowledge power as an extrinsic cost incurred in the process of sharing knowledge, which entails a negative relationship with knowledge contribution.

Some users are afraid that contributing may lead to the loss of their unique value (i.e., their knowledge) (Ding et al. 2014) and thus, they “would rather retain the knowledge than share it” (Huang et al. 2008, p. 456). In competitive work environments, we believe that this cost may be of particular significance for employees who otherwise compete with colleagues in multiple dimensions of which knowledge (especially tacit knowledge) is an important one. However, research on what motivates users to participate in an organisational context tends to take a positive approach and focuses on beneficial factors with less attention paid to the cost factors. On the basis of this discussion, we argue that the perceived loss of knowledge power has a greater influence on the lurker user group than the poster user group.

3.3.1.3 The intrinsic benefit of “intrinsic interest”

Researchers (e.g., (Brock et al. 2001) , (McLure Wasko et al. 2000)) have repeatedly stressed that “no artificial incentive can ever match the power of intrinsic motivation” (Kohn 1993, p. 7). Intrinsic benefits (e.g., fun) have a greater impact on encouraging system use (Beaudry et al. 2010), particularly when the technology use is voluntary in nature (Webster et al. 1992). Of the many cognitions examined in IT usage research, intrinsic benefits are one of the most salient to influence user attitudes particularly towards systems with pleasure-oriented qualities like social networks (Lin et al. 2010; Wu et al. 2013). In the same vein, Kang et al. (2013) and Turel et al. (2012) highlight the importance of intrinsic benefits as the most significant motivations for using social networks.

In relation to work environments, research on IS usage demonstrates that perceptions regarding the intrinsic benefits strongly influence the use of knowledge management systems (Beck et al. 2014a; Kankanhalli et al. 2005; Sun et al. 2012; Wasko et al. 2005). Employees use virtual communities not only for work-related activities but also for water cooler chatting, entertainment and social arrangements and as a conversation medium for relationship building (Xu et al. 2012). In the analysis of 71,000 posts in an enterprise blogging system, Singh et al. (2014) found that nearly 75% of the posts were on non-work topics.

In order to capture broader aspects of users’ own pleasure and enjoyment, we employed the benefit of “intrinsic interest” as conceptualised by (Webster et al. 1993). Intrinsic interest represents an intrinsic form of motivation (Webster et al. 1993), and IS research in IS has long-established the significant effect of intrinsic interest in shaping individuals’ use of an IS (Ali-Hassan et al. 2011; Scheepers et al. 2014). For example, in a qualitative study of employees’ use of an enterprise social software, Kügler et al. (2014) found hedonic use (i.e., the extent to which employees used the software for the purpose of entertainment) to be an important facet of the software usage. In a study on professional virtual communities, Hung et al. (2015b) found that intrinsic benefits (i.e., enjoyment in helping others) positively influenced posters’ intentions to share their knowledge. Further, in a recent study on the intention to share and seek information on online investment communities in South Korea, Park et al. (2014) found that entertainment value had a significant influence on users’ intentions to share and seek information. Therefore, we argue that intrinsic interest has a greater influence on the poster user group than on the lurker user group.

3.3.1.4 The intrinsic cost of “fulfilment”

As previously indicated, while previous research has investigated the relative importance of several extrinsic and intrinsic beneficial factors in knowledge sharing, understanding the cost factors that drive individuals to lurk is the least investigated research area particularly in relation to enterprise virtual communities (Beck et al. 2014a). In this study, the last motivation that completes the fourth block in the quadrant of salient motivations to participate (or not participate) in ESNs is the intrinsic cost of fulfilment.

As explored in Chapter 2 (Section 2.3.3), the scholarly work by Preece and Nonnecke (2000) (2001) (2004) on understanding the reasons for lurking is well acknowledged in the literature (e.g., (Bishop 2007; Bishop 2011), (Muller 2012; Muller et al. 2010) ,(Rau et al. 2008), (Ridings et al. 2006) and (Sun et al. 2014)). From a survey of 219 lurkers regarding their reasons for not posting, Preece et al. (2004) identified five main reasons for not posting: (1) the lurkers think that just reading/browsing is enough, (2) the lurkers are still learning about the group, (3) the lurkers think they are being helpful by being altruistic observers, (4) there is no requirement to post, or (5) the lurkers are simply not able to use the software functionalities. The “just reading/browsing is enough” reason was found to be the dominant reason for lurking in online discussion communities. More than half (53.9%) of the lurkers selected that reason for their lurking behaviour (Preece et al. 2004). The lurkers’ typical comments in the follow-up open-ended question about their reasons for not posting were: “I do not really feel a need to” and other comments indicating that they “got what they wanted, and there was no need for them to post” (Preece et al. 2004, p. 220).

The “just reading/browsing is enough” reason is echoed in the literature on online lurking as the main reason for low levels of user participation (Sun et al. 2014); however, we are not aware of any research that provides a conceptualisation of this reason. The present study conceptualised a new construct to account for the “just reading/browsing is enough” reason. The rationale for developing this new construct is as follow:

- The dearth of empirical research on motivations to lurk in the corporate use of social software. The literature calls for further theory-based quantitative studies to examine why employees do not use social technologies (El Ouiridi et al. 2015Ren et al. 2012).

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- Despite the significance of the “just reading/browsing is enough” reason in explaining why users lurk, there is, to the best of the author’s knowledge, no research that provides a conceptualisation of this reason.
 - In order to capture the relative richness of this reason, it is necessary to explain and examine: (i) the extent of its influence on lurking behaviour, and (ii) how posters’ and lurkers’ perceptions of this reason are different. Such understanding has both academic and practical value. For example, one implication for ESN community managers could be to try to alter the content of these messages to position the ESN as a favourable environment for lurkers.
 - Finally, the new construct was developed in order to address the first objective of the study, that is, to identify the key reasons that drive ESN members to either lurk or post.

We drew on the lurking literature (especially Preece and Nonnecke (2000) (2001) (2004)) and conceptualised a new construct named “perceived fulfilment” as a cost factor that could hinder user participation. Perceived fulfilment is defined as “*the extent to which members feel their needs for using the ESN are fulfilled through reading only*”. Although our new construct might not resemble inherently intrinsic factors (e.g., intrinsic interest), we believe it represents the intrinsic aspect of lurkers’ realisation that the reading activity itself is sufficient and meaningful and that it fulfils their needs for using the ESN. Therefore, we included perceived fulfilment as an intrinsic cost in our model (further details on this new construct including the measures and validation procedure are presented in Chapter 4, Section 4.2.1.4, in relation to the research methodology). We argue that perceived fulfilment is an important driver of lurking behaviour in ESNs.

To conclude this part of the discussion, our theory suggests that the salient motivations of users’ participation can be categorised in four dimensions: (a) extrinsic benefit (operationalised using “image”), (b) extrinsic cost (operationalised using “loss of knowledge power”), (c) intrinsic benefit (operationalised using “intrinsic interest”), and (d) intrinsic cost (operationalised using “perceived fulfilment”). Based on the previous arguments linking these four factors to users’ participation, we formulated the following proposition:

Proposition 1 – Perceived extrinsic and intrinsic benefits and costs will impact ESN participation behaviour, such that the perceived extrinsic cost of loss of knowledge power and the perceived intrinsic cost of fulfilment will encourage lurking behaviour, and the perceived extrinsic benefit of image and the perceived intrinsic benefit of intrinsic interest will encourage posting behaviour.

3.4 Organisational Interventions

Given the voluntary nature of ESNs, participation in these communities needs to be properly stimulated in order for the communities to survive (Lai et al. 2013). Practitioners (e.g., David et al. (2013), Qualman (2012), Perez (2014) and Pisoni (2013)) have suggested numerous interventions to reach the silent user groups in ESNs (e.g., give praise, like someone's post, give unsolicited advice, send promotional messages and write SMPs); yet, these suggestions need an appropriate empirical and theoretical base. In fact, organisations have already implemented some of these interventions (May 2013), but there is still no way of knowing if these interventions are effective and whether they improve lurkers' attitudes or, worse, turn off posters' willingness to participate.

In the academic literature, the stimulation of users to participate in online activities has been one of the most widely studied topics in online participation research (e.g., (Bock et al. 2006), (Kankanhalli et al. 2005), (Lee et al. 2013), (McLure Wasko et al. 2000; Wasko et al. 2005), (Ren et al. 2012; Ren et al. 2007) and (Won-Seok et al. 2002)). However, these studies largely pre-date the establishment of ESNs. In addition, empirical studies evaluating the influence of organisational interventions across different user groups (i.e., lurkers and posters) are scarce (Kane et al. 2014). As members lack "sufficient motive to contribute" (Beck et al. 2014a), encouraging passive-but-not-lost members (i.e., lurkers) involves the use of different techniques (Koh et al. 2007; Schneider et al. 2013). An understanding of which interventions have more effect and which interventions have less effect on the motivation–participation relationship can help organisations form a better strategy to promote user participation. To date, very little is known about 'what' and 'how' management interventions impact on users' perceptions and/or users' online participation.

To examine whether certain interventions improve users' beliefs and subsequent participation (the second objective in our research), we investigated three types of interventions. As illustrated and discussed in the literature review in Chapter 2 (Section 2.4.2), academic studies (e.g., Wang et al. (2013)) that investigate possible interventions to influence users' online participation have been broadly classified into three key areas: persuasion-based interventions, compliance-based interventions, and governance tools (i.e., SMPs). Compared to other commonly-used organisational interventions, promotional messages (as a persuasion-based intervention), management pressure (as a compliance-based intervention) and SMPs are among the key interventions that are suggested in the literature to impact on the use of enterprise social software (All 2014; Qualman 2012; Yuan et al. 2013). These three key interventions are explained in greater detail in the following sub-sections.

3.4.1 Promotional messages

Researchers suggest that persuasion frameworks are more applicable to voluntary technologies (Kane et al. 2014) and propose many persuasive strategies (e.g., promotional messages, social cues, peer support and setting an example for others) that managers can use to draw employees' attention towards a new IS (Li 2013; Sánchez et al. 2010). In particular, promotional messages are one of the most widely-used organisational interventions in ESNs (Qualman 2012; Yuan et al. 2013). In the present study, promotional messages are defined as *persuasive communication sent by management through emails or online posts to encourage users' participation and to provide information about the ESN*.

Scholars in the area of persuasion have developed different persuasion frameworks to explain how cognitive involvement leads to persuasion: in other words, to model how changes are made to the way people feel, think and then act (Oinas-Kukkonen et al. 2008). As illustrated in the literature review in Chapter 2 (Section 2.4.2.2), in order to understand how motivations to participate could potentially be influenced through promotional messages, we employed the ELM (Petty et al. 1986) because it offers “a theoretical explanation for observed differences in the amount of *influence* accepted by recipients exposed to new information” (Angst et al. 2009, p. 341). This influence is captured by identifying its two routes, namely, the peripheral route and the central route (Petty et al. 1986) (as discussed in detail in Chapter 2, Section 2.4.2.2.1). In IS research, the ELM has been employed to examine different management interventions (e.g., training, promotional emails) that aim to engage employees (e.g., (Bhattacharjee et al. 2006), Li (2013) and Sussman et al. (2003)).

3.4.1.1 Central and peripheral route influences on motivations

Through the theoretical lens of the ELM, our empirical study evaluated the influence of a promotional message on the four dimensions of users' beliefs across different users (i.e., lurkers and posters). We posit that promotional messages can influence these beliefs through: (i) the central route (operationalised using “argument quality”) and (ii) the peripheral route (operationalised using “source credibility”) of promotional messages. Based on Bhattacharjee et al. (2006) definition of argument quality and source credibility, we define argument quality as *the persuasive strength of the arguments embedded in the promotional messages*, and source credibility as *the extent to which the promotional message source is perceived to be believable, competent and trustworthy by ESN users*.

When sending persuasive messages (promotional messages), the source credibility plays an important role in persuading recipients, particularly individuals in the peripheral route who process information by their identification with the source (Bhattacharjee et al. 2006). In contrast, in the central route, individuals rely more on the argument quality of such messages (Sussman et al. 2003). In the IS field, the majority of ELM research has investigated the persuasive impact of information messages in training courses (e.g., Bhattacharjee et al. (2006) and Li (2013)) or in recommendation emails received from colleagues (e.g., Sussman et al. (2003)). In corporate online communities, promotional messages are usually sent by email and online posts (Yuan et al. 2013).

We argue that when management (e.g., ESN community managers) send promotional messages, the persuasive strength of the arguments embedded in these messages and the source characteristics (the competence, trustworthiness and authority of the source as perceived by the ESN users) will influence the four motivations to participate, that is, image and intrinsic interest as the benefits and loss of knowledge power and fulfilment as the costs. However, as discussed in the literature review in Chapter 2 (Section 2.4.2.2.1), the literature links the argument quality and the source credibility of the message received by users to a limited number of user beliefs (e.g., usefulness). Therefore, we examined all possible paths of influence and proposed:

Proposition 2 – The argument quality in promotional messages and the credibility of their source will impact users' perceived benefits (i.e., image, intrinsic interest) and costs (i.e., loss of knowledge power, fulfilment) of participation in the ESN, and such impact will differ across lurkers and posters.

3.4.2 Management pressure

Since different individuals are influenced by different things, it can be expected that persuasive techniques alone will not align the ESN users' beliefs and behaviours with the firm's expectations. IS researchers have highlighted management pressure as an intervention that can influence employees' behaviour in a significant manner (Bajwa et al. 2008; Boss et al. 2009; Eckhardt et al. 2009; Venkatesh et al. 2008a).

As illustrated in the literature review in Chapter 2 (Section 2.4.2.3.1), management pressure could lead to the creation of favourable perceptions among users even for voluntary systems (Venkatesh et al. 2008a; Venkatesh et al. 2000). Further, several managerial pressure techniques are already implemented in organisations to boost ESN participation (Pisoni 2013; Qualman 2012; Yuan et al. 2013). However, in the

context of a work setting, less effort has been put into understanding how management pressure influences both posters' and lurkers' behaviours in virtual communities (Malinen 2015; Richter et al. 2013c). Written or spoken management pressure interventions to enhance user participation might not yield the hoped-for results because strategies that encourage lurkers to be more active may not translate into posters' willingness to continue being active posters.

Using the social influence theory (Kelman 1958), we drew on Kelman's conceptualisation of compliance to understand the effectiveness of management pressure in aligning employees' participation with the ESN managers' expectations. Consistent with other IS researchers (e.g., Venkatesh and Davis (2000)), certain types of social and managerial pressure could influence individuals' behaviours and ensure users react in a desired fashion (Boss et al. 2009). For example, in the ESN context, a manager might mandate that each employee must post a certain number of entries each month or that they must broadcast their project deliverables.

In contrast to our approach to promotional messages as an intervention employed to influence users' beliefs, here we examined the direct influence of management pressure on lurkers' and posters' participation behaviour. The rationale for the direct examination of management pressure techniques on users' behaviour lay in the following considerations:

- (i) Previous applications of the theory (e.g., Eckhardt et al. (2009) and Wang et al. (2013)) link several social and management influences to systems' usage.
- (ii) The aim of management pressure techniques is often to change behaviours. Management pressure techniques (e.g., written rules) are not designed to convince or appeal to users (like promotional messages) to change their beliefs and subsequently favour certain behaviours. Instead, management pressure techniques target users' behaviour in order to align the behaviour with the organisation's expectations.

Drawing on the literature on management influence (e.g., (Chatterjee et al. 2002), (Liang et al. 2007) and (Wang et al. 2013)), we categorised two types of management pressure: (i) verbal management pressure based on Brown et al.'s (2010) conceptualisation of "superior influence", and (ii) non-verbal management pressure (rules) based on Boss et al.'s (2009) conceptualisation of mandatoriness. We define verbal management pressure as *the perceived pressure of management unwritten rules to participate in the ESN*, and we define non-verbal management pressure (rules) as *the perceived pressure of management rules to participate in the ESN*.

3.4.2.1 Verbal and non-verbal management pressure on participation

Rogers (2003) suggests that social influence operates through two channels: non-verbal interaction and verbal communication (Wang et al. 2013). Most IS researchers (e.g., (Brown et al. 2010), (Pavlou et al. 2006; Venkatesh et al. 2008a; Venkatesh et al. 2003)) examine the verbal communication aspect to validate the effect of social influence on ongoing IS use and often measure it by asking respondents “to indicate the extent to which they think that others believe that they should use a technology, which is predominantly formed through language-based interactions” (Wang et al. 2013, p. 301). The non-verbal channels are largely overlooked in the IS literature. Very little is known about the outcomes and the extent of influence of the non-verbal channels (Wang et al. 2013).

In this study, we took a holistic view of not only employees’ perceptions of management suggestions and gestures to participate (e.g., when supervisors suggest or encourage participation in the ESN) but also their perceptions of tougher techniques and written rules that management could employ to push employees to regularly post in the ESN (e.g., a manager mandating that employees must upload presentations on the ESN before any seminar). Therefore, we argue that employees are influenced by two types of management pressure, namely, the verbal management pressure and the non-verbal management pressure (rules).

The management pressure intervention could provide a significant impact on employees’ participation as compared to other organisational interventions. From the verbal management pressure aspect, employees look to these important people (i.e., managers) and correlate with their expectations which could directly influence their own participation behaviour. On the other hand, users will comply when they “perceive pressure to behave in a certain way, to either gain rewards or avoid punishment” (Wang et al. 2013, p. 300). Therefore, from the non-verbal management pressure (rules) aspect, if employees perceive that participation is compulsory or highly expected by organisational management, particularly through written rules, they are more likely to participate.

In line with these arguments, we proposed:

Proposition 3 – The verbal management pressure and the non-verbal management pressure (rules) will impact ESN participation behaviour, and such impact will differ across lurkers and posters.

3.4.3 Social media policy

Having discussed promotional messages and management pressure interventions, we now discuss the third and final organisational intervention examined in this study, namely, SMPs. Organisations use policies as guidelines to dictate the rules and regulations (Vroom et al. 2004). Straub et al. (1990) define IT policy as a tool that articulates the rights, duties and responsibilities of technology stakeholders and identifies the scope of the acceptable use of a technology. As previously explained (Chapter 2, Section 2.4.2.4), firms implementing an ESN usually have an SMP (Macnamara 2011) because it is the only governance tool available to organisations to manage employee use of social media (Vaast et al. 2013).

IS researchers emphasise the important role of IT policies not only in restricting detrimental use (Bartridge 2005) but also in guiding users to best use the technology in an effective manner (Barney 1991; Doherty et al. 2011; Vaast et al. 2013). In this sense, “policies communicate organizations’ official perception of the affordances of social media” (Vaast et al. 2013, p. 81). However, the literature on behavioural issues relating to policy usually cover the domains of information privacy and security (Xue et al. 2011), particularly policy-behaviour compliance in mandatory IT settings. There is limited empirical research investigating both sides of the policy (i.e., the protection and the know-how guidelines) and their effectiveness in influencing users’ perceptions and participation behaviours in virtual communities (Husin et al. 2011a; Vaast et al. 2013).

Following this logic, the present study focused on employees’ perceptions of the SMP in a broader sense. We investigated the role of the SMP as a communication document in providing: (i) guidance on best practices for participation (‘know-how’ for collaboration, finding solutions, etc.), and (ii) protection from any misuse (e.g., improper content, bullying or harassment). We argue that the guidelines on best practices for participation and the information on the relative merits of the ESN incorporated in the SMP document will persuade and positively influence employees’ beliefs about participation in the ESN. On the other hand, as SMPs also articulate “what employees can and cannot do with social media in the organizational context” (Vaast et al. 2013, p. 81), the SMP provides the sense of protection that could mitigate members’ fears of any negative behaviour by others. Members of

online communities have expressed concerns about the risk of aggressive responses and poor treatment, and have identified these concerns as their reasons for lurking (Preece et al. (2004). Therefore, we argue that employees' beliefs about participating in an ESN will depend on, among other factors, the persuasive strength of the policy's content in providing protection from any misuse by others (e.g., improper content, bullying or harassment).

Drawing on the policy-behaviour compliance literature and based on Xu et al. (2011) conceptualisation of the perceived effectiveness of privacy policy, we define SMP effectiveness *as the extent to which an employee believes that the SMP provides guidance on how best to engage in the ESN and provides protection from any misuse (e.g., improper content)*. To the best of our knowledge, technological policy effectiveness has not been tested on the four motivations identified in this study. Thus, we examined all possible paths and proposed:

Proposition 4 – The effectiveness of the SMP will impact users' perceived benefits (i.e., image, intrinsic interest) and costs (i.e., loss of knowledge power, fulfilment) of participation in the ESN, and such impact will differ across lurkers and posters.

3.5 Summary

This chapter described the development process of the research conceptual model and the four propositions. First, to guide the discussion in this chapter, the proposed research conceptual model is presented. Second, the chapter discussed the dependent variable of lurking and posting behaviours in ESNs. Third, the four independent variables, namely, image and intrinsic interest as benefits, and loss of knowledge power and fulfilment as costs that believed to motivate posting and lurking behaviours were then identified. Table 3.2 summarises the construct definitions.

Table 3.2 The study' constructs definitions

| Construct | Definition | Reference |
|---|--|---------------------------|
| Image (as an extrinsic-benefit) | The extent to which an individual believes that posting on the ESN enhances his/her social self-concept in the ESN | (Wasko et al. 2005) |
| Loss of knowledge power (as an extrinsic-cost) | The perception of power and unique value lost due to knowledge posting in ESN | (Kankanhalli et al. 2005) |

| | | |
|--|---|-----------------------------|
| Intrinsic interest (as an intrinsic-benefit) | The extent to which members are involved in the activity for its own pleasure and enjoyment rather than for some utilitarian purpose | (Webster et al. 1993) |
| Perceived Fulfillment (as an intrinsic cost) | The extent to which members feel their needs of using the ESN are fulfilled through reading only | Self-developed |
| Argument quality | The persuasive strength of the arguments embedded in the messages* | (Bhattacharjee et al. 2006) |
| Source credibility | The extent to which a message* source is perceived to be believable, competent and trustworthy by ESN users | (Bhattacharjee et al. 2006) |
| verbal management pressure | The perceived pressure of management unwritten rules to participate in the ESN | (Brown et al. 2010) |
| non-verbal management pressure | The perceived pressure of management rules to participate in the ESN. | (Boss et al. 2009) |
| SMP** effectiveness | The extent to which an employee believes that the SMP** provides guidance on how best to engage in the ESN and provides protection from any misuse (e.g. improper content). | (Xu et al. 2011) |
| *persuasive communication sent by management through emails or online posts to encourage users' participation and to provide information about the ESN (e.g. its benefits, qualities and recent topics discussed). ** Social Media Policy | | |

Next, the chapter discussed the relationships (Proposition-1) of these four variables on lurking/posting behaviour in an ESN. In the last section, the chapter identified, justified and discussed the relationships of three management interventions (i.e., promotional messages, two management pressure techniques, and SMP) on users' four beliefs (Proposition 2 and 4) and – directly – on users' participation behaviour (Proposition 3).

