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The role of workplace relationships in assisting nurses and engineers to solve work-based problems

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ABSTRACT

This research comprises an examination of workplace relationships and the effect they have on the perceived usefulness of workplace networks for providing employees' with information, knowledge and resources for solving work-based problems. In particular, this research uses two dimensions of Social Capital Theory as a lens to provide insight into the quality and size of workplace social networks used for problem-solving by both engineers and nurses. The findings confirm that the organisational factors tested affected the perceived usefulness of workplace social networks for providing employees' with an appropriate amount of information to support efficient and effective workplace problem-solving .

Key Words: Social networks, sociability, Social Capital Theory, network content, nurses and engineers

INTRODUCTION

This is a preliminary study which examines workplace relationships and the effect they have on the perceived usefulness of workplace social networks for providing employees' with information, knowledge and resources for solving work-based problems, (Adler & Kwon, 2002; Lin, 2001) especially for professionals (Evetts & Buchner-Jeziorska, 1997). To date, there have been very few empirical studies that have examined the use of workplace social networks for nursing and engineering professionals. Additionally, both nurses and engineers are listed as two professional groups which are in short supply in many OECD (Organisation for Economic Development) countries (OECD, 2006). The shortage of professional groups has put pressure on organisations and management to develop processes that contribute to organisational efficiency and effectiveness (Burke & Ng, 2006). Therefore, the aim of this study is to provide a preliminary examination into who engineers' and nurses' seek for advice, information and support when addressing work-based problems and to compare the role of the supervisor within the workplace network of these two groups of professionals. The study also examines the relationship between an employee's sociability and the perceived usefulness of the workplace social network for solving work-based problems.

In the case of nurses, this study adds value for both researchers and practitioners because of the current pressure on nurses and engineers to perform at a professional level, whilst facing pressure from external forces. For example, such forces in the Australian nursing profession include the current shortage of nurses which has increased the health systems reliance on the ability of nurses to solve problems efficiently and effectively (Buchan & Calman, 2004). Currently Australia and many other OECD countries are facing a shortage of registered nurses and this shortage is said to be constantly increasing (Brunetto & Farr-Wharton, 2006; Buerhaus, 2002; Converse, Change, & Whitehead, 2007; Johnson, 2001; Sugrue, 2005; Tanner et al., 2003; Thomas & Davies, 2005). Similar to other countries, the main factors affecting the shortage include: an aging population, inadequate numbers attracted to the nursing profession and a high turnover of nurses (Buchan & Calman, 2004; Buerhaus, 2002; Schofield & Beard, 2005).

To date, research examining the usefulness of networks has focused on the implications of poor management practices, in particular examining employee perceptions about the low levels of support from supervisors (Wayne, Shore, & Liden, 1997). However,

there is a paucity of research about the usefulness of nurse workplace networks which can be used as a support mechanism for problem-solving. This study adds value to the literature by adding new knowledge about the social networks, which nursing and engineering professionals' use to solve work-based problems. Such knowledge is required to better understand the factors affecting the productivity of both nursing and engineering professionals.

In the case of engineers, they are professionals that are more likely to operate within a Knowledge Based Firm (KBF) or a knowledge based context. Additionally, engineering firms are considered to be KBF's because they require the generation and leveraging of knowledge if they are to gain a competitive advantage (Alvesson, 2000). Therefore, such knowledge defines an organisation's capability to transform current inputs into value-adding outputs (Herling & Provo, 2000). It should also be noted that the majority of knowledge within KBF's is often retained and developed from employees within the organisation (Branchos, Kostopoulos, Soderquist, & Prastacos, 2007). Moreover, the knowledge developed and retained by employees' within the organisation can then be used as a tool to assist in solving work-based problems (Jonassen, Strobel, & Lee, 2006).