Chapter 4: Research Methodology

Informed by several theoretical frameworks and the literature on online participation, extrinsic and intrinsic motivations, behaviour change, and lurking behaviour, Chapter 3 presented the study's research model and propositions. This chapter describes how the study's research model was empirically tested, leading to findings that address the research objectives.

To present the research methodology, this chapter is structured as follows:

- I. The first section presents the key steps of the overall research design. This section then provides a background to the survey method and a justification for the use of this method in the study's research context.
- II. The second section provides a detailed discussion of the cross-sectional online survey method and the operationalisation of its procedure. This discussion covers the following points:
 - Development of the scale, including the adoption of previously-validated measures in the literature, the conceptualisation phase of a new construct and the operationalisation procedure that was followed to create the new construct's measures.
 - Sample selection criteria and an overview of the case context.
 - General guidelines for the online survey design.
 - Content validation procedures and the pre-test and pilot test that were employed before proceeding with the full-scale survey.
- III. A summary of the chapter is presented in the final section.

4.1 Research Design

Clark et al. (2011) p. 53 define research design as “procedures for collecting, analysing, interpreting and reporting data” which are useful because “they help guide the methods and decisions that researchers must make during their studies and set the logic by which they make interpretations at the end of their studies”.

As illustrated in the research design (Figure 1.1 in Chapter 1), after the research problem was defined and the research questions were identified (Chapter 1), a comprehensive literature review was performed (Chapter 2). Guided by the social

exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution, the salient motivations for user participation were identified. Several behavioural change frameworks, namely, the ELM (Petty et al. 1986), social influence theory (Kelman 1958) and policy–behaviour compliance literature, formed the basis of understanding how three commonly used organisational interventions (i.e., promotional messages, management pressure techniques, and social media policy-SMP-) influence users' beliefs and participation behaviours across two user groups (i.e., lurkers and posters). Next, the research model was constructed and four propositions were developed (Chapter 3). A survey design was chosen to validate the study's model and test the propositions (this chapter). The measurement items used in the study were adopted mainly and wherever possible from among the previously validated measures in the literature. Based on the data analysis, findings addressing the research objectives were obtained (Chapter 5).

4.1.1 Data collection objectives

The phenomenon under investigation in this study concerns users' underutilisation of an ESN. In such a scenario, ESN community managers need to enhance user participation in ESNs. However, in order to achieve that, they need to better understand why and how employees participate in ESNs. Therefore, in an effort to better understand the reasons behind online behaviours and to identify the direction and level of influence of already-implemented interventions on participation, the objectives of this study were as follows:

- (i) to identify the key reasons that drive ESN members to either lurk or post after they have already been introduced to the platform [Hence, aligning with Research Question-1 "*What are the salient drivers of lurkers' and posters' participation in ESNs?*"]; and
- (ii) to examine whether the influence of already-implemented interventions improves users' beliefs or, worse, turns off posters' willingness to participate, and to examine the extent of that influence [Hence, aligning with Research Question-2 "*How do promotional messages, management pressure techniques and SMP influence employees' perceptions of the ESN and their posting and/or lurking behaviours?*"].

The central thesis of the model developed in the present study is that members' participation is dependent on four motivations, namely, image and intrinsic interest (as benefits) and loss of knowledge power and fulfilment (as costs) (thus addressing

the first research objective). In addition, to address the second research objective, the model proposes that the four motivations are influenced by: (i) the argument quality and the source credibility of the promotional messages sent by management to influence ESN participation and (ii) the SMP effectiveness. Lastly, the model proposes a direct influence of verbal management pressure and non-verbal management pressure (rules) on users' participation behaviour.

Accordingly, to evaluate the propositions in the research model, namely, the relationship between the four dimensions of users' beliefs and participation behaviours, and the relationship between several organisational interventions on the four beliefs and subsequent participation behaviours across lurkers and posters, the study employed a quantitative approach and chose an observational, cross-sectional survey design (Straub et al. 2004b).

4.1.2 Research methodology and justification

The quantitative approach and qualitative approach are the two most widely used methodological approaches in the IS literature (Bhattacharjee 2012). The quantitative approach is a means for "testing objective theories by examining the relationship among variables," while the qualitative approach is a means for "exploring and understanding the meaning individuals or groups ascribe to a social or human problem" Creswell (2009, p.4). A quantitative approach begins with a number of assumptions and then builds an instrument, measures variables, and interprets the statistical results (Atkinson et al. 1994). On the other hand, a qualitative approach looks at a phenomenon in order to understand it, then builds the principles and describes the research problem in detail (Bryman et al. 2011). Table 4.1 summarises the main characteristics of both approaches.

Table 4.1 Quantitative versus qualitative research
(adopted from VanderStoep et al. (2008))

| Characteristics | Quantitative Research | Qualitative Research |
|----------------------|--|---|
| Type of data | Phenomena are described numerically | Phenomena are described in a narrative fashion |
| Analysis | descriptive and inferential statistics | Identification of major themes |
| Scope of inquiry | Specific questions or hypotheses | Broad, thematic concern |
| Primary advantage | Large sample, statistical validity, accurately reflects the population | Rich, in-depth narrative description of sample |
| Primary disadvantage | Superficial understanding of participants' thoughts and feelings | Small sample, not generalizable to the population |

4.1.2.1 Justification

Driven by the nature of the phenomenon and the research objectives as described in the previous section, a cross-sectional survey design (Straub et al. 2004b) was chosen in the present study. Surveys “are non-experimental designs that do not control for or manipulate independent variables or treatments, but measure these variables and test their effects using statistical methods” (Bhattacharjee 2012, p. 48). In a cross-sectional field survey, the dependent and independent variables are measured at once (Bhattacharjee 2012).

The aim of the survey method is to objectively test relationships and verify theories and hence “to provide generalisable statements about the object of study” (Gable 1994, p. 114). To do so, surveys often capture snapshots (e.g., beliefs, practices) from the participants in a survey questionnaire (Bhattacharjee 2012; Recker 2013; Straub et al. 2004b) to be then analysed using statistical techniques (Gable 1994). In IS research, a survey is a widely used research method (Recker 2008; Recker 2013).

The advantages of the survey methodology are:

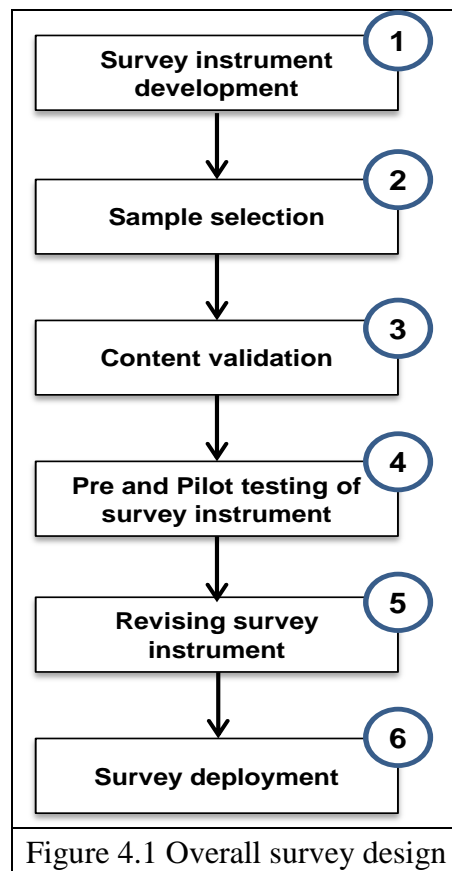
- (i) its focus on verifying rather than discovering and understanding new variables (Gable 1994)
- (ii) its 'deducibility' power whereby surveys can “accurately document the norm, identify extreme outcomes and delineate associations between variables in a sample ” (Gable 1994, p. 114)
- (iii) its ability to capture many variables using multiple theoretical frameworks (Bhattacharjee 2012)
- (iv) its ability to analyse data both at aggregate and at individual levels (Sedera et al. 2003a)
- (v) its ability to add to the inventory of previous survey instruments (Ishman 1996) in (Recker 2008; Sedera et al. 2003a).

In the case of the present study, the rationale for selecting the survey methodology lay in the study’s interest in assessing the prevalence of different forms of participation (posting vs lurking) and the respective motivations (the four users’ beliefs) among users engaged in different projects and work tasks at a single point in time, namely, after the employment of certain organisational interventions such as a promotional message. As in prior research, it was believed that a survey was the most appropriate technique to provide rich and efficient ways of assessing users’ perceptions of the ESN participation experience in the present study.

4.2 Survey Design

The literature suggests several approaches (e.g., Bagozzi et al. (1991), Diamantopoulos et al. (2001), Fornell et al. (1981), (MacKenzie et al. (2011)), O'Brien et al. (2009) and Straub et al. (2004a)) to constructing and validating a survey instrument. The survey in the present study followed a classical cross-sectional survey design to test the model and the proposed causal relationships between the model's latent constructs. With regard to the unit of analysis, the unit of examination was at the individual level (i.e., the ESN community member). Although it is the organisation that acquires and implements the ESN, it is the user group who decides the extent of its use (Kugler et al. 2013b).

As illustrated in Figure 4.1, the survey design involved six steps: 1) survey instrument development, 2) sample selection, 3) content validation, 4) pre-test and pilot test of the survey instrument, 5) revision of the survey instrument, and 6) survey deployment. Each step is explained in detail in the next sections.



4.2.1 Survey instrument development

All constructs used in this study are well established in the literature. Researchers have repeatedly recommended the use of ‘proven’ measurement instruments (MacKenzie et al. 2011) to increase construct validity. Following the approaches proposed by Churchill Jr (1979) and MacKenzie et al. (2011), the measurement items of all the constructs were adapted from previously-validated measures in the literature (except for the newly developed construct of “perceived fulfilment”). It is noted that all the constructs in the research model were measured reflectively. The following subsections explain the measurement items of each construct in the research model in turn.

4.2.1.1 *The dependent variable – participation measurement scale*

The literature on online participation typically refers to an individual who visits an online community and engages in any way or form as a participant (Malinen 2015). There is no specific definition of online participation; rather, “the visibility of the activity seems to be the most common way of conceptualizing participation” (Malinen 2015, p. 231). Some researchers (e.g., Cullen et al. (2011)) consider registering in an online community as a visible purposeful action and thus it is seen as a form of participation.

Normally, online participation is operationalised in terms of its quantity using measures such as the time spent, number of visits, number of posts and comments or the amount of shared content (Malinen 2015). Overall, “the quantitative success metrics focus on the volume of activity, and the more traffic there is at the site, the more successful it is considered to be” (Malinen 2015, p. 231).

This study adopted previously tested and proven items to measure online participation (e.g., (Kankanhalli et al. 2005), (Wasko et al. 2005) and (Watson et al. 2006)) and modified them for use in the ESN context following the item-writing suggestions by MacKenzie et al. (2011). In order to develop comprehensive metrics to capture the volume of participation, the study employed multiple items to measure users’ participation behaviours in terms of content creation (i.e., posts and comments) using two scales (a 7-point Likert scale and a continuous scale). Accordingly, and consistent with the study’s definition of lurkers (*members who did not create any content in the last month*) and posters (*members who posted or*

commented at least once in the last month) (refer to Section 2.3.1 for detail), the study used three self-reported items to measure users' participation:

- (i) a continuous scale "UseCreate" (During the past month, how many posts did you create in the ESN?)
- (ii) a continuous scale "UseComm" (During the past month, how many posts created by others did you comment on in the ESN?)
- (iii) a categorical scale of "Post/Comment Frequency" (I post or comment in the ESN) by picking one of the listed options (Several times a day, About once a day, Several times a week, About once a week, About once a month, Once or twice in the last three months, Never).

4.2.1.2 The independent variable –motivation scale

The "image" construct was defined as "the extent to which an individual believes that posting in the ESN enhances his/her social self-concept in the ESN". It was measured using three items adopted from Wasko et al. (2005) which were originally adopted from Constant et al. (1996). In their study of employees' use of electronic networks of practice (message boards), Wasko et al. (2005) scale of reputation captured how employees' perceived reputation contributed to further use of the message boards. Wasko et al.'s three items were: (i) I earn respect from others by participation in the message boards, (ii) I feel that participation improves my status in the profession, and (iii) I participate in the message boards to improve my reputation in the profession. The present study followed (MacKenzie et al. 2011) advice on wording and made minor changes to suit the study's context.

The "loss of knowledge power" construct was defined as "the perception of power and unique value lost due to knowledge posting in ESN". This construct was measured using three items adopted from Kankanhalli et al. (2005). Kankanhalli et al. (2005) developed the loss of knowledge power measures based on Orlikowski (1992) research on groupwork practices and social interaction facilitated by technology. Drawing on social exchange theory (Blau 1964), Kankanhalli et al. examined a number of benefits and cost factors for user participation in electronic knowledge repositories (EKRs). Kankanhalli et al. (2005) conceptualised, operationalised and validated the cost factor of loss of knowledge power to negatively influence EKR usage by knowledge contributors. Their proposed items to

measure the loss of knowledge power were: (i) Sharing my knowledge through EKR makes me lose my unique value in the organisation, (ii) Sharing my knowledge through EKR makes me lose my power base in the organisation, (iii) Sharing my knowledge through EKR makes me lose my knowledge that makes me stand out with respect to others, and (iv) Sharing my knowledge through EKR makes me lose my knowledge that no one else has. The present study adopted three items from Kankanhalli et al. (2005) to measure the loss of knowledge power construct. Minor changes were made to the wording of the original items to suit the study's context, following the recommendations by (MacKenzie et al. 2011).

The third motivational construct is intrinsic interest. Based on (Webster et al. 1993) conceptualisation, intrinsic interest was defined as “the extent to which members are involved in the activity for its own pleasure and enjoyment rather than for some utilitarian purpose”. As explained in Chapter 3, the study did not use “enjoyment in helping others” from Kankanhalli et al.'s model because it was decided to better extend this concept to capture broader aspects of users' own pleasure and enjoyment. Therefore, the study employed “intrinsic interest” as conceptualised by (Webster et al. 1993) instead. Based on Csikszentmihalyi (1975) flow theory, Webster et al. (1993), p. 414 studied human-computer interactions and argued that when “individuals find the activity intrinsically interesting, they are involved in the activity for its own pleasure and enjoyment rather than for some utilitarian purpose”. Based on their earlier work (Webster et al. 1992), Webster et al. (1993) developed three items to measure intrinsic interest in using Lotus 1-2-3: (i) Using Lotus 1-2-3 bored me (reverse-scored), (ii) Using Lotus 1-2-3 was intrinsically interesting, and (iii) Lotus 1-2-3 was fun for me to use. However, the present study excluded the reverse item because of confusion by most of the participants in the pre testing (refer to Section 4.2.5) and adopted the other two items.

The literature often emphasises the use of a minimum of three items per construct (e.g., Hair Jr et al. (2013) and Nunnally et al. (1994)). However, if a scale measures more than one construct, it is not uncommon to use as little as two items per construct (e.g., (Bock et al. 2005), (Kulkarni et al. 2007) and (Raubenheimer 2004)). Finally, in the same way as with the previous constructs, minor changes were made to the wording of the original items to suit the study's context.

The measure of the last motivational factor, “perceived fulfilment”, is discussed in Section 4.2.1.4.

4.2.1.3 The influence scale (management interventions)

As previously illustrated (refer to Chapter 3, Section 3.4), the study examines three organisational interventions: persuasion-based interventions (promotional messages), compliance-based interventions (management pressure) and governance tools (SMPs).

Source credibility and argument quality

Through the theoretical lens of the ELM (Petty et al. 1986), this study posits that promotional messages can influence users' beliefs through: (i) the central route (operationalised using "argument quality") and (ii) the peripheral route (operationalised using "source credibility"). The "argument quality" was defined as "the persuasive strength of the arguments embedded in the promotional messages" and was measured using three items adopted from (Bhattacharjee et al. 2006). The "source credibility" was defined as "the extent to which a promotional message source is perceived to be believable, competent and trustworthy by ESN users" and was measured using four items adopted from (Bhattacharjee et al. 2006).

In their study on IT acceptance, Bhattacharjee and Sanford (2006) explain how perceived knowledge usefulness is formed by the processes of outer influence (i.e., training). They argue that the argument quality of informational messages (i.e., whether these informational messages are perceived by the users to be informative, valuable and persuasive) plays an important role in persuading users and potentially affects users' perception of the usefulness of IT acceptance. In the same vein, the source characteristics (i.e., the competence, trustworthiness and authority of the source as perceived by the users) have a positive effect on potential users' perceptions of the usefulness of IT acceptance. Bhattacharjee et al.'s (2006) measures of the source credibility and argument quality were modified versions of Sussman et al. (2003) measures. Lastly, this study followed (MacKenzie et al. 2011) advice on the wording and made minor changes to suit this study's context.

Verbal and non-verbal management pressures

IS researchers highlight management pressure as an intervention that can influence employees' behaviour in a significant manner (Bajwa et al. 2008; Boss et al. 2009; Eckhardt et al. 2009; Venkatesh et al. 2008a; Venkatesh et al. 2003). Using the social influence theory (Kelman 1958), this study drew on Kelman's (1958)

conceptualisation of compliance and the literature on management influence (e.g., (Chatterjee et al. 2002), (Liang et al. 2007) and (Wang et al. 2013)) to understand the direct influence of two types of management pressure on participation behaviour: (i) verbal management pressure defined as “the perceived pressure of management unwritten rules to participate in the ESN” based on Brown et al.’s (2010) conceptualisation of “superior influence”, and (ii) non-verbal management pressure (rules) defined as “the perceived pressure of management rules to participate in the ESN” based on Boss et al.’s (2009) conceptualisation of mandatoriness.

The present study adopted three items from Brown et al.’s (2010) measure of “superior influence” that was originally adapted from (Venkatesh et al. 2003) to measure the “verbal management pressure” construct: (i) I believe the top management would like me to use <collaboration tool>, (ii) My supervisor suggests that I use <collaboration tool>, and (iii) There is pressure from the organisation to use <collaboration tool>.

To measure “non-verbal management pressure (rules)”, the study adopted four items from King et al. (2008) measure of supervisory control that “reflects the amount of influence that an individual perceives that management is exerting in order to get compliance for its notion of appropriate contributory behaviour” (King et al. 2008, p 135): (i) My supervisor spends time with me explaining the tasks I have to do to appropriately utilise SYSTEM X , (ii) My supervisor frequently monitors whether I am following established procedures for SYSTEM X utilisation, (iii) Specific performance goals are established for using SYSTEM X, (iv) My supervisor reviews how I do my job when I do not attain SYSTEM X goals, (v) If I do not meet performance goals associated with SYSTEM X, I am required to explain why, and (vi) I frequently receive feedback on how I am accomplishing performance goals as they pertain to SYSTEM X. Changes were made to the wording of the original items in order to suit the study’s context using the recommendations by (MacKenzie et al. 2011).

Social media policy

The third and final organisational intervention examined in this study was the SMP. IS researchers emphasise the important role of IT policies not only in restricting detrimental use (Bartridge 2005) but also in guiding users to best use the technology in an effective manner (Barney 1991; Doherty et al. 2011; Vaast et al.

2013). As previously explained in Chapter 3 (Section 3.4.3), this study investigated the role of the SMP as a communication document in providing: (i) guidance on best practices for participation ('know-how' for collaboration, finding solutions, etc.), and (ii) protection from any misuse (e.g., improper content, bullying or harassment). Drawing on the policy-behaviour compliance literature and based on Xu et al. (2011) conceptualisation of the perceived effectiveness of privacy policy, this study defined SMP effectiveness as "the extent to which an employee believes that SMP provides guidance on how best to engage in the ESN and provides protection from any misuse (e.g., improper content)".

The study measured SMP effectiveness using two scales. Firstly, the study adapted three items from (Xu et al. 2011) measure of the perceived effectiveness of privacy policy: (i) With their privacy statements, I believe that my personal information will be kept private and confidential by these websites, (ii) I believe that these websites' privacy statements are an effective way to demonstrate their commitments to privacy, and (iii) I feel confident that these websites' privacy statements reflect their commitments to protect my personal information. Secondly, the study adapted two items from (Kirsch 1996) measure of pre-specified behaviour. Kirsch's items are about an understandable, written sequence of steps, and established materials (e.g., manuals, standards, directives, technical and professional books) that can be followed to ensure a project goal is met. To suit the study's context, minor changes were made to the wording of the original items.

Table 4.2 summarises all the items adopted from the literature. It is noted that the items in the table are in the final wording as used in the survey instrument (Sections 4.2.4 and 4.2.5 present further details on the content validation, pre-testing, pilot testing and refinement procedures).

Table 4.2 Adopted measurement items

| Construct | Definition | Items | Original items |
|-------------------------|--|--|---|
| Image | The extent to which an individual believes that posting on the ESN enhances his/her social self-concept in the ESN | <ul style="list-style-type: none"> ▪ I post my opinions on Google+ to earn respect from others. ▪ I post my opinions on Google+ to improve my reputation. ▪ I feel that participation improve my status on Google+. | Adopted from (Wasko et al. 2005) <ul style="list-style-type: none"> ▪ I earn respect from others by participation in the message boards ▪ I feel that participation improve my status in the profession ▪ I participate in the message boards to improve my reputation in the profession. |
| Loss of knowledge power | The perception of power and unique value lost due to knowledge posting in ESN | <ul style="list-style-type: none"> ▪ When I post on Google+, I lose my unique value in the organisation. ▪ Posting on Google+ makes me lose the value of my knowledge that makes me stand out with respect to others. ▪ Posting on Google+ makes me lose my power base in the organisation. | Adopted from (Kankanhalli et al. 2005) <ul style="list-style-type: none"> ▪ Sharing my knowledge through EKR makes me lose my unique value in the organization ▪ Sharing my knowledge through EKR makes me lose my power base in the organization ▪ Sharing my knowledge through EKR makes me lose my knowledge that makes me stand out with respect to others ▪ Sharing my knowledge through EKR makes me lose my knowledge that no one else has |
| Intrinsic interest | The extent to which members are involved in the activity for its own pleasure and enjoyment rather than for some utilitarian purpose | <ul style="list-style-type: none"> ▪ I find posting in Google+ interesting. ▪ It is fun to post in Google+. | Adopted from (Webster et al. 1993) <ul style="list-style-type: none"> ▪ Using Lotus 1-2-3 bored me. (Reverse-scored) ▪ Using Lotus 1-2-3 was intrinsically interesting. ▪ Lotus 1-2-3 was fun for me to use. |
| Perceived Fulfillment | The extent to which members feel their needs for using the ESN are fulfilled through reading only | <ul style="list-style-type: none"> ▪ For me, just reading/browsing on Google+ is enough. ▪ I feel reading adequately meets my purpose for using Google+. ▪ By just reading, I feel my reasons for using Google+ are adequately met. | Self-developed |
| Argument quality | The persuasive strength of the arguments embedded in the messages* | <ul style="list-style-type: none"> ▪ The information in Google+ promotional messages is informative ▪ The information in Google+ promotional messages is valuable | Adopted from (Bhattacharjee et al. 2006) <ul style="list-style-type: none"> ▪ The information provided during the DMS training session was informative ▪ The information provided during the DMS |

| | | | |
|--------------------------------|---|--|---|
| | | <ul style="list-style-type: none"> The information in Google⁺ promotional messages is persuasive | <ul style="list-style-type: none"> training session was helpful. The information provided during the DMS training session was valuable. The information provided during the DMS training session was persuasive. |
| Source credibility | The extent to which a message* source is perceived to be believable, competent and trustworthy by ESN users | <p><i>The person who usually sends these messages....</i></p> <ul style="list-style-type: none">is trustworthy. is credible is experienced on Google⁺. appears to be an expert on Google⁺. | <p>Adopted from (Bhattacharjee et al. 2006)</p> <ul style="list-style-type: none"> The person providing the DMS training was trustworthy The person providing the DMS training was credible The person providing the DMS training was knowledgeable on this topic The person providing the DMS training appeared to be an expert on this topic |
| Verbal management pressure | The perceived pressure of management unwritten rules to participate in the ESN | <ul style="list-style-type: none"> My supervisor suggests that I participate in the Google⁺ communities. I believe the organisation's management would like me to participate in the Google⁺ communities. There is pressure from the organisation to participate in the Google⁺ communities. | <p>Adopted from Brown et al.'s (2010)</p> <ul style="list-style-type: none"> I believe the top management would like me to use <collaboration tool>. My supervisor suggests that I use <collaboration tool>. There is pressure from the organization to use <collaboration tool>. |
| Non-verbal management pressure | The perceived pressure of management rules to participate in the ESN. | <ul style="list-style-type: none"> If I do not post on Google⁺ for one month, I am required to explain why. There are rules that require employees to post about certain tasks on Google⁺ I believe that my annual evaluation report (or Performance Planning and Review) takes into account my posting activities on Google⁺ Overall, I believe it is required that I regularly post on Google⁺ | <p>Adopted from Boss et al.'s (Boss et al. 2009)</p> <ul style="list-style-type: none"> My supervisor spends time with me explaining the tasks I have to do to appropriately utilise SYSTEM X. My supervisor frequently monitors whether I am following established procedures for SYSTEM X utilisation Specific performance goals are established for using SYSTEM X. My supervisor reviews how I do my job when I do not attain SYSTEM X goals. If I do not meet performance goals associated with SYSTEM X, I am required to explain why. |

| | | | |
|---|---|---|---|
| | | | <ul style="list-style-type: none"> ▪ I frequently receive feedback on how I am accomplishing performance goals as they pertain to SYSTEM X. |
| SMP effectiveness | The extent to which an employee believes that SMP provides guidance on how best to engage in the ESN and provides protection from any misuse (e.g. improper content). | <ul style="list-style-type: none"> ▪ With the Social Media Policy, I believe that I am protected from any misuse by others (e.g. improper content, bullying, harassment). ▪ I believe that the Social Media Policy is an effective way to protect the Google+ communities from any misuse such as posts that have improper content, bullying, or harassment. ▪ I feel confident that the Social Media Policy reflects the organisation's commitment to protect the Google+ communities from any misuse by others (e.g. improper content, bully ▪ I believe that the Social Media Policy is an effective way to guide users on how to best use Google+. ▪ The organisation's Social Media Policy has an understandable, written sequence of steps that could be followed to ensure the best use of Google+. | <p>Adopted from (Xu et al. 2011)</p> <ul style="list-style-type: none"> ▪ With their privacy statements, I believe that my personal information will be kept private and confidential by these websites. ▪ I believe that these websites' privacy statements are an effective way to demonstrate their commitments to privacy. ▪ I feel confident that these websites' privacy statements reflect their commitments to protect my personal information. <p>Adopted from (Kirsch 1996)</p> <ul style="list-style-type: none"> ▪ There was an understandable, written sequence of steps that could be followed to ensure [the project goal was met]. ▪ To what extent did established materials (manuals, standards, directives, technical and professional books, and the like) cover how to [meet the project goal]? |
| <p>*persuasive communication sent by management through emails or online posts to encourage users' participation and to provide information about the ESN (e.g. its benefits, qualities and recent topics discussed).</p> | | | |

4.2.1.4 The new construct of perceived fulfilment

The last motivation that completes the fourth block in the quadrant of salient motivations to participate (or not participate) in ESNs is the cost factor of “perceived fulfilment”. As previously explained in Chapter 3 (Section 3.3.1.4), the scholarly work by Preece and Nonnecke (2000; 2001; 2004) on understanding the reasons for lurking is well acknowledged in the literature (e.g., (Bishop 2007; Bishop 2011), (Muller 2012; Muller et al. 2010), (Rau et al. 2008), (Ridings et al. 2006) and (Sun et al. 2014)); particularly their landmark study (2004) on the top five reasons for lurking. They surveyed 1188 posters and lurkers in 375 MSN bulletin board communities. The “just reading/browsing is enough” reason was found to be the dominant reason for lurking in public online discussion communities. More than half (53.9%) of the lurkers selected that reason for their lurking behaviour (Preece et al. 2004). Despite the importance of this reason, there is, to the best of the author’s knowledge, no research that provides a conceptualisation of this reason.

In order to capture the relative richness of the “just reading/browsing is enough” reason, it is necessary to explain and examine the extent of its influence on the different modes of participation, particularly lurking behaviour. For the purposes of addressing the first objective in our research (i.e., to identify the key reasons that drive ESN members to either lurk or post) and account for this reason, we exploited the literature on lurking (especially Preece and Nonnecke (2000; 2001; 2004)) and conceptualised a new construct named “perceived fulfilment” to account for the “just reading/browsing is enough” reason as a cost factor that could hinder user participation. The study defined perceived fulfilment as “the extent to which members feel their needs for using the ESN are fulfilled through reading only”. This definition captures the essence of the “just reading/browsing is enough” reason as it represents the intrinsic aspect of lurkers’ realisation that the reading activity itself is sufficient and meaningful and that it fulfils their needs for using the ESN. The approach employed to operationalise (generate items) and validate the new construct is discussed next.

Item generation

Providing a definition to a new construct is necessary, but not sufficient. It is also necessary to build a reliable and valid measurement (Froehle et al. 2004) to be able to empirically estimate the relationship of the new construct with the

phenomenon under investigation. The first step in achieving that is by generating a set of items that tap into the construct's definition and help the researcher to truthfully measure the new construct from the users' perspective (Churchill, 1995). The literature stresses the importance of the item generation process "to produce a set of items that fully captures all of the essential aspects of the domain of the focal construct, while minimizing the extent to which the items tap concepts outside of the domain of the focal construct" (MacKenzie et al. 2011, p. 304).

The present study followed the guidelines prescribed by (Davis 1989) and later revised by Moore and Benbasat (1991). Apart from being one of the most cited procedures for scale development in IS research, Moore and Benbasat's (1991) procedure was chosen in this study because it "allows for the development of scales that are general enough to allow for a wider uptake in other empirical measurement studies" (Recker 2008, p. 216) which aligns well with our conceptualisation of the new construct as it reflects a broader array of members' needs for using the ESN. A pool of items was created from a thorough review of the conventional lurking literature (e.g., Bishop (2011), Cheng et al. (2014), Grigore et al. (2011), Lai et al. (2014), Muller et al. (2010), Muller (2012), Nonnecke et al. (2000), Nonnecke et al. (2006), Preece et al. (2004), Rau et al. (2008), Ridings et al. (2006) and Sun et al. (2014)). These items were fragmented into different aspects of needs; for example: information needs (e.g., By just reading, I learn new things, or I find the answers for my questions), curiosity needs (e.g., By just reading, I feel informed about what is going on Yammer) and global items (e.g., Overall, I feel reading adequately meets my needs). To assess the validity of these items, the study employed two qualitative techniques: a panel of reviewers and Q-sort.

Panel review

The purpose of a panel review is to evaluate the content validity of the generated items. The literature suggests that a panel review is essential for reviewing the item pool for quantitative surveys (Devellis 2003).

Once the initial set of items for the new construct was specified, the study employed a panel (five PhD students who majored in IS-related research and were familiar with ESNs) to review, eliminate and revise the items in the pool as appropriate. The panellists were asked to: (i) check the face validity to make sure the items were the right measures for the research context, (ii) identify any problems in wording,

meaning, readability or repeated questions, and (iii) check the completeness and accuracy of the items (i.e., all aspects of the construct's definition is covered) (Recker 2013). During this phase, the panel members suggested a few new items that they thought would tap into the construct's definition.

Q-sort exercise

The remaining items were too many (17 items). The aim was to develop a parsimonious set of measures for the new construct. The literature suggests that it is more likely that other researchers adopt scales that have a reasonable number of items in order to reduce the level of 'survey fatigue' among participants (Barnes et al. 2014). Thus, the present study ran a Q-sort exercise to improve the construct validity (Moore and Benbasat 1991). In a firm that used Yammer¹ as an ESN, the study conducted a Q-sort exercise with 16 users. The firm (an academic institute in eastern Australia) was particularly appropriate for the purpose as it had used an ESN for knowledge sharing and collaboration for more than a year with over 1000 registered users.

Using an online card sorting tool (conceptcodify.com), each user received an email inviting them to participate in a quick (5 minute) online-Q-sort. The participants were given the construct definition and a set of cards (17 items) with the instruction to sort the cards from the most to the least suitable in one group. Ten responses were received. After the data collection, the card sorting tool generated the data analysis report that simply sorted the cards from the most cited to the least cited based on the participants' responses. In the interest of parsimony, the three most frequently cited items are presented in Table 4.2. The invitation email, the original items and screenshots of the tool used to run this exercise are presented in Appendix 1.

Until this stage, there is no way of establishing whether or not the selected items measure the intended construct (Straub et al. 2004a). Even with the Q-Sort, only initial indications of the reliability and validity of these selected items are obtained. Thus, the chosen items were then subjected to the same content validity and reliability tests that were conducted for the full survey instrument (e.g., pre-testing, and pilot testing).

¹ Yammer is the leading ESN used by more than 200,000 companies including 85% of the Fortune 500 (Yammer 2013).

4.2.2 Sample selection

4.2.2.1 *Organisation and participant criteria*

Before gathering data for this research, three conditions were identified to form the benchmarking for the selection of the target organisation: (i) the organisation had used an ESN for at least one year and had at least 500 registered users, thus having a mature implementation; (ii) the organisation encouraged ESN use to achieve certain objectives such as knowledge sharing (to enable the study to investigate the types of interventions and their influence across lurkers and posters); and (iii) the organisation face issues to get users to participate (to enable the study to examine lurkers' motives). Other criteria were identified for the appropriate survey participants: (i) the participant had been a user of the ESN for at least one month in order to ensure the quality of responses; (ii) participants held any position (management, operational, or executive level) in order to solicit the perceptions of high and low users of the ESN.

We choose one organization to mitigate bias stemming from the existence of multiple organizational cultures. Similarly, an online community is based on common norms. As we investigate a phenomenon of underutilised online community and its dependency on members to create content, it is rather advantageous that such communities belong to the same organization. Lastly, the communities from which data was collected were large (over 8000 members) and active communities (refer to next section for details)

4.2.2.2 *The case organisation context: an overview*

The study collected data by distributing an online survey to members of online communities within an Australian retail organisation. In terms of revenue, according to the Global Powers of Retailing 2015 report (Deloitte 2015), the case organisation was among the 25 largest organisations worldwide. At the time of this study, the company had over 200,000 employees across all Australian states.

In a competitive market, retail organisations are under constant pressure to innovate (Lewis and Dart 2014; Patroni et al. 2015). Our case organisation installed Google+ communities in order to support and encourage interorganisational collaboration, communication and innovative performance among the employees, independent of the locations at which they were working. Different communities were set up for different members of the organisation. At the time of data collection, the case organisation had over 50 communities (with the numbers of members ranging between 200 and 6000) for different members of the organisation. For instance, some

communities were set up for trading brands (i.e., department stores), while others were set up for functions (e.g., corporate communications and IT). Often encouraged by management (e.g., community managers, executives and middle managers), the employees use the communities to post new ideas, comment on others' posts, share information or highlight achievements. Prior to the introduction of the Google⁺ communities, the organisation relied greatly on email for communication; however, email was only available to a small percentage of the organisation's workforce (approximately 27,000 employees).

This study acknowledges the importance of organisational culture in influencing users' participation behaviour (i.e., posting or lurking). IS researchers have highlighted the significance of organisational culture in both fostering and inhibiting the general use of knowledge management systems (e.g., Huang et al. (2008), Rafaeli et al. (2004) and Shin et al. (2007)) as well as the use of social networking sites (e.g., Kim et al. (2011), Koch et al. (2013) and Schlagwein and Prasarnphanich (2011)). However, in this study, our focus is on the influence of particular management interventions that aim to boost ESN participation (i.e. promotional messages, management pressure techniques and SMP).

From the software perspective, the case organisation had implemented Google⁺ as an enterprise-wide platform in early 2014. Google⁺ is a vendor platform that was launched in 2011 by Google Inc. as a timeline-based social network (Kang et al. 2015). As at October 2013, there were nearly 540 million monthly active Google⁺ users (i.e., representing the number of interactions with Google⁺ each month) (McGee 2013). Google⁺ includes a bundle of wide-ranging services (e.g., data sharing, status updates, discussion, schedule management) that popular social networks such as Facebook or Twitter also implement. It is noted that Google⁺ uses different terms for its features. The term "communities" refers to conversations about specific topics, "circles" refers to different types of relationships (similar to "friends" on Facebook) and the Google⁺ "+1 button" for recommendations is similar to the "like" button on Facebook (Lytle 2013; McGee 2013). Although Google⁺ is initially introduced in the public domain, it has been increasingly utilized in professional domain.

Many organisations use Google⁺ communities as organisationally-bound, private social networks for relationship building, communicating, collaborating and sharing information with and among employees (Edelman & Eisenmann 2014). Google⁺ provides capabilities and functionalities that are similar to those provided by other

popular contemporary ESN platforms (e.g., Yammer, Jive and Chatter), particularly those related to microblogging services (Rus 2013; Turban et al. 2015). Google⁺ offers the leading features of popular enterprise social networking such as: rich collaborative features (microblogs), built-in applications (e.g., internal search engine, event management/calendar), file sharing and document collaboration (e.g., file versioning, importing/exporting to different formats), aggregation of users' activities, recommendation feature for content/members, and visualisation of the relationship networks and user hierarchy (Kang et al. 2015). Google⁺ also has more functionalities than some of the ESNs (such as Yammer) whose popularity remains firmly rooted in the professional world, including audio/video conferencing, or "Hangouts", and screen, calendar and contact sharing (Zone 2015). Thus, we do not consider the selection of Google⁺ communities in this study as a limitation on the generalisability of the results.

4.2.2.3 Google⁺ communities

Members of two of the online communities in the case organisation were approached: Community A² was set up exclusively for staff responsible for the operation of 897 grocery supermarket stores across all Australian states, while Community B was set up exclusively for staff responsible for the operation of 182 department stores across all Australian states. Overall, for Community A, the staff population was about 115,000, of which 6000 were members of the Google⁺ community. For Community B, the staff population was about 17,000, of which 2000 were members of the Google⁺ community.

In return for their participation in the survey, we offered the respondents a chance to win an iPad Air 2. In addition, we provided the case organisation with access to a report on the results so the organisation could gain valuable insights into its employees' ESN usage (e.g., to help the organisation evaluate the strategies and interventions aimed at improving user participation).

4.2.2.4 Sampling size

Sampling is the process of selecting representative participants from the target population (Bhattacharjee 2012). Selecting the right sample size is critical in any survey research (Sedera et al. 2003). Generally, the larger the sample size the easier it is to assess the validity and reliability of measurements (Sedera et al. 2003).

² To maintain confidentiality, the names of the company and the communities are not used.

Researchers suggest different rules for the item-to-sample response ratio, with their suggestions for the minimum number of item-to-sample ratio per measure ranging from 3:1 to 10:1 (Cattell 2012; MacKenzie et al. 2011). For example, Rummel (1970) suggests a ratio of 1:4, Bryant and Yarnold (1995) suggest 1:5 and Schwab (1980) suggests an item-to-sample ratio of 1:10. Although there is no agreed-upon number for the sample size, the general rule of thumb is that the sample size should be five times the number of items and the number of participants should be more than 100 (Bryman and Cramer 2009). The present study satisfied these conditions with an item-to-sample ratio of 1:8 and more than 360 valid responses.

4.2.3 General instructions and guidelines for survey design

In relation to the number of items per construct, Cronbach et al. (1955) suggest that measurements should have an adequate number of items in order to capture all aspects of the construct but be as parsimonious as possible. However, if researchers use very few items to measure a construct, they could under-specify the construct (Hinkin et al. 1989) and the content and construct validity could be compromised (Nunnally et al. 1967). Following Nunnally et al. (1994) norm of three items per construct, this study used three items to measure nearly every construct.

The design of the survey (see Appendix B) incorporated: (i) a cover letter which contained details about the research team, a description of the research project and the target participants, expected time to complete the survey, expected benefits and possible risks for participants, and the privacy and confidentiality statements; (ii) three sections to capture information about the participant's demographics, membership and usage of the ESN; (iii) one section to capture the participant's perceptions of the four motivations to participate, namely, image, intrinsic interest, loss of knowledge power, and fulfilment (the first research objective); and (iv) three sections about the participant's perceptions of already-implemented interventions (promotional messages, management pressure, and the SMP) to influence their participation (the second research objective). Except for demographics, all the questions were made mandatory. In addition, the length of the survey instrument was considered because a long questionnaire entails the risks of low response rates, poor data quality and bias (Adams et al. 1982; Newell et al. 2004; Sedera et al. 2003b; Weisberg 2005). From the observation of the pre-test and pilot test, the survey took approximately 10–15 minutes to complete.

In the survey, all the items were operationalised in the form of 7-point Likert scales which were displayed from left to right, ranging from “strongly disagree” to “strongly agree”, except for the two items (‘UseCreate’, ‘UseComm’) which were measured using a continuous scale (see Section 4.2.1.1). Using a single scale is “an important consideration of the instrument validation process” (Sedera 2006, p 5-10). The Likert scale is the most commonly used scale in IS research (Hair Jr et al. 2013; Recker 2008). In particular, the 7-point Likert scale is popular because it provides more accurate reflections of the respondents’ perceptions and behaviours (Flynn et al. 2004).

Item wording is an important design aspect (MacKenzie et al. 2011). The wording of the items in this study’s survey followed the recommendations by MacKenzie et al. (2011) and Black et al. (1998) to make the wording precise but as simple as possible by: (i) avoiding the use of ambiguous, negative, loaded or unfamiliar terms in order to minimise the risk of systematic response error, (ii) simplifying complex syntax and keeping questions short and specific, and (iii) removing items that contained obvious social desirability. In addition, all the items were subjected to wording review (the supervisory team, colleagues, pre-test and pilot test).

Lastly, before commencing the research, approval was obtained from the Queensland University of Technology Human Research Ethics Committee (No. 1300000354) (see Appendix B). The research was categorised under ‘Low Risk Applications’. Participation was completely voluntary, and participants were free to withdraw at any time while completing the survey. All responses were anonymous and treated confidentially without any personal or identifiable information required. All the collected data was stored securely as per QUT policy on the management of research data. The participants who wanted to enter the free prize draw were asked to provide only contact details, and these details were kept completely separately from the research data.

4.2.4 Content validation

Content validation is a critical step in the design of any survey instrument as it validates that a set of items is actually measuring the intended construct. In other words, an item is not valid if it is measuring the wrong construct. Content validity is defined as “the extent to which a measure adequately represents the underlying construct that it is supposed to measure” (Bhattacharjee 2012, p. 58). Straub et al.

(2004a), p. 424 define content validity as “the degree to which items in an instrument reflect the content universe to which the instrument will be generalized”. MacKenzie et al. (2011) identify two questions to assess content validity: Does each item represent an aspect of the content domain of the construct? And, Do all the items of a single construct represent the entire content domain of the construct? In other words, it is important that the construct is “well represented by one or more items and that the items are appropriate for the research domain” (Sedera et al. 2003a, p. 597).

There are two main approaches to assessing the content validity: theoretical and empirical approaches. The theoretical approaches focus “on how well the idea of a theoretical construct is translated into or represented in an operational measure” (Bhattacharjee 2012, p. 58). This approach uses techniques such as face validity, a panel of expert judges, and a qualitative technique such as Q-sort. Empirical approaches “examine how well a given measure relates to one or more external criterion, based on empirical observations” (Bhattacharjee 2012, p. 58). The empirical approach uses techniques such as convergent, discriminant, concurrent and predictive validity (refer to Chapter 5). As illustrated earlier in this chapter, following Churchill Jr (1979) and MacKenzie et al. (2011), all the items that encompassed the constructs of the research model were the result of a comprehensive literature review (see Section 4.2.1) and pre-testing.

4.2.5 Pre-test and pilot test

A pre-test is conducted with the objective of improving the face validity (i.e., ensuring that questions are valid and easy to understand by survey respondents) (Bhattacharjee 2012)) or the content validity of a survey instrument (Recker 2008). The literature suggests that three to ten critics are necessary to review the survey instrument (DeVellis 2011); among whom one should have sound knowledge of survey development. In this study, eleven individuals were asked to review the survey instrument based on the following criteria: (i) being a member of an ESN; (ii) already holding a doctorate degree or engaged in a doctoral program; and (iii) having experience in survey development. The first and second criteria were met by all members of the panel. Three individuals had experience in developing online survey instruments.

The eleven participants, comprising two IS professors and nine PhD students who majored in IS-related research, were asked in individual face-to-face meetings to complete a paper-based version of the survey. Notes were taken while the participant

filled out the survey. In addition, the participants were asked to comment on the clarity, logic, wording, length and format of the scale. There were two main outcomes: (i) the wording of some items was revisited (e.g., ‘loss of knowledge power’ items) and one item was deleted because of confusion by most of the participants (i.e., a reverse-item of ‘intrinsic interest’); and (ii) the format of one section (promotional messages) was slightly changed by adding a control item to ask respondents if they had ever received a promotional message. These changes helped to improve the content validity of the survey instrument.