However, major engineer shortages exist in predominantly construction and mining engineering, especially in countries that have an aging population (Adamson, 2005; Association of Professional Engineers Scientists & Managers Australia (APESMA), 2007; OECD, 2006). As such, organisations are forced to become competitive in their search for engineers' and this increases the difficulty for organisations to retain and develop information and knowledge to assist in solving work-based problems (Jonassen et al., 2006). Therefore, as previously mentioned this study will examine who engineers' and nurses' approach when faced with work-based problems, as well as the supervisors' role. The reason for examining this issue for both engineers' and nurses' is centred on the fact if employees do not possess or are not part of effective social networks, then problem-solving without knowledge and resources could become frustrating over time. Moreover, if solving a problem is more often than not frustrating, these conditions are less than ideal for retaining professionals and improving organisational efficiency (Shore & Wayne, 1993). Consequently, by not retaining professionals, training new employees becomes expensive and it is difficult to retain and develop knowledge.

Additionally, there is currently very little empirical research that examines the usefulness of workplace social networks for problem-solving within service-based knowledge

firms (Oke, 2007). The importance of this research is also further enhanced by the increased competitiveness within the Australian engineering industry (Adamson, 2005). The increased competition infers that engineering firms are required to generate and leverage knowledge within the organisation, more so than ever before, if they are to remain competitive. Therefore, there is a requirement for research into the organisational factors that impact upon the perceived usefulness of workplace social networks for work-based problem-solving within a professional nursing and engineering context.

It is the role of management to ensure that employees have both informal and formal workplace networks to solve work-based problems efficiently and effectively. In addition, part of the responsibility of management is to provide support and assistance for employees in solving work-based problems (Lin, 2000), moreover it has been suggested that effective management is an important factor affecting organisational effectiveness (Gollan, 2005). When management fails to embed a support mechanism for employees to solve problems, it is probable that the effectiveness of the workplace network will be reduced (Fliaster & Spiess, 2008). Without effective networks, it is more likely that employees will experience frustration in gathering knowledge, information and resources to solve every day work-based problems (Allen, James, & Gamlen, 2007). Therefore, the supervisor/ manager undertakes a central role within a workplace social network and therefore is considered to hold a position in which they can either facilitate or impede the transfer of knowledge between workplace social network members.

This study will use Social Capital Theory (SCT) as a theoretical framework for examining the quality and size of workplace social networks used by both engineers and nurses. SCT suggests that there are intangible benefits that accumulate for all parties who have workplace social network relationships. Additionally, an organisation that facilitates the development of workplace social network relationships will also share in the benefits provided (Adler & Kwon, 2002; Cornwell & Cornwell, 2008; Hsieh, 2008; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). Moreover, organisations that encourage the development of networks for solving problems are expected to be better equipped to foster the development of workplace ties amongst employees, which should grow over a period of time into mutual and reciprocal relationships. More specifically, current literature suggests that reciprocal relationships are required to facilitate the sustainable transfer of knowledge, resources and information between workplace social network members (Cropanzano &

Mitchell, 2005; Julian & Fiona, 2005; Konovsky & Pugh, 1994; Tekleab, Takeuchi, & Taylor, 2005). In addition, the development and growth of a workplace social network is dependent on, amongst other things, an employee's social competence (sociability), which provides employees with a tool to facilitate the reciprocal flow of information, resources, support, favours and/or other privileges (Kessels & Poell, 2004).

Therefore, this study will provide insight into the quality and size of workplace networks, specifically focusing on nurses and engineers, particularly about the usefulness of workplace networks. This study uses survey data from 164 nurses and 85 engineers to address the Primary Research Questions (PRQ):

PRQ 1: What is the current perceived usefulness of a workplace social network for nurses and engineers, as well as the quality and size of the network for solving workplace problems and how important are supervisors within this network?

PRQ 2: What are the similarities and/or differences between the usefulness of workplace networks for engineers and nurses?'

This study will be structured using four main sections. The first section reviews past and current theory and literature from which the secondary research questions and hypothesis were developed. The second section outlines the measures and methods used to examine the research questions. The third section provides the results and a discussion that brings together the literature and findings from the study, outlining implications for hospital and engineering management. The fourth and final section provides a conclusion of the study, which outlines the studies contribution to theory and the literature, limitations, and areas for future research.