Following the pre-test, a pilot test was conducted using a web-based version of the survey to assess the reliability and validity of the survey instrument. Pilot testing is an important part of the research process (Bhattacharjee 2012) because it helps detect potential research design issues, potential execution and performance issues of the web-based version, and any reliability or validity issues of the measures before proceeding with the full-scale survey. A Google+ community was targeted in the same organisation from which the main survey was collected. The invitation email was sent to all members (300) (i.e., a corporate Google+ community that represented a small subset of the target population) of whom 50 agreed to participate. Overall, the performance of the web-based version was stable with all data being captured and stored with no issue.

The pilot test focused on the quantitative insights particularly the measurement properties. The partial least square (PLS) technique of structural equation modelling (SEM) (Hair Jr et al. 2013) in the SmartPLS 3 software was used to examine the validity and reliability of the measurements. Nearly all the measures met the criteria for convergent and discriminant validity. Two items of the “verbal management pressure” construct were deleted because their loadings were less than 0.5. In sum, the data analysis of the pilot test provided reassurance to proceed with the full-scale survey.

4.2.6 Survey deployment

Following the reassurance gained through the results of the pre-test and pilot test, it was felt that the survey instrument was ready for the final full-scale survey. A web-based survey was used as the form of the data collection instrument. To save time and effort and reduce the distribution cost and processing complexity, the web-

based survey is the best option compared to traditional data collection instruments such as mail surveys (Couper et al. 2001; Olsen et al. 2004). With a rapid increase of internet access as in the case of the present study, the results may not be significantly biased by the use of web-based surveys (Porter 2004; Recker 2008).

As previously explained in Section 4.2.2, In March 2015, the study collected data by distributing an online survey to members of two ESN communities (i.e., a grocery supermarket staff community, and a department store staff community) within an Australian retail organisation. Participation in the survey was voluntary. Owing to the unavailability of members' email addresses, a link to the online questionnaire was posted; the study relied entirely on the invitation posted in the community for contacting participants. In the invitation post, the researcher introduced the study, explained its purpose and invited the community members (who had been using the platform for at least one month) to participate. To incentivise participation, members were offered the chance to win an iPad Air 2 (in a separate database, the respondents were asked to voluntarily give their names and email addresses for this purpose) and community managers were promised access to the results. The survey was online for one month.

A reminder was posted one week after the initial invitation posting. Overall, 473 members participated in the survey. After screening the responses, 107 responses were discarded because of high percentages of incomplete answers. Overall, therefore, the response rate was about 6%, which was to be expected because such posts may easily go unnoticed in active communities like Community A and Community B. The response rate is comparable to those of similar online studies with random user populations (Wu et al. 2014).

We also evaluated the common method variance (CMV). It is important to reduce the risk of CMV when collecting self-reported data from the same respondents about the models' independent and dependent variables (Podsakoff et al. 2003). There are several techniques to reduce the CMV. The Harman's single-factor test is perhaps the most commonly used approach to reducing the CMV (Sharma et al. 2009; Woszczyński and Whitman 2004). By conducting principal components analysis (PCA) in SPSS, the first factor was found to account for 26.3% of the variance. This result suggested that the CMV was not a concern in this study.

4.3 Chapter Summary

This chapter described the research methodology and explained how the research model, as illustrated in Chapter 3, was operationalised using a survey method. The main phases of the overall research design were set out and the selection of the survey design as the research methodology was justified. The six key steps of the survey design were then explained, namely, the survey instrument development, sample selection, content validation, pre-test and pilot test of the survey instrument, revision of the survey instrument and the survey deployment.

The measurement items of all the constructs were adapted from previously-validated measures in the literature except for the new developed construct. The chapter then discussed the conceptualisation phase of the new construct of “perceived fulfilment”, followed by a discussion of the operationalisation procedure that was followed to create its measures. The sample selection and some general guidelines for the survey design were discussed. The chapter then concluded by describing the content validation procedures and the pre-test and pilot tests that were employed before proceeding with the full-scale survey.

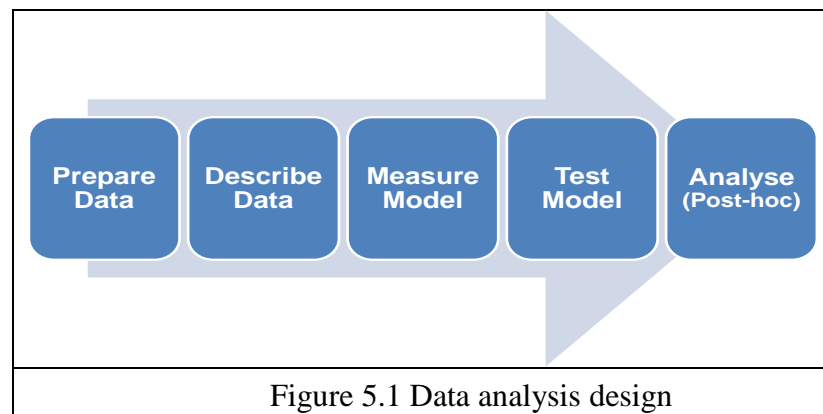
Chapter 5: Data Analysis

This chapter describes the procedures followed to analyse the data collected using the survey instrument (Chapter 4) for the purpose of validating the study's research model (Chapter 3). The chapter begins with an overall discussion of the data analysis design, followed by an overview of the data preparation procedures. It then presents the descriptive statistics about the data. Next, the chapter examines the reliability and validity of the measurement models before testing the research propositions. Subsequently, the chapter discusses the research findings. The last section provides a summary of the chapter.

5.1 Data Analysis Design

5.1.1 Key steps in data analyses

The process of analysing the collected survey data is illustrated in Figure 5.1. Five steps formed the data analysis design in this study. The first step was the data preparation in which the data file was created and then screened for missing data, outliers and unengaged responses. The second step was reporting descriptive statistics about the data such as usage information and demographic information (age, gender, employment position, etc.). In the third step, the measurement models were evaluated. A number of tests were conducted to assess the construct reliability and meet the criteria for convergent and discriminant validity. Subsequently, the fourth and fifth steps were about testing the research propositions. The bootstrapping procedure was used to estimate the structural model for all users. In the second round of analysis, a stepwise binary logistic regression and multi-group analysis were used to differentiate posters and lurkers and their motivations.



5.1.2 Data analysis software

The PLS technique of SEM (Hair Jr et al. 2013) in the SmartPLS 3 software was used to evaluate the measurement properties and test the study's propositions. In IS research, SEM is a very popular data analysis method (Gefen et al. 2000). In addition, SPSS 22.0 software was used to perform stepwise binary logistic regression in order to examine the first proposition across poster and lurker user groups (i.e., the relative importance of the four motivations of image and intrinsic interest, loss of knowledge power and fulfilment to posting/lurking behaviour).

5.2 Data Preparation

As illustrated in Chapter 4 (Section 4.2.2), data was collected from an Australian retail organisation. The case organisation had implemented Google⁺ as an enterprise-wide platform and set up different communities for different groups of staff members. Members of two online communities were invited to participate in this study's survey. With approximately 6000 registered members, Community A was set up exclusively for staff responsible for the operation of 897 grocery supermarket stores across all Australian states, while Community B (2000 registered members) was set up exclusively for staff responsible for the operation of 182 department stores across all Australian states. These two communities were considered to be active communities. The average frequency of posting and commenting ranged from 6 to 8 times per month per member (discussed in Section 5.3 in more detail).

A master data file of 473 records was created in Excel and was then imported to SPSS for the screening of missing data, outliers and unengaged responses. Following the screening, 107 responses were discarded because of the high percentages of incomplete answers. The remaining 366 responses had very few missing values in the demographic questions on age and gender. Further, three cases (Case 69, Case 4 and Case 271) were identified as potential problematic outliers in the two continuous scales used to measure users' participation (UseCreate and UseComm). After both continuous scales were normalised using a log₁₀ transformation in SPSS, the results indicated that the detected outliers (Cases 69, 4 and 271) no longer presented any concern. Next, standard deviation (SD) was used in the data analysis to evaluate the unengaged responses (Kline 1998). Unengaged responses occur when participants respond with almost the exact value for all questions. The SD for all latent variables was less than 0.5; therefore, there were no unengaged responses.

The response rate was 6%. The low response rate was to be expected because the invitation to participate in the survey was communicated in a post, and such posts may easily go unnoticed in active communities like Community A and Community B. Nevertheless, the response rate is comparable to those in similar online studies on random user populations (e.g., Pavlou (2003), Teo et al. (2002), Wu et al. (2014)).

5.3 Descriptive Statistics

The objective of the descriptive statistics analysis was to demonstrate that the sample in the present study: (i) was a representation of the population and that it represented the relevant demographics and the expected users, namely, lurkers and posters, and (ii) had adequate experience with the ESN and organisational intervention (e.g. promotional messages).

As explained in Chapter 4 (Section 4.2.1.1), in order to differentiate posters and lurkers, the scores on the variables UseCreate (“During the past month, how many posts did you create in the ESN?”) and UseComm (“During the past month, how many posts created by others did you comment on in the ESN?”) were examined. The examination identified 78 lurkers and 288 posters. Table 5.1 presents the posters’ and lurkers’ usage and demographic characteristics.

Table 5.1 Demographic characteristics

| | | Posters (288) | Lurkers (78) |
|--|----------------|---------------|--------------|
| Gender | Male | 145 (55.3%) | 36 (46.2%) |
| | Female | 143 (49.7%) | 42 (53.8%) |
| Employment Position | Employee | 96 (33.3%) | 51 (65.4%) |
| | Line Manager | 166 (57.6%) | 25 (32.1%) |
| | Others* | 26 (9.1%) | 2 (2.5%) |
| Purpose of usage | Work-related | 247 (85.8%) | 72 (92.3%) |
| | Social-related | 1 (0.3%) | 1 (1.3%) |
| Membership duration (in months) | Mean | 9.6 | 10.2 |
| | SD | 9.5 | 9.8 |
| Age | Mean | 34.8 | 33.6 |
| | SD | 9.5 | 9.8 |
| Posting frequency (last month) | | | |

| | | | |
|---|------|------|------|
| | Mean | 5.99 | 00 |
| | SD | 9.8 | 00 |
| Commenting frequency (last month) | | | |
| | Mean | 8.86 | 00 |
| | SD | 19.9 | 00 |
| Post or comment frequency(7Likert-Scale) | | | |
| | Mean | 4.00 | 1.67 |
| | SD | 1.39 | 1.18 |
| *Executives and C-level executives | | | |

The sample demonstrated consistent characteristics across the population and did not reveal any significant differences between lurkers and posters in relation to gender, employment position, age, or usage purposes. The correlation analyses were used to examine any association between age and gender and participation behaviour. The results showed no relationships between them. Because the vast majority (90%) of the respondents worked at the operational level and used the ESN for work-related matters, correlation analyses between these two factors (employment position, usage purposes) and participation behaviour were not run.

Males and females were represented in approximately equal number in both groups, with an average age of 34. In relation to employment position, nearly 90% of the respondents worked at the operational level (i.e., store employees and line managers). However, most posters (58%) were line managers while the vast majority of lurkers were store employees (65%). Further, in both groups, the mean for membership duration was approximately 10 months and most of the respondents (90%) used the ESN for work-related matters. It is noted that most of the respondents (80%) were members of Community A (grocery supermarket stores) and a large proportion of the respondents (79%) reported that they visited their online community at least once a day.

Next, the descriptive statistics are discussed in terms of the mean and SD of each construct and the items that were targeted in the validity and SEM analyses. The perceived differences between posters and lurkers in regard to each construct are presented (Table 5.2). It is noted that the results in Table 5.2 were calculated after assessing the validity and reliability of all the study's constructs.

Table 5.2 Differences in mean and standard deviation

| | Posters (288) | | Lurkers (78) | | Independent sample t-tests** | |
|---------------------------------------|---------------|-------|--------------|-------|------------------------------|----------------------|
| | Mean | SD | Mean | SD | t-value | Sig. (at 0.05 level) |
| Image | | | | | -5.52 | 0.000 |
| | IMG1 | 3.62 | 1.72 | 2.76 | 1.58 | |
| | IMG 2 | 3.76 | 1.85 | 2.56 | 1.47 | |
| | IMG 3 | 4.12 | 1.84 | 3.05 | 1.66 | |
| Loss of knowledge power | | | | | 1.54 | 0.124 |
| | LOKP1 | 2.52 | 1.56 | 2.77 | 1.46 | |
| | LOKP2 | 2.41 | 1.52 | 2.68 | 1.40 | |
| | LOKP3 | 2.24 | 1.47 | 2.53 | 1.40 | |
| Intrinsic interest | | | | | -6.77 | 0.000 |
| | INT1 | 5.09 | 1.43 | 3.87 | 1.64 | |
| | INT2 | 4.95 | 1.56 | 3.65 | 1.44 | |
| Perceived Fulfillment | | | | | 0.004 | 0.997 |
| | FUL1 | 4.46 | 1.63 | 4.64 | 1.82 | |
| | FUL2 | 4.39 | 1.46 | 4.41 | 1.83 | |
| | FUL3 | 4.36 | 1.53 | 4.17 | 1.93 | |
| Argument quality | | | | | -2.17 | 0.038 |
| | AQ 1 | 4.80* | 1.45 | 4.05* | 1.50 | |
| | AQ 2 | 4.70* | 1.45 | 3.86* | 1.53 | |
| | AQ 3 | 4.34* | 1.44 | 3.86* | 1.39 | |
| Source credibility | | | | | -2.05 | 0.049 |
| | SC1 | 5.08* | 1.37 | 4.90* | 1.51 | |
| | SC2 | 5.15* | 1.35 | 4.52* | 1.60 | |
| | SC3 | 5.20* | 1.43 | 4.57* | 1.47 | |
| | SC4 | 5.02* | 1.43 | 4.10* | 1.41 | |
| Verbal management pressure | | | | | -5.02 | 0.000 |
| | VMP1 | 5.30 | 1.82 | 4.17 | 2.10 | |
| | VMP2 | 5.97 | 1.27 | 4.90 | 1.85 | |
| | VMP3 | 4.49 | 1.80 | 3.85 | 1.99 | |
| Non-verbal management pressure | | | | | -2.54 | 0.012 |
| | N-VMP1 | 1.86 | 1.52 | 1.69 | 1.25 | |
| | N-VMP2 | 2.71 | 1.90 | 2.46 | 1.63 | |
| | N-VMP3 | 2.99 | 2.09 | 2.78 | 1.73 | |
| | N-VMP4 | 3.47 | 2.11 | 2.38 | 1.57 | |
| SMP effectiveness | | | | | -2.62 | 0.01 |
| | Pol1 | 5.47 | 1.44 | 4.95 | 1.63 | |
| | Pol2 | 5.56 | 1.36 | 5.32 | 1.34 | |
| | Pol3 | 5.70 | 1.25 | 5.44 | 1.28 | |
| | Pol4 | 5.53 | 1.30 | 5.01 | 1.52 | |
| | Pol5 | 5.45 | 1.33 | 5.01 | 1.40 | |

* 109 out of 288 posters reported that they had received promotional messages and 21 out of 78 lurkers reported that they had received promotional messages.

** Equal variances not assumed

Generally, the poster group had higher agreement with the statements about beneficial factors (image, intrinsic interest) that could motivate their participation. In addition, the poster group's view of organisational promotions (e.g., promotional messages, SMP effectiveness) was higher compared to the lurker group.

To test the significance of the differences in perception, a number of independent sample t-tests (in SPSS) were conducted to compare the composite mean of each construct across posters and lurkers. As illustrated in Table 5.2, there were significant differences in perception between posters and lurkers in regard to most constructs. The lurker group had a higher perception of the cost factors (perceived fulfilment, loss of knowledge power) compared to the poster group; however, the difference was not statistically significant between posters and lurkers .

5.4 Measurement Properties

This section describes the process used to assess the validity and reliability of the study's reflective constructs. A reflective measure outlines any change in the construct through the changes in its measurement items. Measurement items measure the same aspect of the unobservable construct (unidimensional). The validity and reliability of the reflective constructs was performed using the PLS technique (Hair Jr et al. 2013). The reliability and validity tests are explained in this section in turn.

The construct reliability test examines the consistency and stability of measures (Sekaran 2006). The most widely used reliability test is Cronbach's alpha (Cronbach 1951). Thus, Cronbach's alpha was used in the study to ensure the measures were reliable. The literature suggests 0.7 or above as an acceptable cut-off value for the Cronbach alpha (Nunnally et al. 1967). The results of the Cronbach alpha test are presented in Table 5.3. Next, we examine construct validity using convergent and discriminant validity tests.

The literature proposes empirical and theoretical approaches to evaluating the content validity. The theoretical approaches use techniques such as: employing previously used and validated measures in the literature, face validity (pre-testing), pilot testing and the Q-sort qualitative technique. Empirical approaches "examine how well a given measure relates to one or more external criterion, based on empirical observations" (Bhattacharjee 2012, p. 58). The most widely used techniques in the empirical approach are the convergent and discriminant validity tests.

Convergent validity refers to “the closeness with which a measure relates to (or converges on) the construct that it is purported to measure”, and discriminant validity refers to “the degree to which a measure does not measure (or discriminates from) other constructs that it is not supposed to measure” (Bhattacharjee 2012, p. 59). In other words, the measures (items) of a specific construct should load highly on that construct (convergent validity) and load less on other constructs (discriminant validity). To meet the criteria for convergent and discriminant validity in this study, the recommendations by Fornell et al. (1981) were followed. The reliability and validity tests were conducted on the entire sample³.

The factor analysis showed a low factor loading for three items. Item VMP3 in the verbal management pressure construct loaded only 0.47, causing the result of Cronbach’s alpha test to be slightly below the cut-off value of 0.7. It was decided to eliminate Item VMP3. Furthermore, the factor loadings of Item Non-VMP1 (0.61) and Item Non-VMP2 (0.68) were slightly below the cut-off value of 0.7. However, given that the loadings of Non-VMP1 and Non-VMP2 were close to the cut-off value of 0.7 and all the other reliability and validity tests, namely, Cronbach’s alpha and average variance extracted (AVE), easily passed the recommended cut-off values (see Table 5.3), it was decided to retain these items. The factor loadings of the remaining items exceeded 0.7, while the constructs’ AVE values were greater than 0.50 suggesting that the Fornell criteria for convergent validity were met.

Similarly, to meet the Fornell criteria for discriminant validity, the square root of each construct’s AVE exceeded the construct–measure correlation between each construct and other constructs in the factor correlation matrix (Hair et al. 2011) (see Table 5.4). In addition, the items’ loadings on their intended constructs were higher compared to their loadings on any other construct, suggesting discriminant validity (see Table 5.5).

³ I used a confirmatory factor analysis (CFA) to ensure the accuracy of the measurements used in the survey (Straub et al. 2004). I used Principle Component Analysis (PCA) with varimax rotation (Fornell et al. (1981). The Varimax rotation helps the interpretation of factors in increasing their information content and variance (Gefen and Straub 2005).

Table 5.3 Item and construct statistics

| | Indicator | Loading | AVE | Cronbachs Alpha |
|--|------------|---------|------|-----------------|
| I post my opinions on Google+ to earn respect from others | IMG1 | 0.90 | 0.84 | 0.91 |
| I post my opinions on Google+ to improve my reputation. | IMG 2 | 0.95 | | |
| I feel that participation improve my status on Google+. | IMG 3 | 0.90 | | |
| I find posting in Google+ interesting. | INT1 | 0.96 | 0.92 | 0.91 |
| It is fun to post in Google+. | INT2 | 0.96 | | |
| When I post on Google+, I lose my unique value in the organisation. | LOKP1 | 0.90 | 0.89 | 0.94 |
| Posting on Google+ makes me lose the value of my knowledge that makes me stand out with respect to others. | LOKP2 | 0.96 | | |
| Posting on Google+ makes me lose my power base in the organisation | LOKP3 | 0.96 | | |
| For me, just reading/browsing on Google+ is enough. | FUL1 | 0.85 | 0.84 | 0.91 |
| I feel reading adequately meets my purpose for using Google+. | FUL2 | 0.95 | | |
| By just reading, I feel my reasons for using Google+ are adequately met. | FUL3 | 0.95 | | |
| During the past month, How many posts created by others did you comment on on Google+? | UseComm* | 0.86 | 0.79 | 0.87 |
| During the past month, How many posts did you create on Google+? | UseCreate* | 0.91 | | |
| I post or comment on Google+. | RevPostF | 0.90 | | |
| The information in Google+ promotional messages is informative | AQ 1 | 0.93 | 0.86 | 0.92 |
| The information in Google+ promotional messages is valuable | AQ 2 | 0.94 | | |
| The information in Google+ promotional messages is persuasive | AQ 3 | 0.91 | | |
| <i>the person who usually sends these messages....</i> | SC1 | 0.87 | 0.81 | 0.92 |
| <i>....is trustworthy.</i> | SC2 | 0.93 | | |
| <i>... is credible</i> | SC3 | 0.93 | | |
| <i>.... is experienced on Google+.</i> | SC4 | 0.87 | | |
| With the Social Media Policy, I believe that I am protected from any misuse by others (e.g., improper content, bullying, and harassment). | Pol1 | 0.85 | 0.75 | 0.92 |
| I believe that the Social Media Policy is an effective way to protect the Google+ communities from any misuse such as posts that have improper content, bullying, harassment. | Pol2 | 0.89 | | |
| I feel confident that the Social Media Policy reflects the organisation's commitment to protect the Google communities from any misuse by others (e.g., improper content, bullying, and harassment). | Pol3 | 0.87 | | |
| I believe that the Social Media Policy is an effective way to guide users on how to best use Google+ | Pol4 | 0.88 | | |
| The organisation's Social Media Policy has an understandable, written sequence of steps that | Pol5 | 0.84 | | |

| | | | | |
|---|--------|------|------|------|
| could be followed to ensure the best use of Google+ | | | | |
| If I do not post on Google+ for one month, I am required to explain why | N-VMP1 | 0.61 | 0.60 | 0.82 |
| There are rules that require employees to post about certain tasks on Google+ | N-VMP2 | 0.68 | | |
| I believe that my annual evaluation report (or Performance Planning and Review) takes into account my posting activities on Google+ | N-VMP3 | 0.79 | | |
| Overall, I believe it is required that I regularly post on Google+ | N-VMP4 | 0.97 | | |
| My supervisor suggests that I participate in the Google+ | VMP1 | 0.88 | 0.81 | 0.77 |
| I believe the organisation's management would like me to participate in the Google+ | VMP2 | 0.92 | | |
| * Normalized using a log10 transformation. | | | | |
| Image (IMG), Intrinsic interest (INT), Fulfillment (FUL), Loss of knowledge power (LOKP) Argument quality (AQ), Source credibility (SC), Verbal management pressure(VMP), Non-verbal management pressure (Non-VMP), Social media policy effectiveness (SMP) . | | | | |

Table 5.4 Correlation of constructs

| | AQ | IMG | INT | LOKP | FUL | Non-VMP | Part. | Pol | SC | VMP |
|--|------|------|-------|-------|-------|---------|-------|------|------|------|
| AQ | 0.93 | | | | | | | | | |
| IMG | 0.12 | 0.92 | | | | | | | | |
| INT | 0.27 | 0.45 | 0.96 | | | | | | | |
| LOKP | 0.11 | 0.20 | -0.07 | 0.94 | | | | | | |
| FUL | 0.15 | 0.24 | 0.23 | 0.15 | 0.92 | | | | | |
| NonVMP | 0.03 | 0.25 | 0.05 | 0.24 | -0.05 | 0.77 | | | | |
| Part. | 0.11 | 0.36 | 0.49 | -0.11 | -0.06 | 0.19 | 0.89 | | | |
| Pol | 0.27 | 0.22 | 0.41 | -0.10 | 0.22 | -0.01 | 0.16 | 0.87 | | |
| SC | 0.63 | 0.12 | 0.32 | -0.04 | 0.11 | -0.01 | 0.18 | 0.29 | 0.90 | |
| VMP | 0.16 | 0.32 | 0.30 | 0.00 | 0.10 | 0.22 | 0.28 | 0.33 | 0.19 | 0.90 |
| Image (IMG), Intrinsic interest (INT), Fulfillment (FUL), Loss of knowledge power (LOKP) Argument quality (AQ), Source credibility (SC), Verbal management pressure(VMP), Non-verbal management pressure (Non-VMP), Social media policy effectiveness (SMP), Participation(Part) | | | | | | | | | | |

Table 5.5 Cross loading

| | AQ | IMG | INT | LOKP | FUL | Non-VMP | Part. | Pol | SC | VMP |
|-------------------|-------|------|-------|-------|-------|---------|-------|-------|-------|-------|
| AQ1 | 0.93 | 0.08 | 0.29 | 0.05 | 0.14 | 0.01 | 0.11 | 0.26 | 0.63 | 0.17 |
| AQ2 | 0.94 | 0.08 | 0.23 | 0.12 | 0.12 | 0.03 | 0.09 | 0.25 | 0.56 | 0.15 |
| AQ3 | 0.91 | 0.17 | 0.23 | 0.14 | 0.16 | 0.05 | 0.11 | 0.23 | 0.55 | 0.12 |
| IMG1 | 0.13 | 0.90 | 0.35 | 0.26 | 0.23 | 0.19 | 0.29 | 0.23 | 0.06 | 0.28 |
| IMG2 | 0.11 | 0.95 | 0.42 | 0.18 | 0.21 | 0.25 | 0.35 | 0.17 | 0.08 | 0.30 |
| IMG3 | 0.09 | 0.90 | 0.47 | 0.12 | 0.23 | 0.24 | 0.33 | 0.22 | 0.17 | 0.32 |
| INT1 | 0.25 | 0.42 | 0.96 | -0.07 | 0.24 | 0.05 | 0.46 | 0.40 | 0.30 | 0.30 |
| INT2 | 0.26 | 0.45 | 0.96 | -0.06 | 0.20 | 0.05 | 0.48 | 0.38 | 0.32 | 0.27 |
| LOKP1 | 0.09 | 0.17 | -0.08 | 0.90 | 0.13 | 0.24 | -0.10 | -0.09 | -0.01 | -0.01 |
| LOKP2 | 0.11 | 0.21 | -0.06 | 0.96 | 0.15 | 0.23 | -0.11 | -0.08 | -0.04 | 0.03 |
| LOKP3 | 0.11 | 0.18 | -0.06 | 0.96 | 0.15 | 0.22 | -0.10 | -0.11 | -0.06 | -0.01 |
| FUL1 | 0.05 | 0.13 | 0.04 | 0.16 | 0.85 | -0.07 | -0.15 | 0.13 | 0.01 | 0.06 |
| FUL 2 | 0.16 | 0.22 | 0.26 | 0.11 | 0.95 | -0.07 | -0.05 | 0.23 | 0.14 | 0.11 |
| FUL 3 | 0.18 | 0.28 | 0.26 | 0.16 | 0.95 | 0.00 | 0.00 | 0.22 | 0.11 | 0.11 |
| Non_VMP1 | -0.04 | 0.14 | -0.06 | 0.24 | -0.04 | 0.61 | 0.03 | -0.11 | -0.13 | 0.02 |
| Non_VMP2 | -0.03 | 0.12 | -0.03 | 0.25 | 0.01 | 0.68 | 0.05 | -0.06 | -0.10 | 0.10 |
| Non_VMP3 | 0.00 | 0.22 | 0.03 | 0.21 | -0.01 | 0.79 | 0.06 | 0.00 | 0.00 | 0.17 |
| Non_VMP4 | 0.06 | 0.24 | 0.08 | 0.20 | -0.06 | 0.97 | 0.24 | 0.01 | 0.03 | 0.25 |
| Pol1 | 0.20 | 0.23 | 0.37 | -0.10 | 0.18 | -0.04 | 0.17 | 0.85 | 0.24 | 0.25 |
| Pol2 | 0.21 | 0.17 | 0.31 | -0.09 | 0.16 | -0.05 | 0.08 | 0.89 | 0.23 | 0.26 |
| Pol3 | 0.22 | 0.12 | 0.32 | -0.15 | 0.19 | -0.09 | 0.09 | 0.87 | 0.24 | 0.26 |
| Pol4 | 0.29 | 0.23 | 0.38 | -0.06 | 0.19 | 0.04 | 0.19 | 0.88 | 0.31 | 0.30 |
| Pol5 | 0.22 | 0.20 | 0.38 | -0.03 | 0.22 | 0.07 | 0.15 | 0.84 | 0.25 | 0.35 |
| SC1 | 0.53 | 0.09 | 0.28 | -0.07 | 0.04 | -0.03 | 0.14 | 0.26 | 0.87 | 0.14 |
| SC2 | 0.60 | 0.13 | 0.31 | -0.05 | 0.10 | 0.00 | 0.18 | 0.27 | 0.93 | 0.20 |
| SC3 | 0.61 | 0.09 | 0.28 | -0.04 | 0.11 | 0.01 | 0.16 | 0.28 | 0.93 | 0.18 |
| SC4 | 0.50 | 0.10 | 0.28 | -0.01 | 0.14 | -0.01 | 0.15 | 0.25 | 0.87 | 0.17 |
| UseCommLG 10 | 0.11 | 0.27 | 0.41 | -0.12 | -0.02 | 0.09 | 0.86 | 0.13 | 0.16 | 0.19 |
| UseCreateLG 10 | 0.09 | 0.36 | 0.46 | -0.10 | -0.09 | 0.19 | 0.91 | 0.14 | 0.14 | 0.27 |
| RevPostF | 0.10 | 0.32 | 0.44 | -0.08 | -0.04 | 0.23 | 0.90 | 0.17 | 0.17 | 0.28 |
| VMP1 | 0.20 | 0.30 | 0.27 | 0.01 | 0.04 | 0.23 | 0.23 | 0.27 | 0.21 | 0.88 |
| VMP2 | 0.10 | 0.29 | 0.27 | -0.01 | 0.14 | 0.18 | 0.28 | 0.32 | 0.15 | 0.92 |

Image (IMG), Intrinsic interest (INT), Fulfillment (FUL), Loss of knowledge power (LOKP)
 Argument quality (AQ), Source credibility (SC), Verbal management pressure (VMP), Non-
 verbal management pressure (Non-VMP), Social media policy (SMP), Participation (Part).

5.5 Proposition Testing

Having established the reliability and validity of the constructs, the next step in the data analysis design was testing the proposed model and the four propositions as presented in Chapter 3:

Proposition 1 – Perceived extrinsic and intrinsic benefits and costs will impact ESN participation behaviour, such that the perceived extrinsic cost of loss of knowledge power and the perceived intrinsic cost of fulfilment will encourage lurking behaviour and the perceived extrinsic benefit of image and the perceived intrinsic benefit of intrinsic interest will encourage posting behaviour.

Proposition 2 – The argument quality in promotional messages and the credibility of their source will impact users' perceived benefits (i.e., image, intrinsic interest) and costs (i.e., loss of knowledge power, fulfilment) of participation in the ESN, and such impact will differ across lurkers and posters.

Proposition 3 – The verbal management pressure and non-verbal management pressure (rules) will impact ESN participation behaviour, and such impact will differ across lurkers and posters.

Proposition 4 – The effectiveness of the SMP will impact users' perceived benefits (i.e., image, intrinsic interest) and costs (i.e., loss of knowledge power, fulfilment) of participation in the ESN, and such impact will differ across lurkers and posters.

The strategy for proposition testing was as follows:

- First, using the PLS technique of SEM (Hair Jr et al. 2013) in the SmartPLS 3 software, a structural model corresponding to the proposed model (Chapter 3) was estimated. For all the proposed paths, the standardised path coefficients and path significance were examined. The variance explained (R²) of the proposed model was also provided⁴.
- In the second round of analysis, posters versus lurkers were examined in particular. Two post-hoc analyses were performed: one logistic binary regression (Pallant 2013) (using SPSS 22.0 software) and one MGA (Rigdon et al. 2010) of the structural model (using SmartPLS 3 software).

Table 5.6 summarises the details of the proposition testing conducted in this study. The following sub-sections report on each test in turn.

⁴ Following the detailed recommendations by MacKenzie et al. (2011) for testing the standardised path coefficients, path significance and variance explained (R²)

Table 5.6 Propositions testing summary

| Objective | Test | Sample (size) |
|---|--|---|
| Structural model Evaluation - To examine the influence of the four motivations for users' participation (Image, Intrinsic interest, Loss of knowledge power, Fulfilment) on users' participation (Proposition 1). - The Verbal and Non-verbal management pressure on users' participation (Proposition 3). | Bootstrapping procedure to test the standardised path coefficients and path significance | All groups: n=366 |
| | As above | For promotional messages, all groups: n=130* For SMP, all groups: n=366 |
| Comparing posters versus lurkers - To compare the influence (the likelihood) of the four motivations on posting/lurking. - To compare the influence (the likelihood) of the management pressure techniques on posting/lurking. | Stepwise binary logistic regressions | Posters (212) Lurkers (78) |
| | Multi-group analysis | For promotional messages, Posters (109)* Lurkers (21)* For SMP, Posters (212) Lurkers (78) |
| * Only members who had experience with promotional messages | | |

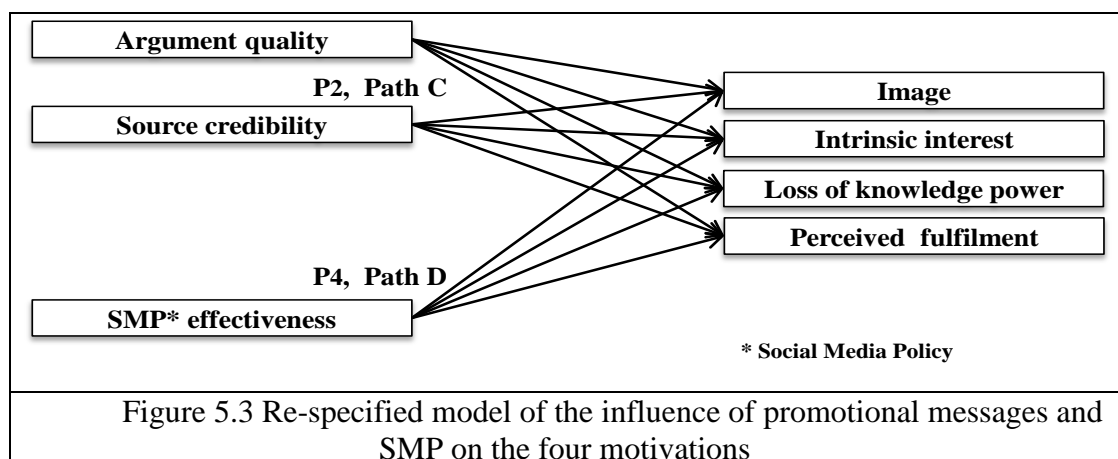
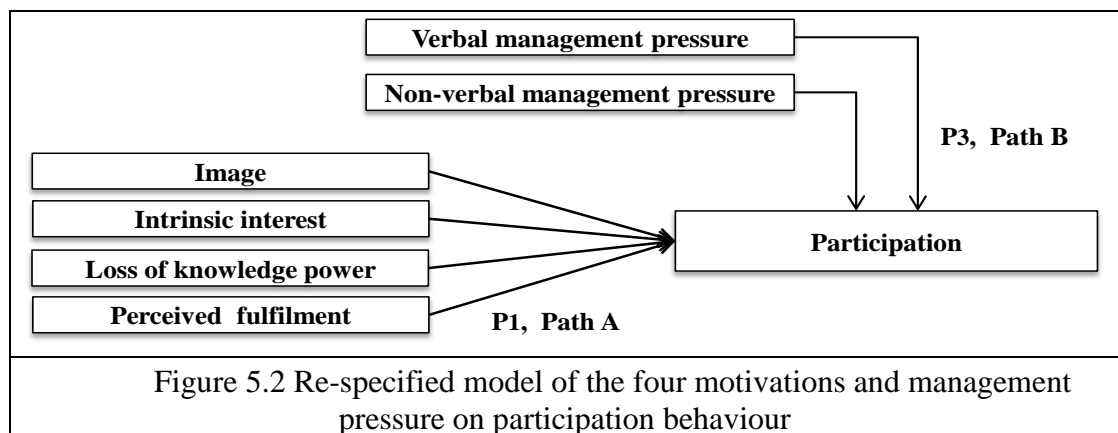
5.5.1 Evaluating the structural model

This step involved the estimation of the structural model. Consistent with the study's propositions, the structural model included the paths between:

- A. all four motivations (i.e., image, intrinsic interest, loss of knowledge power and fulfilment) and the dependent variable, ESN participation (Proposition 1)
- B. the management pressure constructs (verbal & non-verbal management pressure) and the dependent variable, ESN participation (Proposition 3)
- C. the promotional message constructs (argument quality, source credibility) and all four motivations (Proposition 2)
- D. and finally, the SMP effectiveness and all four motivations (Proposition 4).

The proposed model is large and its evaluation used different tests. The test used to examine the relative importance of the four motivations on the binary posting/lurking variable (i.e. logistic binary regression) was different from the test used to examine the paths' coefficients and significance of argument quality, source credibility and SMP effectiveness on all four motivations. In addition, for Path C, a small sample size of those who had received and experienced promotional messages (130 members out of 366) was used to examine the impact of argument quality and source credibility on all four motivations. This made it difficult to test the model as a whole. Thus, the structural model was partitioned into two parts: the first model evaluated Paths A and B (Figure 5.2) while the second model evaluated Paths C and D (Figure 5.3). Partitioning large and complex structural models for analysis is a common practice in data analysis (e.g. Beck et al. (2014) and Wiertz et al. (2007)).

To test these paths and determine their significance, the bootstrapping technique of 1000 re-sampling in PLS was applied following the recommendations by Wetzels et al. (2009) (to use a sample size of at least 500). The results on the standardised path coefficients and path significances are presented in turn. Overall, the model accounted for 34 % of the variance in participation.



Motivations and management pressure to participate in the ESN (Paths A and B)

After examining the impact of extrinsic and intrinsic benefits and costs on users’ participation (Proposition 1), image and intrinsic interest (the perceived extrinsic and intrinsic benefits, respectively) were found to have a significant positive impact on participation (encouraging posting), Moreover, loss of knowledge power and fulfilment (the perceived extrinsic and intrinsic costs, respectively) were found to have a significant negative impact on participation (encouraging lurking) (refer to Table 5.7).

To examine whether management pressure constructs influenced users’ participation (Proposition 3), the data analysis tested the two paths of verbal management pressure and non-verbal management pressure on the dependent variable of ESN participation. Both verbal management pressure and non-verbal management pressure were found to have a significant positive impact on users’ participation (refer to Table 5.7).

Table 5.7 Proposition 1 and 3 - Testing for all groups (n=366)

| Proposition-1 | Results |
|---|--------------------------|
| IMG => Participation | $\beta = 0.170^{***}$ |
| INT => Participation | $\beta = 0.386^{***}$ |
| LOKP => Participation | $\beta = (-) 0.124^{**}$ |
| FUL => Participation | $\beta = (-) 0.172^{**}$ |
| Proposition-3 | |
| VMP => Participation | $\beta = 0.096^*$ |
| Non-VMP => Participation | $\beta = 0.127^*$ |
| (Participation R ² = 0.339) *** p<0.001, ** p<0.01 , * p<0.05 Shaded cells indicate significant path coefficients and differences. Image (IMG), Intrinsic interest (INT), Fulfilment (FUL), Loss of knowledge power (LOKP) ,Verbal management pressure(VMP), Non-verbal management pressure (Non-VMP) | |

Promotional messages and SMP on users’ motivation to participate in the ESN (Paths C and D)

To examine whether promotional messages influence the four motivations to participate (Proposition 2), the data analysis tested hypothesized paths between argument quality and source credibility of these messages vs members’ perceived image, intrinsic interest, loss of knowledge power and fulfilment. This analysis used a subsample of 130 members (out of 366), namely, those who had received and experienced promotional messages. Altogether, four of the eight relationships were found to be significant. Argument quality was found to have a significant positive

impact on members' perceived cost (loss of knowledge power) and members' perceived benefits (intrinsic interest), while source credibility was found to have a significant positive impact on members' perceived benefits (intrinsic interest) but a negative impact on members' perceived costs (loss of knowledge power) (refer to Table 5.8).

In relation to the influence of SMP effectiveness on the four motivations to participate (Proposition 4), similarly, the data analysis tested all possible paths of the SMP effectiveness vs members' perceived image, intrinsic interest, loss of knowledge power and perceived fulfilment. The four relationships were found to be significant (refer to Table 5.8). The next section provides details of the comparison between the poster and lurker user groups.

Table 5.8 Proposition 2 and 4 - Testing for all groups

| Proposition-2 (n=130) ^a | | Results |
|--|------|--------------------------|
| AQ => | IMG | $\beta = 0.125$ |
| | INT | $\beta = 0.206^*$ |
| | LOKP | $\beta = 0.364^{***}$ |
| | FUL | $\beta = 0.228$ |
| SC => | IMG | $\beta = 0.128$ |
| | INT | $\beta = 0.427^{***}$ |
| | LOKP | $\beta = (-) 0.286^{**}$ |
| | FUL | $\beta = 0.099$ |
| Proposition-4 (n=366) | | |
| SMP => | IMG | $\beta = 0.207^{***}$ |
| | INT | $\beta = 0.340^{***}$ |
| | LOKP | $\beta = (-) 0.116^*$ |
| | FUL | $\beta = 0.194^{***}$ |
| (Participation R ² = 0.34) *** p<0.001, ** p<0.01, * p<0.05 Shaded cells indicate significant path coefficients and differences. Image (IMG), Intrinsic interest (INT), Fulfilment (FUL), Loss of knowledge power (LOKP) Argument quality (AQ), Source credibility (SC), Social media policy effectiveness (SMP) ^a those who had received and experienced promotional messages | | |

5.5.2 Comparing posters and lurkers

The second round of analysis sought to differentiate posters and lurkers and their motivations. As explained earlier (refer to Section 2.3.1 for more detail in lurking definition), lurkers were those who did not create any content in the last month, while the posters were those members who posted or commented at least once in the last month. The sample comprised 78 lurkers and 288 posters (see Section 5.3 for details). However, out of the total number of posters (288), there were 76 who only commented once but did not post in the last month. Similar to previous research (e.g., Hung et al. (2015) and Rau et al. (2008)), care was taken to clearly

distinguish the lurker and poster user groups; therefore, the statistical analysis did not consider those 76 respondents as posters. For this phase of the data analysis, 78 lurkers and 212 posters were identified.

Motivations and management pressure on posting/lurking behaviours

Using the binary variable of poster/lurker, a stepwise binary logistic regression (Pallant 2013) was performed using SPSS 22.0 software to examine the relative importance of: (i) the four motivations (i.e., image and intrinsic interest as benefits, and loss of knowledge power and fulfilment as costs) to posting/lurking behaviour, and (ii) verbal management pressure and non-verbal management pressure to posting/lurking behaviour.

The analysis used the composite scores of the four motivations and management pressure techniques as the independent variables and the binary posting/lurking as the dependent variable. Table 5.9 summarises the results. The Hosmer–Lemeshow goodness-of-fit test showed that the regression model was significantly better at determining posting/lurking than random chance. The fit results were acceptable (Hosmer et al. 2000). Aligning with Proposition 1, the extrinsic and intrinsic benefits (image, intrinsic interest) were significant predictors of posting, while the extrinsic and intrinsic costs (fulfilment, loss of knowledge power) were significant predictors of lurking. However, in relation to Proposition 3, only verbal management pressure was shown to have significant influence on posting while non-verbal management pressure did not significantly influence posting/lurking behaviour.

Table 5.9 Stepwise binary logistic regressions
(Lurkers n = 78 & Posters (n=212))

| Motivations | Beta | SE | Wald | Sig. | Exp (B) |
|--|-----------------|-------|--------|-------|---------|
| IMG | 0.353 | 0.115 | 9.481 | 0.002 | 1.424 |
| INT | 0.647 | 0.132 | 24.185 | 0.000 | 1.910 |
| LOKP | (-)0.355 | 0.124 | 8.171 | 0.004 | 0.701 |
| FUL | (-)0.323 | 0.124 | 6.805 | 0.009 | 0.724 |
| Management Pressure | | | | | |
| Non-VMP | 0.160 | 0.125 | 1.646 | 0.199 | 1.173 |
| VMP | 0.277 | 0.101 | 7.553 | 0.006 | 1.319 |
| Model fit on posting/lurking: (-2 Log Likelihood = 246.041),(Cox & Snell R ² = 0.271),(Nagelkerke R ² = 0.394) The Hosmer-Lemeshow goodness-of-fit (chi-square, p) = (6.888, p = 0.549) | | | | | |
| Image (IMG), Intrinsic interest (INT), Fulfilment (FUL), Loss of knowledge power (LOKP), Verbal management pressure(VMP), Non-verbal management pressure (Non-VMP) | | | | | |

Multi-group analysis

The data analysis then compared the significance of the path coefficient differences among the lurker and poster user groups in the structural model. To that end, an MGA (Henseler 2010; Rigdon et al. 2010) was run to perform a pair-wise comparison of the bootstrap estimates for the overall structural model. A similar approach was used by Teo et al. (2014) and Recker et al. (2012). Before that, all the measurement properties for both the lurker (78) and poster (212) samples were re-examined. The SC1 loaded only 0.39 in the lurker sample (78). It was decided to eliminate Item SC1. Otherwise, all the construct validity and reliability criteria were met in both samples.