BACKGROUND

Social Capital Theory

Social capital is referred to as a cluster of social resources that are derived through individual relationships between employees. Past literature suggests that relationships or social ties within an organisation are developed over a period of time and involve a history of interactions between employees (Adler & Kwon, 2002; Akdere, 2005; Brunetto & Farr-Wharton, 2006). In addition, the intangible benefits are developed from the individual relationships that form the organisation's workplace social network. Furthermore, SCT postulates that if individuals invest in developing workplace social network relationships this

will provide them access to information, resources or knowledge they otherwise would not have been able to access or attain (Hezlett & Gibson, 2007). Furthermore, SCT includes several components including: relational, structural and cognitive dimensions (Nahapiet & Ghoshal, 1998).

An understanding of each dimension is imperative to provide insight into the organisational factors (social capital enablers) that impact upon the social benefits accrued from the social relationships developed within the organisation. However, for the purpose of this study the structural and relational dimensions of SCT and the organisational factors associated with the development of social capital within an organisation will form the focus of this study. The reason for a focused study limiting the examination to both the structural and relational dimensions will take place to provide appropriate insight into the quality, size and perceived usefulness of workplace social networks for problem-solving.

The structural dimension of SCT

For the purpose of this study the structural dimension of SCT will be used as a lens to observe the development of social capital within two separate organisations and industries. This will be achieved by examining the structures embedded within the organisation which facilitate the development of workplace social network ties or relationships. This study will use the structural dimension of SCT, in line with past studies, to examine the interpersonal relationships (ties) between workplace social network members (Nahapiet & Ghoshal, 1998). These social ties become the channels or vehicles that disseminate information and resources throughout the social network (Marouf, 2007; Tsai & Ghoshal, 1998). Hence, an individual with several network ties has more opportunities to be able to exchange and access knowledge than an individual with limited or no social network ties (Casson, 1997).

Network content/ contacts

As previously stated, social capital can be developed from the construction of effective workplace social networks. SCT literature suggests that the structure of a network which forms the structural dimension of social capital is a combination of both the structure and content of workplace social network relationships. These relationships are developed as intangible ties are formed between employees and are based on several interactions over a period of time. Therefore, an analysis of the content of a network can be used to contribute to the examination about the perceived usefulness of workplace social networks (Hoang & Antoncic, 2003). Hite, Williams and Baugh (2007) refer to the content of a network as the

information, knowledge or resources that are transferred between workplace social network members. In contrast, network content can be referred to as the workplace relationships which can be used as a vehicle to transfer important work-based information, knowledge and resources (Allen et al., 2007). Therefore, the content of a network can be examined by examining how many employees contacted a colleague within their workplace network when faced with a work-based problem. In summary, this study will examine the reliance of the perceived usefulness of a workplace social network on the content of the network, the strength of network ties and number of interpersonal linkages that connects members within a workplace network.

To adequately examine the network content it is critical to analyse who employees informally seek when faced with unresolved work-based problems. The process of seeking help within an organisation is said to rely on the organisation's advice network. More specifically, advice networks are internal networks composed of professional relationships, which are developed over a period of time and through several social interactions. In addition, when employees seek information and advice from colleagues to aid their problem-solving they are referred to as having developed and utilised a workplace advice network (Gibbons, 2004). Furthermore, an advice network can be referred to as a workplace network which symbolises a set of interpersonal links through which information, knowledge and resources are disseminated among workplace network members. As a result, to examine the content of both nurses' and engineers' workplace networks the first Secondary Research Question (SRQ) is:

SRQ 1: Who do engineers' and nurses' approach for advice and what is the content of their workplace social network for solving work-based problems?

An alternative method for examining the role of a workplace social network within the problem-solving process is to examine the central member within the workplace social network. Furthermore, Burt (1992) suggests that an employee that has a central position within a workplace social network may have a greater impact and influence upon the transfer of knowledge, information and resources for solving work-based problems. More specifically, this can be attributed to the notion that employees that hold a position of centrality often have the greatest access to knowledge, information and resources (Ibarra, 1993). As such, employees' who are central to a network are also considered as crucial components when transferring knowledge to support effective problem-solving within the

organisation. Additionally, it is assumed that within both nursing and engineering that supervisors would often be considered to hold a position of centrality within the workplace social network. The attainment of this centric position can be attributed to the knowledge, position and power held by supervisors. Therefore, with this said it becomes apparent that supervisors can either support or prevent the transfer and use of knowledge, information and resources to assist employees' to solve work-based problems. To examine the importance of supervisors in assisting the solving of work-based problems the second SRQ is:

SRQ 2: How important is the supervisor for nurses' and engineers' when having to solve work-based problems?