The analysis of the promotional messages used a subsample of 130 members (out of 366), namely, those who had received and experienced promotional messages. This subsample comprised 21 lurkers and 109 posters. Because of the size of the subsamples, two separate MGA of the structural model were run: one for argument quality and one for source credibility⁵. Table 5.10 summarises the results. In line with the expectations in Proposition 2, the impact of argument quality and source credibility on all four motivations was different between the posters and lurkers. Furthermore, the impact difference was sometimes significant. Likewise, an MGA of the structural model was run for SMP effectiveness. In line with the expectations in Proposition 4, the impact of the SMP on all four motivations was different between the posters and lurkers. However, the impact difference was not significant.

Argument quality and source credibility had a mixed impact on image, intrinsic interest, fulfillment, and loss of knowledge power across the lurkers and posters. In the lurker group, argument quality significantly increased image, fulfillment, and loss of knowledge power, while source credibility only increased lurkers' perceived image and fulfillment. In the poster group, argument quality and source credibility significantly increased the posters' perceived intrinsic interest. The difference in the impact of argument quality on image and on fulfillment was found to be significant ($p=0.03$, and 0.008 , respectively), while the rest were not significant. On the other hand, the differences in the impact of source credibility on image and on fulfillment

⁵ Before that, the measurement properties were examined, and all the construct validity and reliability criteria were met in both samples. Note that because of the small sample size of lurkers (21) and posters (109) in the AQ and SC analysis, each path was examined separately (AQ to IMG, AQ to INT, etc.)

were significant ($p=0.02$ and $p=0.002$, respectively), while the impact of source credibility on intrinsic interest and on loss of knowledge power was not significantly different (refer to Table 5.10).

Similar to the source credibility and argument quality impact, SMP also had a mixed impact on image, intrinsic interest, loss of knowledge power and fulfilment across the lurkers and posters (refer to Table 5.10). The next section provides a discussion of the results.

Table 5.10 Multi-group analysis results

| Propositions => | | Lurkers (n = 21) $\beta =$ | Posters (n = 109) $\beta =$ | Lurkers vs Posters |
|---|------|----------------------------------|-----------------------------------|--------------------------|
| AQ | IMG | 0.463** | 0.133 | 0.033* |
| | INT | 0.237 | 0.485*** | 0.812 |
| | LOKP | 0.398* | 0.163 | 0.112 |
| | FUL | 0.668*** | 0.243 | 0.008** |
| SC | IMG | 0.549** | 0.135 | 0.028* |
| | INT | 0.421 | 0.556*** | 0.669 |
| | LOKP | 0.242 | (-)0.109 | 0.127 |
| | FUL | 0.815*** | 0.226 | 0.002** |
| Propositions => | | Lurkers (n = 78) | Posters (n = 212) | |
| SMP | IMG | 0.229 | 0.236*** | 0.417 |
| | INT | 0.474*** | 0.434*** | 0.351 |
| | LOKP | 0.058 | (-)0.067 | 0.264 |
| | FUL | 0.315*** | 0.220*** | 0.180 |
| *** $p<0.001$, ** $p<0.01$, * $p<0.05$ Shaded cells indicate significant path coefficients and differences. Image (IMG), Intrinsic interest (INT), Fulfilment (FUL), Loss of knowledge power (LOKP), Argument quality (AQ), Source credibility (SC), Social media policy effectiveness (SMP) | | | | |

5.6 Discussion

All the propositions relating to the research model of the four motivations to participate (or not participate) in ESNs and the influence of three organisational interventions on these motivations and participation behaviours were supported. This demonstrates the general viability of the proposed model in: (i) explaining the cost and beneficial determinants of lurking/posting behaviour; and (ii) validating whether the already-implemented interventions improve users' beliefs or, worse, turn off posters' willingness to participate in an ESN.

Overall, the research model explained 34% of users' participation behaviour. Although the variance may not be very high, it is close to previous studies based on social exchange theory (e.g., 40% in Hung et al. (2011) and 40% in Chen et al. (2010)) and extrinsic and intrinsic motivation (e.g., 44% in (Lai et al. 2014) and 26%

in (Marett et al. 2009)). Furthermore, it is important to highlight that all the respondents were employees of the case organisation with experience in using Google+ (the firm's ESN) of at least 9.71 months and 86% of them used Google+ for work-related matters. Both communities from which data was collected were active communities, with 79% of members reporting that they visited their online community at least once a day. This indicates that the collected data was sufficient and appropriate because it was sourced from experienced users of an ESN.

Contrary to the general notion in the literature on online communities (Lai & Chen 2014; Malinen 2015) that lurkers comprise the largest user group (e.g., the “90–9–1” principle of collaborative websites (Arthur 2006)), we identified only 78 of all 366 participants as lurkers (21.3%). The reasons behind the low number of lurkers are: (i) context-wise, the study collected data from organisationally-bound, private networks in which all members are identifiable; thus, the characteristics of this user group are different from the characteristics of the user groups in previous studies (e.g., Preece et al. (2004)) that investigated public online forums (where the number of members is massive and lurkers can be unidentifiable); (ii) as discussed above in Section 5.3, the average number of posts and comments per month in the two Google+ communities from which we solicited our data was 5.99 and 8.86, respectively; this demonstrates the high level of activities in these communities, as more members participate; and (iii) it was expected that fewer lurkers would respond to the online survey because “it is their nature not to actively participate, as has been found with other online surveys targeting lurkers” (Ridings et al. 2006, p. 339). Nevertheless, the number of lurkers in the present study is comparable to the number of lurkers in previous surveys on lurking (e.g., 7.7% in Ridings et al. (2006), 12.2% in Petrovčič and Petrič (2014) and 34.7% in Andrews et al. (2003)).

This section sets out to discuss the findings on users' motivations for posting and lurking behaviours in ESNs (Proposition 1) and the influence of three interventions, namely, promotional messages (Proposition 2), management pressure (Proposition 3) and SMP (Proposition 4) on users' motivations and behaviours. A detailed discussion of the insights gained into the four propositions to address the research questions is presented next.

5.6.1 Explaining users' motivations to post (or lurk) in the ESN

The study's first proposition and its findings are summarised in Table 5.11. The research findings provide full support for Proposition 1 by revealing that the extrinsic and intrinsic benefits (image and intrinsic interest, respectively) are

significant predictors of posting, while the intrinsic and extrinsic costs (fulfilment and loss of knowledge power, respectively) are significant predictors of lurking.

Table 5.11 Proposition-1 and results

| Propositions-1 | Relevant empirical results |
|---|--|
| <p>Perceived extrinsic and intrinsic benefits and costs will impact ESN participation behaviour, such that the perceived extrinsic cost of loss of knowledge power (LOKP) and the perceived intrinsic cost of fulfilment (FUL) will encourage lurking behaviour and the perceived extrinsic benefit of image (IMG) and the perceived intrinsic benefit of intrinsic interest (INT) will encourage posting behaviour</p> | <ul style="list-style-type: none"> ▪ IMG ($\beta=0.353$, $p=0.002$) was the most important extrinsic predictor of participation; and INT ($\beta=0.647$, $p=0.000$) was the most important intrinsic predictor of participation. ▪ Lurking was motivated by high levels of the perceived extrinsic cost LOKP and the perceived intrinsic cost FUL. ▪ Posting was motivated by high levels of the perceived extrinsic benefit IMG and the perceived intrinsic benefit INT. |

In relation to the two beneficial motivations of participation – perceived image (IMG) and perceived intrinsic interest (INT) – INT was found to be the most important predictor of posting in an ESN. Users with higher perceptions of INT were more likely to post. In fact, the likelihood was almost double. As illustrated in Table 5.9, for each point of increase in INT, the likelihood of posting increased from 1.0 to 1.910 when the other covariates were held constant. This finding confirms the study’s argument about the importance of intrinsic determinants in explaining voluntary users’ participation even in a work setting (Chapter 3, Section 3.3.1.3). The results are in line with previous research that found intrinsic values to have a greater impact on encouraging system use (Beaudry et al. 2010), particularly when the technology use is voluntary in nature (Webster et al. 1992).

The second important predictor of posting behaviour was an extrinsic factor. As expected, IMG was a positive and significant determinant of posting behaviour. Although it was not a strong predictor of posting behaviour as INT, nevertheless, for each point of increase in IMG, the likelihood of posting increased from 1.0 to 1.424 when the other covariates were held constant (refer to Table 5.9). These findings are consistent with previous research (e.g., Kügler et al. (2015a) and Wasko et al. (2005)) that found IMG to be a significant predictor of participation in professional practice communities.

On the other hand, the two proposed cost factors of participation, namely, loss of knowledge power (LOKP) and perceived fulfilment (FUL), had a significant negative effect on participation and therefore motivated users to lurk instead. As

previously argued (Chapter 3, Section 3.3.1.2), the cost factor of LOKP could significantly hinder users' participation particularly in today's competitive work environments as users could be afraid that contributing may lead to the loss of their unique value (i.e. their knowledge) (Cabrera et al. 2002; Ding et al. 2014). Contrary to Kankanhalli et al. (2005) who found no significant association between LOKP and knowledge contribution, the analysis in the present study found LOKP to have a significant negative correlation with users' participation, suggesting that the perceived extrinsic cost of LOKP is an important determinant of lurking behaviour in ESNs. The analysis revealed that, for each point of increase in LOKP, the likelihood of posting decreased from 1.0 to 0.701 when the other covariates were held constant (refer to Table 5.9). This suggests that users are unwilling to post about their experience as they think that sharing their knowledge could compromise their competitive advantage.

The newly proposed construct of FUL was found to have a significant negative correlation with users' participation; thus, making FUL a key predictor of lurking behaviour. Similar findings are reported in the literature on lurking, particularly the finding by Preece and Nonnecke (2000; 2001; 2004) that "just reading/browsing is enough" was the most frequently cited reason for low levels of user participation in public bulletin board communities. Furthermore, the findings in the present study extrapolate, for the first time, the extent of the influence of this reason. In support of the claim made in this study (Chapter 3, Section 3.3.1.4), perceived fulfilment was found to be a key reason for lurking in ESNs. Similar to the association between LOKP and users' participation, the likelihood of posting decreased from 1.0 to 0.724 for each point of increase in FUL assuming all other covariates were held constant (refer to Table 5.9). This finding suggests that users are unwilling to post when they feel their needs for using the ESN are fulfilled through reading only. Overall, these findings support the proposition that FUL and LOKP are key reasons for lurking in ESNs.

In summary, these results suggest that:

- I. Participation behaviour is a dual factor concept with the opposite ends of the continuum being influenced by orthogonal antecedents. In other words, users' motivations to post are different from their motivations to lurk.

-
- II. ESNs are generally perceived as systems for work-related activities; however, users' participation was provoked by a mix of extrinsic and intrinsic factors. This suggests that users' motivations are not mutually exclusive because users also perceive the ESN as a social entertainment actor. As categorised by Wu et al. (2013), social networking technologies have the dual-purpose nature of improving productivity and providing entertainment.
 - III. The investigation of both beneficial and cost factors provides a fuller picture of why users either lurk or post in online communities. Taking a purely positive approach and examining only beneficial motivations will leave the behaviour of the largest user group in any online community (i.e., lurkers) undiscovered.
 - IV. While the findings in previous studies on the effect of image on users' participation in professional online communities are mixed (Lai et al. 2014), the findings in the present study suggest that image has a significant positive impact on users' willingness to participate in ESNs.
 - V. The influence of the beneficial factors of image (IMG) and intrinsic interest (INT) on content creation can be extended to the ESN context. IMG ($\beta = 0.353$, $p = 0.002$) and INT ($\beta = 0.647$, $p = 0.000$) were significant predictors of participation. This is in line with findings in the literature that IMG and INT significantly impacted knowledge creation in professional online communities (e.g., He et al. (2009) and Shin et al. (2007)).
 - VI. It is difficult to overcome self-interest factors (LOKP). The literature suggests that the cost factor of LOKP hinders users' participation (e.g., Huang et al. (2008) and Kankanhalli et al. (2005)), and LOKP is indeed a significant barrier to participation in ESNs ($\beta = (-)0.355$, $p = 0.004$). However, the participation of and feedback from management representatives, experienced staff members (well known for their academic or professional expertise) and ESN community managers could create a cooperative environment that eases users' concerns about losing their knowledge.
 - VII. The results of the newly proposed cost factor (FUL) suggest that the referent construct is not only conceptually relevant (refer to Section 4.2.1.4), but also empirically relevant to the problem of ESN participation (lurking). Users are less likely to contribute when they believe that the reading activity itself is sufficient and meaningful on its own ($\beta = (-)0.323$, $p = 0.009$). A possible

strategy to change such a perception is the implementation of extensive campaigns to: (a) show that their voices are important and necessary for these communities to survive, and (b) raise awareness of the value of the strong norm of reciprocity in the collective.

VIII. Social exchange theory is an appropriate theoretical lens to explain the cost and beneficial factors that motivate posting and lurking behaviours.

Thus, the results of the data analysis are able to address the first research objective and support the claim that these four motivations are among the key drivers for lurking and posting behaviours in an ESN. Particularly, the results extend the view of the importance of cost factors in explaining lurking behaviour in these platforms.

5.6.2 Explaining the role of organisational interventions on users' motivations across poster and lurker user groups

Promotional messages

The second proposition explores how the four motivations are influenced by the argument quality and the source credibility of the promotional messages sent by management to influence ESN participation. Proposition 2 and its findings are summarised in Table 5.12. The findings were in some cases contradictory to the results that ESN managers may hope for.

Table 5.12 Proposition-2 and results

| Proposition 2 | Relevant empirical results |
|--|--|
| <p>The argument quality in promotional messages and the credibility of their source will impact users' perceived benefits (i.e. image, intrinsic interest) and costs (i.e. loss of knowledge power, fulfilment) of participation in the ESN, and such impact will differ across lurkers and posters.</p> | <ul style="list-style-type: none"> ▪ In all groups, AQ significantly increased users' perceived benefit of INT and their perceived cost of LOKP while SC significantly increased users' perceived benefit of INT but decreased users' perceived cost of LOKP. ▪ In the lurker group, AQ significantly increased lurkers' perceived cost of FUL and LOKP as well as their perceived benefit of IMG. The SC, on the other hand, significantly increased users' perceived cost of FUL and their perceived benefit of IMG. ▪ In the poster group, AQ and SC significantly increased posters' perceived benefit INT. |

In the all-group analysis, the results suggest that promotional messages may have impacts that contradict the intended effect. After examining all the possible paths of influence from argument quality (AQ) to all four motivations, two significant paths of influence were found. First, the AQ significantly increased users' perceived

benefit of INT as users became more animated and excited to participate to satisfy their pleasure needs. Previous research suggests that the articulation of the values of participation in online communities is an effective way to encourage participation (Yuan et al. 2013). Second, contrary to the outcome hoped for by ESN community managers, AQ was found to significantly increase users' perceived cost of LOKP. A possible explanation for this result is that when members perceive the content of promotional messages to be of great value (informative, valuable and persuasive), users may wonder why (despite all these good functionalities) others are not engaging, which in turn may lead to perceptions of fear of losing their knowledge. The literature on knowledge exchange among organisational employees suggests that when an employee realises that "no one else or very few others contributing, [he or she] will be saving a wasted contribution" (Cabrera et al. 2002, p. 693); therefore, not contributing will be the dominant strategy for that employee.

The examination of all possible paths of influence from source credibility (SC) to the four motivations revealed two significant paths. Fortunately, a higher perception of source credibility is good news to ESN community managers. SC significantly increased users' perceived benefit of INT and decreased users' perceived cost of LOKP. The results indicate that when credible users (or experts) send promotional messages: (1) members may think that if experts rally for the ESN and are not afraid of sharing, it should be okay to participate (decreased LOKP), and (2) members become even more excited to participate (increased INT). The finding on the decrease in users' perception of LOKP when they have a high perception of the source characteristics is echoed in the literature on knowledge creation. For example, according to (Renzl 2008, p. 210), "an individual's faith in another's benevolence and integrity increases that individual's willingness to take risks by cooperating and sharing valuable knowledge with others".

Promotional messages are usually designed to target the lurker user group. This study's analysis of the lurker group showed that AQ and SC significantly increased lurkers' perceived benefit of IMG while AQ significantly increased lurkers' perceived cost of LOKP and – along with SC – lurkers' perceived cost of FUL. With regard to IMG, the results indicate that the content of these messages and the source characteristics of these messages help to allow lurkers to recognise more image enhancement benefits from participation. This is consistent with the findings in

previous research (e.g.,(Cabrera et al. 2002)) that sending a clear message about the importance of an individual's participation would increase their perception of the values gained from participation.

An explanation of the effect of AQ on lurkers' perceived LOKP is similar to the explanation provided earlier in regard to the all-group analysis. Furthermore, a possible interpretation of the unexpected effect of AQ and SC on lurkers' perceived FUL is that, when lurkers perceive the content of promotional messages to be of great value and see it being promoted by important people in the organisation, they might find it too "risky" to post content in the community. The literature on online behaviours emphasises that one of the main reasons for not participating in virtual communities is the user's fear of "making a fool of oneself, either because of language issues - in other words, the fear of misspelling or misinterpreting the contents of the article [post] - or because of the fact that their comment would be visible to the whole organization" (Marten et al. 2011, p. 20). Because promotional messages convey, among other things, that the content of posts would be visible to the whole organisation, this may intensify users' fear of participation and, therefore, make them feel more comfortable to only read others' posts.

Although the poster group analysis showed that the posters were less influenced by promotional messages, the results provide better news to ESN community managers compared to the results of the previous group analysis (the lurkers group). After examining all the possible paths of influence from AQ and SC to all four motivations, it was found that AQ and SC significantly increased posters' perceived benefit of INT. In line with the expectations of community managers, these results suggest that the AQ and SC of promotional messages interest or excite posters to be more enthusiastic to post. Previous ELM studies have validated the positive influence of the AQ and SC of certain strategies (e.g., training, promotional emails) on the beliefs held by users. For example, Sussman and Siegal (2003) demonstrated how the AQ and SC of the promotional emails received by users positively influenced the perceived usefulness of the information in those messages. Yuan et al. (2013) suggest that receiving information from a trusted source can enhance users' perception of participation.

Management pressure

The research findings provide full support for Proposition 3. As summarised in Table 5.13, both verbal management pressure (VMP) and non-verbal management pressure (rules) (non-VMP) positively encouraged participation in the ESN—in about equal proportion. Further, posters and lurkers reacted differently to both types of management pressure. The lurker user group didn't respond to this particular management intervention.

Table 5.13 Proposition-3 and results

| Proposition 3 | Relevant empirical results |
|--|--|
| Verbal management pressure (VMP) and non-verbal management pressure (rules) (non-VMP) will impact ESN participation behaviour, and such impact will differ across lurkers and posters. | <ul style="list-style-type: none"> ▪ In all groups, VMP ($\beta=0.096$) and non-VMP ($\beta=0.127$) had a positive significant correlation on users' participation (at significance level of $p<0.05$). ▪ Although VMP and non-VMP encouraged posters to further participate in the ESN, there was no significant correlation in the direct relationship between VMP and non-VMP on lurking behaviour. |

The positive influence of VMP in encouraging users to further participate in the ESN can be explained by previous studies (e.g., (Brown et al. 2010; Brzozowski et al. 2009; Moon et al. 2008)) that identify managers' influence, suggestions or pressure as an intervention that can facilitate participation in online forums. In addition, the non-VMP or tougher techniques of formal written rules that management exercises to mandate user participation (e.g., a manager mandating that employees must upload presentations and achievements in the ESN) also positively influenced users to further participate in the ESN. This finding is consistent with the work by Boss et al. (2009) on the element of mandatoriness in aligning individual information security behaviour with management expectations. Even though the intended group for VMP and non-VMP was the lurker group, the impact was shown only in the poster group. These results are in line with the descriptive statistics of posters' and lurkers' perception of VMP (refer to Table 5.2) in which the poster group had higher agreement with the VMP and non-VMP statements compared to the lurker group.

IS researchers have argued that “no artificial incentive can ever match the power of intrinsic motivation” (Kohn 1993, p. 7) in (Herath et al. 2009). The literature on lurking (e.g.,(Ridings et al. 2006) and (Sun et al. 2014)) suggests that lurkers are

primarily driven by intrinsic motives as well as some aspects of fear (e.g., fear of commitment, fear of loss knowledge, fear of negative behaviour by others) (Sun et al. 2014). As previously explained in the discussion of the results on Proposition 1, lurking is believed to be motivated by high levels of LOKP and FUL. Building on these studies and previous work on self-interest (e.g., De Dreu et al. (2008)), an explanation for lurkers not being impacted by these management pressure techniques is the overwhelming weight of self-interest factors (LOKP and FUL) on lurkers' willingness to participate that, in turn, prevents VMP and non-VMP strategies from influencing the lurker user group. In addition, the literature confirms that individual-level factors are the most consistent predictors of users' behaviours across technologies (Brown et al. 2010; Venkatesh et al. 2008a). It is expected that individual motivators have more immediate impact than management pressure strategies in driving users' behaviour.

Social media policy

The last proposition was fully supported. The examination of all paths of the SMP effectiveness on users' perceived image, intrinsic interest, loss of knowledge power and perceived fulfilment showed that all were significant. The fourth proposition and its findings are summarised in Table 5.14. Similar to the influence of promotional messages, the findings were in some cases contradictory to the results that ESN managers may hope for.

Table 5.14 Proposition-4 and results

| Proposition 4 | Relevant empirical results |
|--|--|
| <p>The effectiveness of the SMP will impact users' perceived benefits (i.e. image (IMG), intrinsic interest (INT)) and costs (i.e. loss of knowledge power (LOKP) and fulfilment (FUL)) of participation in the ESN, and such impact will differ across lurkers and posters.</p> | <ul style="list-style-type: none"> ▪ In all groups, SMP significantly increased users' perceived benefit of IMG, and INT. The SMP significantly increased users' perceived cost of FUL; however, it decreased users' perceived cost of LOKP. ▪ In the poster group, SMP significantly increased posters' perceived benefits IMG and INT and perceived cost FUL. ▪ In the lurker group, SMP significantly increased lurkers' perceived cost FUL and benefit INT. |

Generally speaking, the results from the all-group analysis suggest that SMP effectiveness yields the outcomes that ESN community managers would hope for. After examining all the possible paths of influence from SMP to the four motivations, it was found that the higher the user's perception of the ability of the

SMP to provide guidance and protection from misuse by others, the greater the user's perceived benefits of IMG and INT from participating in the ESN. These results indicate that the guidance on best practices for participation ('know-how' for collaboration, finding solutions, etc.) and the assurances that mitigate any negative aspect of participation (e.g. misuse by others) stimulate users' perceptions that participation in ESNs could: (i) truly enhance an individual's image, and (ii) be interesting and fun. These results are consistent with the findings by Vaast et al. (2013) that corporate SMPs can highlight the capabilities that social networks provide and ultimately reshape employee use of social networks. Also, similar to the explanation above in relation to promotional messages, the articulation of the value of participation in online communities by a trusted source (such as the firm's policy document) can be effective in encouraging users' e-participation (Yuan et al. 2013).