The structural dimension of SCT in past literature has been examined using tools from networking literature. In addition, so far the content (who belongs to the network) of the network has been covered, as well as the importance of a supervisor in supporting work-based problem-solving. However, at this point it is important to examine the number and strength of workplace social network ties, to determine if they are enough to support problem-solving. Current literature suggests that the information and resources that could be derived from a social network are dependent on the strength of ties amongst workplace social network members (Levin & Cross, 2004). Social capital is said to be a result of social relations, because of the quantity and quality of relationships between dyads, the cultural support mechanism and the structure of the network (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). A dyad is the development of a relationship between two people and can be analysed by examining the strength of the relationship or tie.

Tie strength can be defined as the level of proximity between two workplace social network members. Granovetter (1973) suggests four determinants of tie strength: the amount of time, the emotional intensity, the intimacy and the reciprocal services which characterise the tie. Therefore, increased contact over a period of time will allow greater opportunity for workplace social network members to form bonds and to develop a rapport (Nebus, 2006; Sparrowe, Liden, Wayne, & Kraimer, 2001). Additionally, such collaboration plays a pivotal role in developing an effective workplace social network to support problem-solving. A network with strong ties means that network members have formed close relationships, beneficial for problem-solving. In contrast, a network with weak ties provides network members with access to a range of diverse perspectives and new information (Levin & Cross,

2004). Therefore, to examine the size and strength of workplace social network ties the third SRQ is:

SRQ 3: How many relationships do nurses' and engineers' possess and are these ties mainly strong or weak?

The relational dimension of SCT

To appropriately examine the workplace social network relationships the relational dimension of SCT will be used as a lens to observe the development of social capital by examining the organisational factors that affect the quality of workplace social network relationships (Taylor, Jones, & Boles, 2004). SCT literature suggests that relations need to be effectively developed and supported if the organisation is to develop social capital. The relational dimension of SCT refers to examining the development of social capital by analysing the role of the factors affecting the quality of relationships (Chow, 2009). Therefore, the development of effective workplace relationships within the organisation will be directly correlated to how easily information can flow between workplace social network members.

Sociability

Sociability is referred to in current literature as the social competence or skill required to develop effective workplace social network ties (Ferris, Witt, & Hochwarter, 2001; Lizardo, 2006). Therefore, an examination about the perceived usefulness of workplace social networks requires an assessment of an employee's competence for developing workplace social networks. An examination of an employee's sociability is imperative because each member of a workplace social network will possess a different level of social competence and therefore some employees may be better than others at developing workplace relationships or gaining access to important information, knowledge and/ or resources (Nie, 2001). More specifically, this study theorises that an employee who is better equipped to develop and maintain workplace social networks will perceive the usefulness of workplace social networks to be greater than an employee who is lacking in sociability (Ferris et al., 2001). Therefore, this study seeks to provide insight into the sociability of nurses' and engineers' and the impact this has upon the perceived usefulness of workplace social networks for problem-solving. As a result, Hypothesis 1 is as follows:

Hypothesis 1: The sociability of nurses' and engineers' is positively and significantly correlated with their perceptions of the usefulness of workplace social networks for problem-solving.

Usefulness of workplace networks

As previously mentioned, the transfer of knowledge through informal or formal workplace networks can be used to provide information, knowledge and resources to support everyday work-based problem-solving. Empirical research suggests that networks are pivotal in the problem-solving process and that some employees have high centrality and function as connectors within the network (Chang & Harrington, 2007). Therefore, access to resources and knowledge provides workplace social network members with the information they require to solve work-based problems; however, it is their perception of the usefulness of the network that is imperative to its success.

Moreover, while the value of workplace social networks for decision making cannot be disputed, its value as perceived by employees will determine the effectiveness and sustainability of a workplace social network. For example, if employees consider that the process of attaining new knowledge to solve a problem is too difficult, time consuming or will not provide appropriate help they may choose to use an inefficient, but tried and tested method to solve a problem (Gibbons, 2004; Hoang & Antoncic, 2003). This study will therefore examine amongst other things how social capital enablers such as sociability impact upon the perceived usefulness of workplace social networks for solving work-based problems.