In addition, the higher perception of the SMP was correlated with a significant decrease in users' perceived cost of LOKP. This decrease in users' perceived LOKP possibly occurs because users feel assured by the policy document that: (i) their contribution is organisationally-bound, and cannot be accessed by outsiders, and (ii) other members cannot misuse this information in any form or shape (e.g., leaking information to a public social network). This finding is in agreement with prior research (e.g., (Husin et al. 2011a; Husin et al. 2011b)) that a SMP provides the sense of protection that could mitigate members' fears of any negative behaviour by others. This result also aligns with Xu et al. (2011) findings that consumers' perceived risk of using healthcare websites was significantly mitigated by a higher perception of the effectiveness of privacy policy. However, contrary to what ESN community managers may hope for, the SMP significantly increased users' perceived cost of FUL; this suggests that the SMP made users even more convinced that just reading others' posts is a better choice. Although it is difficult to interpret such result, a possible explanation is that the *do* and *do not* policy statements could be intimidating for many, and therefore, users find it risky to post something that other member could misinterpret and perceive as offensive or inappropriate. The poster group analysis yielded similar results to the all-group analysis. The SMP significantly increased posters' perception of IMG, INT and FUL. Although SMP was correlated with a decrease in posters' perceived cost of LOKP, the correlation was not significant. This was the only difference from the all-group analysis.

The lurker group analysis, on the other hand, showed that a higher perception of the SMP was correlated with a significant increase in lurkers' perceived INT and FUL. Similar to the all-group and poster group analysis, the lurkers found participation in the ESN to be more interesting and fun when they perceived the SMP to be effective in providing guidance on best practices as well as in providing protection from any negative behaviour by others. Like the all-group analysis, the SMP did not convince lurkers to favour participation over their temptation to only read others' posts. Rather, it extended their belief that reading others' posts is a better choice.

Synopsis

This study was able to address the second research objective and examine the effectiveness of the three most commonly implemented interventions aimed at improving users' participation in ESNs. The results on the role of the three interventions in influencing users' motivations across the poster and lurker user groups give rise to a number of suggestions in relation to promotional messages, management pressures and SMP effectiveness.

In relation to promotional messages:

- The impact of SC on users' beliefs suggests that a user in the peripheral route tends to respond positively to promotional messages. A higher perception of the message source characteristics increases users' perceived benefit INT but decreases users' perceived cost LOKP. This suggests that credible people or experts who send promotional messages play a pivotal role in shaping the intended effect that ESN community managers are hoping for. This is consistent with Petty and Cacioppo (1981, 1986) in that, in the peripheral route, people are more likely to be persuaded by cues such as the likeability of or affinity toward the endorser or message source.
- Users' perceived IMG – particularly in the poster group – was not influenced by management promotional messages perhaps because the motivated posters, with the goal of enhancing their reputation already set, don't need any further reinforcement. As explained in Section 5.6.1, IMG was the most important extrinsic predictor of participation. These results are largely consistent with previous studies in workplace settings (e.g., (Beck et al.

2014a; Sun et al. 2012)) that highlight the importance of maintaining a favourable social status or image in driving participation in knowledge management systems.

- When people are driven by self-interest rather than social–collective interest, they tend to withhold information (Yuan et al. 2013). Lurkers are overwhelmed by the fear of making mistakes, being easily replaceable, or losing their unique value. Promotional messages, in their current design, are not enough to ease these concerns. There is a need to employ other interventions in order to overcome individuals’ fears. For example, in order to overcome users’ reluctance to share their knowledge, Renzl (2008) suggests creating an atmosphere of a knowledge-friendly culture that shows management is committed to knowledge sharing.
- Users who never or hardly ever post in online communities (lurkers) will have no experience and, therefore, cannot truly appreciate the joy and fun of participating (Lai et al. 2014; Marett et al. 2009). This was manifested in the significant increase in posters’ perceived INT (intrinsic interest) when they received promotional messages. However, there was no correlation between lurkers’ perceived INT and the AQ and SC of promotional messages.
- The employment of the ELM (Petty et al. 1986) (often operationalised using AQ and SC) to understand how promotional messages influence users’ motivations to participate provides important insights into the effectiveness of such an intervention in forming posters’ and lurkers’ salient beliefs about participation in ESNs.

In relation to management pressures:

- Although management pressure techniques are not intended for the poster user group, nevertheless, posters react positively to both VMP and non-VMP management pressures to further participate in the ESN.
- The lurker user group does not respond to this particular management intervention possibly because they are fundamentally driven by their individual characteristics. Consistent with the literature on lurking, lurkers are often motivated by intrinsic motives and aspects of fear (e.g., fear of loss of knowledge or fear of negative behaviour by others) (Sun et al. 2014).

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- The use of social influence theory (Kelman 1958) particularly its conceptualisation of compliance in examining the influence of management pressures on users' participation yielded interesting insights to understand the effectiveness of management pressure techniques in aligning employees' participation with the ESN managers' expectations.

In relation to SMP effectiveness:

- Although the governing tool of SMP may not yield all the hoped-for results to ESN community managers, nevertheless, the analysis suggests, for the first time, a strong link between users' perceived effectiveness of the SMP and four key motivations that drive users' participation in an ESN.
- The SMP can interfere in enhancing certain perceptions, specifically; an individual's perceived benefits of IMG and INT from participation in an ESN. In addition, the SMP is capable of mitigating certain fears. For instance, in all groups in the present study, the SMP was correlated with a significant decrease in users' perceived cost of LOKP.
- The SMP may not be the proper management intervention to change users' intrinsic cost factor of perceived fulfilment. This is, partially, consistent with the literature demonstrating that intrinsic factors are the hardest to change (e.g., (Kohn 1993)) especially in using systems that have a mix of utilitarian, social and entertaining aspects (Wu et al. 2013) such as ESNs.
- Compared to the poster user group, the SMP was not appealing to the lurker user group in the present study. The SMP was not associated with lurkers' perceived IMG or LOKP. Incorporating specific statements, for example, about intellectual property or sharing posts outside the ESN, may mitigate lurkers' fear of LOKP. However, any redesign of the SMP must be approached with caution because strategies that encourage lurkers to be more active may not translate into posters' willingness to continue being active posters.

5.7 Chapter Summary

This chapter presented the procedures for analysing the survey data collected in this study on users' posting and lurking behaviours in an ESN and the influence of three management interventions that aim to improve users' participation. The data analysis design involved five steps: preparation of the data, reporting of the descriptive statistics, assessments of the measurement models, testing of the research propositions, and finally, a post-hoc analysis to differentiate posters and lurkers and their motivations.

All the propositions were supported. The findings yielded many interesting results that were, in some cases, contradictory to the results that ESN community managers may hope for. The chapter presented a detailed discussion of these results and how they address the research objectives. It can be concluded that the model developed in this research can explain the cost and beneficial determinants of lurking/posting behaviours, and how already-implemented interventions influence users' beliefs and subsequent participation across different users (i.e., lurkers and posters).

Chapter 6: Conclusion

This chapter concludes the thesis and provides an overview of the main academic and practical contributions of the study. The chapter begins with a summary of the research reported in this thesis. Then, the chapter discusses the theoretical contributions made by the study, followed by the implications of the study for practice. Next, the chapter identifies the study's limitations and offer directions for future work. The last section provides a conclusion of this chapter.

6.1 Research Summary

The thesis consisted of six chapters. Chapter 1 provided a background and explained the motivations and significance of the research. Chapter 1 then presented the objectives that this research set out to achieve:

- (i) to identify the key reasons for ESN members to either lurk or post after they have been introduced to the platform.

The research question - 1 "*What are the salient drivers of lurkers' and posters' participation in ESNs?*" addressed this objective by finding the extrinsic and intrinsic benefits (image and intrinsic interest, respectively) to be significant predictors of posting while the intrinsic and extrinsic costs (fulfillment and loss of knowledge power, respectively) are significant predictors of lurking behaviour (more detail in the next Section).

- (ii) to examine whether the implemented interventions improve users' beliefs or, worse, turn off posters' willingness to participate, as well as the extent of that influence [Hence, aligning with Research Question-2].

The research question - 2 "*How do promotional messages, management pressure techniques and SMP influence employees' perceptions of the ESN and their posting and/or lurking behaviours?*" addressed this objective by finding that management interventions have a contradictory effect in relation to the intended effect (more detail in the next Section).

Chapter 2 provided a critical review of the literature relevant to the research topic and identified important limitations regarding the understanding of why, how and in what conditions employees lurk or post in ESNs. The in-depth review of the extant

literature related to the research problem further motivated the study. Furthermore, we reviewed several theoretical frameworks on use (or non-use) of IT artefacts, and then turned to the behavioural change literature for the relevant theoretical lenses through which to understand and possibly alter human cognitive strategies and actions. Informed by several theoretical frameworks and findings in the literature, we proposed the research model and propositions in Chapter 3. Four propositions were developed to guide the investigation. The research design and the survey development process were explained in Chapter 4. Lastly, Chapter 5 described how the proposed research model was empirically tested and analysed, and discussed how the results addressed the research objectives.

Reprise

This thesis was motivated by: (a) recognition of the rising challenge for ESN community managers to maintain a sustainable level of active participation among community members, (b) the desire to understand users' participation behaviours and the key perceived benefits and possible barriers to content creation in ESNs, (c) the desire to understand the group of users who create content (posters) and the larger group of users who only read others' posts (lurkers) and how both groups are different in their perceptions of the benefit and cost factors of participation in ESNs, (d) the desire to understand the impact of commonly-used management interventions on users' beliefs and the subsequent participation behaviours across different users (i.e. lurkers and posters), and (e) recent calls by scholars (e.g. Aral et al. (2013), Kane et al. (2014), Kügler et al. (2015b) and Ren et al. (2012)) for further research to understand "how and why people use (or do not use) social networks and how this use results in performance variation between users" (Kane et al. 2014, p. 281).

The existence of any online community primarily depends on members' participation (i.e. creation of content). When a large number of community members are silent (i.e. lurk), there will be no more content to be consumed and the online community will eventually fail. In such a scenario, ESN community managers need to enhance user participation in ESNs. Practitioners have proposed many strategies to boost participation. However, these proposed strategies require an appropriate empirical and theoretical base.

The main argument put forward in this study is that an understanding of the characteristics that drive ESN community members to either lurk or post is essential in order to address the problem of low participation (the study's first research

objective). It is equally important to identify the direction and level of influence of interventions that aim to boost users' participation because such interventions do not – always – yield the hoped-for results (the study's second research objective). Thus, guided by social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge contribution, the study identified the salient motivations for user participation categorised in four dimensions: extrinsic benefits, extrinsic costs, intrinsic benefits, and intrinsic costs (refer to Chapter 3, Section 3.3.1). We then turned to two behavioural change theories from social psychology, namely, the ELM (Petty et al. 1986) and social influence theory (Kelman 1958), to examine persuasion-based interventions (i.e. promotional messages) and compliance-based interventions (i.e. verbal and non-verbal management pressures), respectively. We also examined the influence of the SMP as a governance tool (refer to Chapter 3, Section 3.4). We examined these three interventions to understand how they influenced users' beliefs and subsequent participation across different user groups (i.e. lurkers and posters). The proposed model was discussed in detail in Chapter 3, Section 3.1.

The central notion of the proposed model is that members' participation is dependent on four motivations to participate, namely, image and intrinsic interest as benefits and loss of knowledge power and fulfilment (the new proposed construct) as costs. The model proposes that these four motivations are influenced by: (i) the argument quality and the source credibility of the promotional messages sent by management to influence ESN participation, and (ii) the SMP effectiveness. Lastly, the model proposes the direct influence of verbal management pressure and non-verbal management pressure (rules) on users' participation behaviour.

We examined our model using survey data collected from ESN users (two Google⁺ corporate communities) of a large Australian retail organisation. The case organisation and participants satisfied all the conditions that formed the benchmarking for selecting the organisation and the appropriate survey participants (refer to Chapter 4, Section 4.2.2). The data analysis revealed strong support for the model and its propositions (refer to Chapter 5, Section 5.5). The findings demonstrated the general viability of the proposed model in explaining: (i) the cost and benefit determinants of lurking/posting behaviours; and (ii) the positive and negative influences of already-implemented interventions on lurkers' and posters' beliefs and subsequent participation (refer to Chapter 5, Section 5.6).

After successfully completing the examination phase of this study, there were few studies published in the late 2015 in top refereed journals (i.e., Information System Research, Management Science, MIS Quarterly Executive) that investigated different issues on employees' adoption and use of social networks. Kane (2015) provides a framework for considering how social media affects organizations particularly in designing and implementing an enterprise social media platform. He set out to discuss possible implications for managers to help make better design decisions for their enterprise social media platform. Huang et al. (2015) develops a dynamic structural framework to analyze the blogging content creation and consumption behavior of employees within in a consulting firm. In the same vein, through an online questionnaire, Phang et al. (2015) investigated the motivations for future participation intention of Contributors vs. Lurkers in policy deliberation online forums. They found differences in the participation antecedents of the two groups. For instance, contributors are influenced by "political career benefit and political efficacy motives, while lurkers' future participation intention is driven by collective benefits, possession of civic skills, and mobilization " (Phang et al. 2015a, p. 1). However, these studies either: (i) investigate earlier social tools such as blogs (i.e., Huang et al. (2015)) and public online forums (i.e., Phang et al. (2015)), (ii) focus exclusively on the motives (e.g., Huang et al. (2015), and Phang et al. (2015)) without considering the interventions to improve user participation, (iii) discuss general frameworks to assess managers on design decisions for an enterprise social media platforms (i.e., Kane (2015)). There is limited knowledge on the linkages between employees' motivations and different participation behaviours (e.g., posting, lurking) in microblogging services, and even less on external influences (or interventions) aimed to encourage employees' participation.

6.2 Contributions to Theory

The main contribution of this study is the provision of an empirically validated theoretical model that enhances the understanding of the socio-psychological processes governing employees' participation in ESNs in the presence of three management interventions. The research model extends Kankanhalli et al.'s (2005) model of knowledge contribution (the three-way classification of extrinsic benefits, intrinsic benefits and cost factors) by adding the fourth block in the quadrant of salient motivations to not participate in ESNs; that is, the intrinsic cost of

fulfilment. The model examines the effect of the four categories (extrinsic benefits, extrinsic costs, intrinsic benefits, and intrinsic costs) on the participation behaviour of two user groups (i.e. lurkers and posters) instead of only examining the participation behaviour of the poster group as suggested in Kankanhalli et al.'s (2005) model. Furthermore, the model incorporates two behavioural change theories from social psychology, namely, the ELM (Petty et al. 1986) and social influence theory (Kelman 1958), and a governance tool (the SMP) to examine the influence of three interventions on users' beliefs and subsequent participation across the lurker and poster groups.

The study will (i) benefit academics and practitioners by assisting them to understand why employees "post" or "lurk" in ESNs, and (ii) guide the (re)design of interventions to successfully maintain sustainable active participation in ESN communities. Apart from the main contribution, additional theoretical contributions of the study are structured as follows.

- This study explicates posters' and lurkers' motives and participation behaviours in ESNs and shows that participation behaviour is a dual factor concept with the opposite ends of the continuum being influenced by orthogonal antecedents. The extant literature on employees' use of social software focuses mainly on posters, without considering the motives and usage behaviours of the larger user group – lurkers (Lai et al. 2014; Malinen 2015). The study confirms that users' motivations to post are different (but not opposite) from their motivations to lurk. It provides a comparative group analysis of "why" or "why don't" users participate in ESNs, noting that such an examination has been largely ignored in the research to date which has tended to analyse posting and lurking behaviours independently (Park et al., 2014).
- This study furthers the understanding of four dimensions of users' motivations to create content in ESNs (i.e. extrinsic benefits, extrinsic costs, intrinsic benefits and intrinsic costs). The literature suggests that, unless users see that the perceived benefits outweigh the perceived costs of participating, online communities will remain underutilised. One important contribution of the study is the evidence that both extrinsic and intrinsic benefits (image and intrinsic interest, respectively) are significant predictors of posting while

intrinsic and extrinsic costs (fulfilment and loss of knowledge power, respectively) are significant predictors of lurking in ESNs.

- This study extends the concept of persuasive influence in IS research. Through the theoretical lens of the ELM (Petty et al. 1986), we demonstrate that persuasion-based interventions (i.e. promotional messages) affect posters' and lurkers' beliefs about participation in ESNs. Our analysis clarifies the different pathways in which these effects manifest. For example, the content and source characteristics of promotional messages make lurkers see opportunities to enhance their reputation through participation. However, posters' perceived image is not influenced by the source or content of promotional messages. The study contributes to the ELM literature by: (i) examining and comparing the central route of influence (operationalised using argument quality) and peripheral route of influence (operationalised using source credibility) on two user groups (posters and lurkers) at once, and (ii) linking the argument quality and the source credibility of the new information received by users to other user beliefs (i.e. image, intrinsic interest, fulfilment and loss of knowledge power).
- The study shows that compliance-based influences (verbal and non-verbal management pressures) – which IS research has proved to influence IT usage (Boss et al. 2009; Eckhardt et al. 2009; Venkatesh et al. 2008a) – can be extended to the ESN context. Through the theoretical lens of social influence theory (Kelman 1958), we demonstrate that management pressure techniques influence users' participation in ESNs. Even though management interventions are mainly intended for the lurker user group, in our examination of management pressure techniques it was only posters who reacted positively to these techniques.
- The study provides the first empirical examination of SMP in corporate use of social networks. The findings evidence a strong link between users' perceived effectiveness of the SMP and the four key motivations that drive users' participation in the ESN. Further, the study demonstrates that the SMP can enhance certain perceptions. For example, the SMP was able to increase lurkers' perceived intrinsic interest and posters' perceived intrinsic interest and image from participation in the ESN. However, as the case with all management interventions, the SMP was not equally appealing to the poster and lurker user groups. The SMP was not associated with lurkers' perceived image or loss of knowledge power.

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- At the methodological level, the study is considered one of the first attempts to provide across-sectional empirical and theory-driven study of what motivates and hinders poster and lurker user groups in a work setting. To the best of the author’s knowledge, the academic literature on employees’ use of ESNs comprises either qualitative work (refer to Chapter 2, Section 2.5.2) or research in progress that is yet to be empirically tested. Further, the study’s extensive survey data explores and explains the “black box” of influence within the online participation context, namely, understanding what type of intervention leads to what outcome across different users (i.e. lurkers and posters).
 - Another important contribution of the study is the data analysis strategy applied to differentiate posters and lurkers and their motivations. We performed two post-hoc analyses: (i) a stepwise binary logistic regression (Pallant 2013) using SPSS 22.0 software to examine the relative importance of the four motivations to post or lurk; and (ii) an MGA (Henseler 2010; Rigdon et al. 2010) to perform a pair-wise comparison of the bootstrap estimates for the overall structural model. These analyses were effective in providing an in-depth understanding of the different perceptions between lurkers and posters. The analyses revealed the extent of influence and the likelihood of each factor (of the four motivations) contributing to posting or lurking behaviours, and the significance of the path coefficient differences (management interventions on all four motivations) among the lurker and poster user groups.
 - Another contribution of the study is the conceptualisation and operationalisation of a new construct, namely, “perceived fulfilment”, as an intrinsic cost that could hinder user participation. A rigorous procedure was employed to create the items measuring this construct and ensure the reliability and validity of these items. The study demonstrates that the referent construct is conceptually and empirically relevant to the ESN participation problem (lurking). As an independent variable, the new construct can be employed to understand users’ underutilisation of similar systems.

6.3 Implications for Practice

In terms of practical contributions, the study bridges the gap between the practical application of best practices and scientific research by providing a theoretical model and empirical evidence to help community managers to better

understand and improve users' participation experiences in ESNs. The study provides new insights into the behaviours and consequences relevant to ESN use and presents a more fine-grained discrimination of the roles played by posters and lurkers in online communities. The following elucidates the practical contributions of the study in greater detail.

- The study shows that ESN use is provoked by a mix of extrinsic and intrinsic factors that are not mutually exclusive. Although image enhancement is a strong extrinsic motivator to participate, the study identifies intrinsic interest as the most important predictor of participation in ESNs, thus highlighting the importance of intrinsic values. Employees perceive an ESN as a social entertainment actor. One implication for ESN community managers could be the recognition of the value of emphasising the fun and entertaining use of ESNs in order to boost participation. For example, ESN managers could revise promotional messages to indicate that the ESN is not only a space for improving productivity but is also a conversation medium for relationship building and getting to know colleagues.
- The study proves that users' fear of losing their knowledge power and users' perceived fulfilment are the key cost factors responsible for lurking. It is difficult to overcome self-interest factors; nevertheless, the participation of and feedback from important groups in an organisation (e.g. management representatives, ESN community managers) could create a cooperative environment that eases users' concerns about losing their knowledge. In addition, the study suggests that users are less likely to contribute when they believe that the reading activity itself is sufficient and meaningful on its own. A possible strategy to change lurkers' perceptions is running extensive online (and offline) campaigns to: (a) show that members' voices are important and necessary for the community to survive, and (b) raise awareness of the value of the strong norm of reciprocity in the collective.
- The study serves to improve the practice of ESN management by: (i) evaluating communication strategies that aim to boost user participation, and (ii) identifying the direction and level of influence of implemented strategies. The study shows that some interventions do not – always – yield the hoped-for results; rather, some interventions have an adverse effect in that they increase lurkers' perceived costs. In the present study, such unanticipated outcomes included: (a) the SMP raising lurkers' perceived fulfilment, (b) the content of promotional messages (the perceived argument quality) raising lurkers' fear of losing their knowledge power, and (c) the management pressure techniques not having any impact on

lurkers' behaviour. The implication for ESN community managers is that it would be worthwhile to alter the content of promotional messages to position the ESN as a favourable environment for lurkers. Such messages could, for example, provide reassurance to members that there are no negative repercussions of participation. Another implication is a design matter to be thoughtful about employing features that may push lurkers away from participating (e.g., the "dislike" feature recently announced by Facebook). A similar approach could be taken to SMPs. A possible implication is to redesign the SMP and incorporate, for instance, incorporating less restrictive statements because tight controls could intimidate or undermine lurkers' ability to participate and reduce the users' enjoyable experience. However, any redesign of the SMP must be approached with caution because strategies that encourage lurkers to be more active may not translate into posters' willingness to continue being active posters.

- The study shows that active posters do not react negatively to management interventions. Verbal and non-verbal management pressures encourage posters to further participate in the ESN. Likewise, promotional messages encourage them to be more enthusiastic to post (by increasing the posters' perceived intrinsic interest). In turn, ESN community managers may find that promotional messages are "preaching to the choir" – but are ineffective, at least in their current design, in reaching the silent outsiders.
- The study shows that formal and informal strategies can coexist in encouraging users' participation. The central implication of the study is that strategies (i.e., promotional messages) that aim to change users' beliefs about participation are more effective on lurkers than strategies that directly target their participation behaviour (i.e., management pressure techniques). It is recommended that ESN community managers invest in and put more emphasis on persuasive-based strategies (e.g. promotional messages, online events, setting an example for others), particularly when ESN' participation is voluntary.

6.4 Study Limitations and Directions for Future Work

We identify several limitations in this study. First, we did not set out to create a complete model with all the possible explanatory factors of lurker and poster behaviours. Therefore, many other intrinsic and extrinsic benefits and costs could be investigated in future research, with such investigation addressing whether or not our proposed interventions have an influence on those factors. Guided by social exchange theory (Blau 1964) and Kankanhalli et al.'s (2005) model of knowledge

contribution, we focused on two polarised pairs of motivational beliefs (the extrinsic and intrinsic benefits - image and intrinsic interest - and the intrinsic and extrinsic costs - fulfillment and loss of knowledge power), noting that motivation research also provides more nuanced differentiations.

In relation to management interventions, we focused on: (i) two core concepts from the ELM, namely, argument quality and source credibility, (ii) two compliance-based interventions (i.e. verbal and non-verbal management pressure techniques) through the theoretical lens of social influence theory, and (iii) the effectiveness of one governance tool (i.e. SMP) from the policy-compliance literature, noting that the ELM and social influence theory may not be the only theoretical lens through which to elucidate the processes that influence users' beliefs and participation in ESNs. Future studies may investigate the many other organisational interventions and/or strategies that could influence participation in ESNs (e.g. training, platform feature (re)designs, gamification, material inducements such as incentives or rewards, champions).

Second, other environmental and technological factors that were not covered in the scope of this study might also influence lurking and posting in ESNs. For example, prior experience (i.e., prior use of other ESNs like Yammer) could be an importance factor as it moderates the influences between motivations and system use (Venkatesh et al. 2008). However, we have not considered prior experience in this study. It was expected that prior experience impact would be minimal in our context, because respondents had at least one month experience with the current ESN (i.e., Google+). In addition, future research could explore, for instance, cultural backgrounds, technological factors such as compatibility, or result demonstrability.

Third, we did not explore all the possible construct associations because the present propositions were built in light of specific theoretical lenses. There are possibly important causal links that future research could explore.

Fourth, our data was sourced from one industry (the retail industry) in a developed country (Australia). There is no specific reason to believe that the selected industry or geographical setting could have biased the results; however, to help generalise the findings, future research could apply this research to other countries and different industries. In addition, 90% of the study's respondents worked at the operational level (i.e. store employees and line managers). The data sample may have missed the views of important and influential members; thus, future research should capture a

broader sample with a relatively equal proportion of employees at all management levels.

Fifth, our dependent variable measures participation in terms of users' posts and comments. Previous research usually uses the number of posts and comments to measure users' online participation (Malinen 2015). However, there are other forms of participation such as "re-tweeting" or "liking" other posts. We suggest that future research use more rigorous measures of participation and examine and compare the influence of the research model on all the possible forms of participation.

Sixth, the newly conceptualised construct of "perceived fulfilment" represents lurkers' belief that the reading activity itself fulfils their needs for using the ESN. Future research might focus on more specific needs (e.g. curiosity needs, information needs) or develop a formative index that exhausts the multiple dimensions of members' needs for using an ESN. Another possible area for future research is to examine this construct as a dependent, moderating or mediating variable in order to better understand users' online participation experience.

Seventh, we relied on self-report measures for the constructs in our research model. There may be some bias in this approach, in that the respondents may have over- or under-estimated their participation. We mitigated self-report bias by using multiple self-report measures of participation on a variety of scales. Another possible approach is to use objective data (access log). In addition, our survey was also limited in that we conducted cross-sectional data collection. An alternative could be designed on the basis of a longitudinal setup to examine posting and lurking behaviours over time (e.g. before and after an intervention). This was not possible in the present study due to the constraints of the case organisation. Future research could mitigate some of these design limitations using other research strategies.

The eighth limitation of our work underlines the need for further research to investigate more nuanced differentiations of participant roles (e.g. frequent versus infrequent posters, true versus active lurkers (Kim, 2000)). Our analysis was based on the commonly-accepted dichotomy (posters vs lurkers), but we envisage that it would be useful to consider a more nuanced typology of users.

Finally, an interesting direction for future research would be to compare employees' participation behaviour in an ESN with their participation behaviour in public social networks (e.g. Twitter), and to examine and compare the impact of the four

dimensions of users' motivations in the research model on corporate versus public forms of participation.

6.5 Conclusion

The purpose of this research was to identify the factors that drive corporate staff to either lurk or post in ESNs and to examine the extent of influence of already-implemented interventions (e.g. promotional messages) on users' beliefs and subsequent participation. To do so, the study developed a theoretical model and established empirically the four key factors that encourage posting and lurking behaviours. For posting, the key factors are perceived image and intrinsic interest, categorised as extrinsic and intrinsic benefits respectively. For lurking, the key factors are perceived loss of knowledge power and fulfilment, categorised as extrinsic and intrinsic costs respectively. The proposed model demonstrates how the four beliefs and lurking/posting behaviours change when three management interventions (promotional messages, management pressure techniques and SMP) are applied. The study examined the theoretical model using data collected from a survey of 366 ESN users of two online communities in a large Australian retail organisation.

The results obtained from the analyses established the general viability of the proposed model and strong support for its propositions. The results provided a reasonable explanation of the extrinsic/intrinsic cost and benefit determinants of lurking/posting behaviours and of the positive and negative influences of the three interventions on lurkers' and posters' beliefs and subsequent participation. For instance, in relation to the effect of promotional messages on the poster and lurker user groups, our analysis showed the different pathways in which these effects manifest. The content and source characteristics of promotional messages increased posters' perceived benefit (intrinsic interest), making them more enthusiastic to post. Even though promotional messages are mainly intended for the lurker user group, lurkers' perceived intrinsic interest was not influenced by the source or content of promotional messages. Similar results were observed in relation to the effect of verbal and non-verbal management pressures on the poster and lurker user groups.

The research provides a detailed understanding of how and why corporate staff use (or do not use) social networks in the presence of three management interventions. To the best of our knowledge, this is the first empirical examination of persuasive-

based (promotional messages) and compliance-based (management pressure techniques) interventions and their effects on posters' and lurkers' perceptions and participation behaviours in corporate social software. The research thus makes several contributions to theory, research and practice.

Appendices

Appendix A: Q-sort exercise

The invitation email

Dear Sir or Madam

My name is Abdulrahman Alarifi. I'm a doctoral candidate at School of Information System, Queensland University of Technology (QUT), Brisbane, Australia. I am conducting a research project investigating Enterprise Social Network (ESN) (e.g., yammer) participation behaviour particularly why members post or lurk (i.e., just read) in these platforms.

I invite volunteers to participate in a quick (5 minutes) online-Q-Sort to sort cards from most to least suitable in **ONE** group. The group represent a construct titled 'Perceived Fulfilment' and defined as *"The extent to which members feel their needs for using the ESN are fulfilled through reading only"*.

Your contribution will assist the research team to better select the most suitable measures (i.e., card) for this construct. Please note that this study has been approved by the QUT Human Research Ethics Committee (approval number 1300000354).

Please click on the link below to complete the Q-Sort:

<https://conceptcodify.com/studies/1t0ecww01u686jy4/via/pf39ws5wq6r1ymv3/>

Many thanks for your consideration of this request.

Original items

Instructions : Thank you for helping us out. All you need to do is to sort the cards from most to least suitable in **ONE** group. There are no right or wrong answers.

Perceived Fulfilment:

"The extent to which members feel their needs for using the ESN are fulfilled through reading only"

Measures:

By just reading, I somewhat fulfil my curiosity [strongly agree ... strongly disagree].
By just reading, I feel informed about what is going on in yammer' groups [strongly agree ... strongly disagree].
By just reading, I learn new things [strongly agree ... strongly disagree].
Through browsing other' posts, one can find sufficient information for his questions [strongly agree ... strongly disagree].
By just reading, I find sufficient answers for my questions [strongly agree ... strongly disagree].
By just reading, I find the answers for my questions [strongly agree ... strongly disagree].
Through browsing other' posts, one can find detailed information for his questions [strongly agree ... strongly disagree].
By just reading, I feel I am learning new things [strongly agree ... strongly disagree].
Reading others' posts gives me the information that suits my needs [strongly agree ... strongly disagree].
Over all, I feel reading adequately meets my needs [strongly agree ... strongly disagree].
For me, just reading/browsing is enough [strongly agree ... strongly disagree].
By just reading, I find the information for my questions to be [not adequate at all ... very adequate].
The information I find in yammer are [not adequate at all ... very adequate] to my original inquiries
How adequately do you feel that by just reading meets your information needs [not adequate at all ... very adequate].
How adequately do you feel that by just reading meets your curiosity needs [not adequate at all ... very adequate].
I feel reading [not adequate at all ... very adequate] meets my information needs.
I feel reading [not adequate at all ... very adequate] meets my curiosity needs.

Generated Reports

https://conceptcodify.com/studies/1t0ecww01u686jy4/analyze/

Perceived Adequacy on Yammer

1. Design 2. Collect 3. Analyze

Analyze results

We recommend getting 23 more responses before using the results. You can use the results at any time, however.

Recommendation based on your goal

For other goals:
We love hearing about unique card sorting uses! [Let us know](#) about how you use card sorting and if you need any help!

[Recommendation](#)
[Hierarchy](#)
[Similarity](#)
[Relationships](#)
[Ordering](#)
[Group Names](#)
[Download All Responses](#)

Hierarchical clustering analysis

By just reading, I find sufficient answers for my questions [strongly agree ... strongly disagree].
I feel reading [not adequate at all ... very adequate] meets my information needs.
By just reading, I find the information for my questions to be [not adequate at all ... very adequate].
By just reading, I find the information for my questions to be [not adequate at all ... very adequate].
By just reading, I find the information for my questions to be [not adequate at all ... very adequate].
For me, just reading/browsing is enough [strongly agree ... strongly disagree].
By just reading, I feel I am learning new things [strongly agree ... strongly disagree].
Through browsing other' posts, one can find detailed information for his questions [strongly agree ... strongly disagree].
The information I find in yammer are [not adequate at all ... very adequate] to my original inquiries
Through browsing other' posts, one can find sufficient information for his questions [strongly agree ... strongly disagree].
By just reading, I find the answers for my questions [strongly agree ... strongly disagree].
How adequately do you feel that by just reading meets your curiosity needs [not adequate at all ... very adequate].
By just reading, I learn new things [strongly agree ... strongly disagree].
How adequately do you feel that by just reading meets your information needs [not adequate at all ... very adequate].
Over all, I feel reading adequately meets my information needs [strongly agree ... strongly disagree].
Reading others' posts gives me the information that suits my needs [strongly agree ... strongly disagree].
I feel reading [not adequate at all ... very adequate] meets my curiosity needs.
By just reading, I somewhat fulfil my curiosity [strongly agree ... strongly disagree].

Ordering analysis

| Rank | Card |
|------|--|
| 1 | By just reading, I feel informed about what is going on in yammer' groups [strongly agree ... strongly disagree]. |
| 2 | For me, just reading/browsing is enough [strongly agree ... strongly disagree]. |
| 3 | By just reading, I find sufficient answers for my questions [strongly agree ... strongly disagree]. |
| 4 | Over all, I feel reading adequately meets my needs [strongly agree ... strongly disagree]. |
| 5 | By just reading, I learn new things [strongly agree ... strongly disagree]. |
| 6 | By just reading, I somewhat fulfil my curiosity [strongly agree ... strongly disagree]. |
| 7 | By just reading, I find the answers for my questions [strongly agree ... strongly disagree]. |
| 8 | How adequately do you feel that by just reading meets your curiosity needs [not adequate at all ... very adequate]. |
| 9 | By just reading, I find the information for my questions to be [not adequate at all ... very adequate]. |
| 10 | By just reading, I feel I am learning new things [strongly agree ... strongly disagree]. |
| 11 | I feel reading [not adequate at all ... very adequate] meets my information needs. |
| 12 | Reading others' posts gives me the information that suits my needs [strongly agree ... strongly disagree]. |
| 13 | The information I find in yammer are [not adequate at all ... very adequate] to my original inquiries |
| 14 | I feel reading [not adequate at all ... very adequate] meets my curiosity needs. |
| 15 | Through browsing other' posts, one can find detailed information for his questions [strongly agree ... strongly disagree]. |
| 16 | Through browsing other' posts, one can find sufficient information for his questions [strongly agree ... strongly disagree]. |
| 17 | How adequately do you feel that by just reading meets your information needs [not adequate at all ... very adequate]. |

Appendix B: The Survey Instrument

The invitation post

Win an [iPad Air 2](#) by completing this quick survey about your use of Google+

You are invited to participate in a quick online survey (**10 – 15 minutes**) about your use of this Google+ community. Your participation is voluntarily and anonymous and will not include any identifiable or personal information.

As a member of the community your contribution will assist the research team to gain a better understanding of member participation behaviour and potentially help with member engagement on similar Google+ communities moving forward.

On completion of the survey you will be offered the opportunity to enter a prize draw to [win an iPad Air 2](#). We would like you to complete the survey **before 13 Mar 2015**.



Source: <http://www.apple.com/au/ipad-air-2/>

Please note that this study has been approved by the QUT Human Research Ethics Committee (approval number 1300000354).

Please click on the link below for further information about the study and to complete the online survey: <http://survey.qut.edu.au/f/182829/16e7/>

Many thanks for your consideration of this request and all the best,

Abdulrahman Alarifi

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Information Systems School

Science and Engineering Faculty

Queensland University of Technology

Questionnaire Content

| | |
|---|---|
|  | PARTICIPANT INFORMATION FOR QUT RESEARCH PROJECT |
| Enhancing Enterprise Social Network Use: Promotion Mechanisms | |
| QUT Ethics Approval Number 1300000354 | |

RESEARCH TEAM

| | | |
|------------------------|-------------------------------------|----------------------|
| Principal Researcher: | Abdulrahman Alarifi | PhD Candidate |
| Associate Researchers: | Associate Professor Darshana Sedera | Principal Supervisor |
| | Professor Jan Recker | Associate Supervisor |

School of Information Systems, Science and Engineering Faculty, Queensland University of Technology (QUT)

DESCRIPTION

This project is being undertaken as part of a PhD research project by Abdulrahman Alarifi.

The purpose of this project is to identify mechanisms that could positively influence user motivations and promote participation in Google+ communities.

You are invited to participate in this project because you have been a user of XXX⁶ Google+ communities for at least one month.

PARTICIPATION

Your participation will involve completing an anonymous online survey with Likert scale answers (“strongly agree” – “strongly disagree” style scale) as well as one open-ended question. Participation in this survey will take approximately 10–15 minutes of your time.

The survey will cover the following questions:

- How do you use Google+ communities?
- What factors could motivate or inhibit you to actively contribute to Google+ communities?
- How effective are the management practices that aim to encourage participation in Google+ communities?

Your decision to participate or not to participate will not impact you in any way. You are free to withdraw at any time while completing the survey; however, submission of the completed survey will be taken as consent to participate in the study and it will not be possible to withdraw after submission of the online survey. In order to participate, we ask you to complete the online survey by clicking on the link below.

EXPECTED BENEFITS

It is expected that this project will not benefit you directly. However, it may help enhance Google+ communities of which you are a member, and therefore provide more opportunities for knowledge sharing and collaboration within your firm.

Upon completion of the survey you will have the opportunity to enter into a free prize draw to win an iPad.

RISKS

There are no risks beyond normal day-to-day living associated with your participation in this project.

PRIVACY AND CONFIDENTIALITY

⁶ To maintain confidentiality, the names of the company and the communities are not used.

All comments and responses are anonymous and will be treated confidentially. Answering this survey will not require you to provide any personal or identifiable information. Any data collected as part of this research will be stored securely as per QUT's policy on the management of research data.

We plan to publically present and publish the results of this research through journal articles and conference proceedings. However, information will only be provided in a form that does not identify you.

Entering the free prize draw will require you to provide your contact details; however, these details will be held completely separately from the research data.

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

If you have any questions or require any further information please contact one of the research team members below:

| | | |
|--|--|--|
| Abdulrahman Alarifi | A/Prof Darshana Sedera | Prof Jan Recker |
| 0435 745 922 | 07 3138 2925 | 07 3138 9479 |
| abdulrahman.alarifi@hdr.qut.edu.au | d.sedera@qut.edu.au | j.recker@qut.edu.au |

CONCERNS / COMPLAINTS REGARDING THE CONDUCT OF THE PROJECT

QUT is committed to research integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Unit on 07 31385123 or email ethicscontact@qut.edu.au. The QUT Research Ethics Unit is not connected with this research project and can facilitate a resolution to your concern in an impartial manner.

CONSENT TO PARTICIPATE

Your submission of the completed online survey will be taken as your consent to participate in the study. Specifically, your submission of the online survey indicates that you:

- Have read and understood the information about this project.
- Have had all your questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the researchers.
- Understand that you are free to withdraw at any time without comment or penalty prior to submission of the completed survey.
- Understand that you can contact the QUT Research Ethics Unit on 07 3138 5123 or email ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project.

Thank you for helping with this research project.

[NEXT ->](#)

[Section 1] In this section, we capture general information about your membership in XXX⁷' Google+ communities.

- 1) For how long you have been a member of XXX' Google+? [.....] month(s).
- 2) In XXX' Google+, you are a member of how many group(s) or communities?

I am a member of: [...] community(s).

- 3) In general, I use XXX' Google+...
 - ...mostly for work-related matters.
 - ..mostly for social-related matters.
 - ..about the same for both social and work-related matters.

[Section 2] In this section, we capture information about how often you use XXX' Google+.

- 4) I login to my Google+ account...
 - Several times a day.
 - About once a day.
 - Several times a week.
 - About once a week.
 - Once or twice a month.
 - Once or twice in the last three months.
- 5) I post or comment on Google+...
 - Several times a day.
 - About once a day.
 - Several times a week.
 - About once a week.
 - About once a month.
 - Once or twice in the last three months.
 - Never.

To the best of your recollection, during the past month:

- 6) How often did you **login** to your Google+ account? [...]
- 7) How many posts did you **create** on Google+? [...]
- 8) How many posts created by others did you **comment** on on Google+? [...]

⁷ To maintain confidentiality, the names of the company and the communities are not used.

stand out with respect to others.

- 22) Posting on Google+ makes me lose my power base in the organisation. 1 2 3 4 5 6 7

[Section 4] A promotional message is a message by management communicated through emails or online posts to: (a) encourage users' participation on XXX Google+ communities, and (b) provide information about XXX Google+ communities such as the benefits, qualities and recent topics discussed.

- 23) Have you ever received a promotional message to encourage you to use Google+?
 Yes No (If no, please go to Question 31)

In relation to your experience with XXX' promotional messages, to what extent do you agree or disagree with these statements:

- | | Strongly Disagree | | | Neutral | | | Strongly Agree | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|
| 24) The information in the <u>Google+ promotional messages</u> is informative. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 25) The information in the <u>Google+ promotional messages</u> is valuable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 26) The information in the <u>Google+ promotional messages</u> is persuasive. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

In relation to your experience with XXX' promotional messages, to what extent do you agree or disagree that the person who usually sends promotional messages ...

- | | Strongly Disagree | | | Neutral | | | Strongly Agree | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|
| 27) is trustworthy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 28) is credible. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 29) is experienced on Google+. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 30) appears to be an expert on Google+. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

[Section 5] XXX has developed and published a Social Media Policy named “Posts? Blogs? Forums? Tweets? Your Online Responsibilities” to provide guidance on how to best participate in any social media platform including Google+ communities and to provide protection from any misuse (e.g. improper content, bullying, harassment).

- 31) Are you aware of XXX’ Social Media Policy? Yes No
 32) Have you ever had a look at XXX’ Social Media Policy? Yes No

- | | <i>Not At All
Familiar</i> | <i>Somewhat
Familiar</i> | <i>Expert</i> | | | | |
|---|--------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 33) How familiar are you with XXX’ Social Media Policy. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |

Please indicate the extent to which you agree or disagree with each of the following statements:

- | | <i>Strongly
Disagree</i> | <i>Neutral</i> | <i>Strongly
Agree</i> | | | | |
|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 34) With the Social Media Policy, I believe that I am protected from any misuse by others (e.g. improper content, bullying, harassment). | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |
| 35) I believe that the Social Media Policy is an effective way to protect the Google+ communities from any misuse such as posts that have improper content, bullying or harassing content. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |
| 36) I feel confident that the Social Media Policy reflects XXX’ commitment to protect the Google+ communities from any misuse by others (e.g. improper content, bullying, harassment). | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |
| 37) I believe that the Social Media Policy is an effective way to guide users on how to best use Google+. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |
| 38) XXX’ Social Media Policy has an understandable, written sequence of steps that could be followed to ensure the best use of Google+. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> | 7 <input type="checkbox"/> |

[Section 6] In this section, we capture your beliefs about different management techniques to get users to participate in XXX' Google+ communities.

Please indicate the extent to which you agree or disagree with each of the following statements:

| | <i>Strongly Disagree</i> | | | <i>Neutral</i> | <i>Strongly Agree</i> | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39) My supervisor suggests that I participate in Google+ communities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 40) I believe XXX' management would like me to participate in the Google+ communities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 41) XXX' management publically appreciates members who are very engaged in the Google+ communities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 42) To members who participate, XXX' management sends a private message emphasizing the great job the members did. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43) There is pressure from XXX to participate in the Google+ communities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44) If I do not post on Google+ for one month, I am required to explain why. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45) There are rules that require employees to post about certain tasks on Google+. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46) I believe that my annual evaluation report (or Performance Planning and Review) takes into account my posting activities on Google+. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 47) Overall, I believe it is required that I regularly post on Google+. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

[Section 7] In this section, we capture **demographics and some information** about your role at XXX for classification and comparison purposes only.

1) Your gender is:

- Male Female

2) Your age is :

3) Are you a current employee of XXX?

- Yes No

4) What is your employment position?

- Employee.
 Line manager
 Executive
 C-level executive
 Other, please specify:

End of Survey – Thank you for your participation

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