METHODS

The method utilised to collect the necessary data was a self-report survey. The survey was used to collect data from nurses and engineers about who they approached for help when faced with work-based problems, their sociability, the importance of the supervisor in supporting problem-solving and their perception about the usefulness of workplace social networks for supporting problem-solving. As previously mentioned, surveys were administered to 164 public sector nurses and 85 engineers. The surveys were constructed using several measures which were developed from current literature.

Measures Used

Four main measures were used to examine the primary and secondary research questions and include:

1. The **sociability** instrument which included four questions about the propensity to make friends, acquaintances, to join others and to belong to a group. The sociability instrument was derived from Totterdell, Holman and Hukin (2008).
2. The perceived **usefulness of workplace social networks** instrument was developed from Brunetto, Farr-Wharton and Shacklock (in print 2010).
3. The **network content** instrument was constructed based on the work of Granovetter (1973).
4. The **Tie Strength** instrument (Levin & Cross, 2004) was selected to examine the strength of workplace social network ties and their impact on the usefulness of workplace social networks. This instrument includes three closed ended questions examining the tie strength between engineers and between nurses in a workplace social network.

Sample

Sampling was operationalised using the theory of industry typicality and employee typicality. Employee typicality can be measured by examining the extent to which the employees from the organisation in question match the overall context of the research that is being undertaken (Yin, 2003). Therefore, both organisations' selected required employees' that were representative of professionals in both engineering and nursing. On the other hand, industry typicality is supported if the organisations' themselves are representative of both health care and engineering organisations. An engineering firm was selected because they employ professionals that require an appropriate process to support problem-solving in the workplace. Moreover, a health care organisation, focusing on nurses, was selected because they employ professionals that require an appropriate process to support efficient and effective problem-solving in the workplace. In addition, the partial aim of this study is to examine whether there is similarity or difference between the usefulness of workplace networks for both engineering and nursing professionals.

Data Analysis

Statistical data analysis was conducted to examine and test the correlations between the proposed variables. The analysis included frequencies, means, standard deviations, correlations, and a linear regression. A regression analysis was undertaken to examine the impact of the independent variables upon the usefulness of workplace networks for both engineers' and nurses'. In addition, a series of frequencies were conducted to address the three secondary research questions.

RESULTS

Survey demographics of both samples (nurses and engineers) are summarised within Table 1. The 85 engineering professionals that responded to the survey were predominately male (69.4%) and the 164 nursing professionals were predominately female (87%). The majority of engineering professionals were less than 30 years old (63.5%); however, the majority of nurses were over 45 years old (50.9%). Furthermore, the majority of engineers have attained an undergraduate university degree (60%); while, nurses predominately had at least an undergraduate degree or higher (69.5%).

 Insert Table 1 about here

Correlation Coefficients

The means, standard deviations, reliability analysis and inter-correlations for both the sociability and the usefulness of workplace networks is presented in Table two for engineers and table three for nurses. The results from engineering professionals, as depicted in table 2, suggest that both sociability (.873) and the perceived usefulness of a workplace network (.895) were highly reliable measures. The mean sociability result (4.99) suggests that engineering professionals moderately agree that they possess the sociability required to develop and sustain workplace social networks. Furthermore, the mean results suggest that engineering professionals' perceive workplace social networks to be useful for solving work-based problems.

 Insert Table 2 about here

The results from nurses, as depicted in Table 3, suggest that both sociability (.834) and the perceived usefulness of a workplace network (.765) were highly reliable measures. The mean sociability result (4.89) suggests that nursing professionals moderately agree that they possess the sociability required to develop and sustain workplace social networks. Furthermore, the mean results suggest that nursing professionals' perceive workplace social networks to be useful for solving work-based problems.

 Insert Table 3 about here

Analysis of results

To examine who engineers' and nurses' approach for help to solve work-based problems and therefore identify the content of their workplace social network for problem-solving; engineers and nurses were sought to respond to the following question: *Who do you normally approach with frustrating work-based problems? This may be different for each specific problem you have, however, please place a (1) next to the person you approach the most and a (2) next to the position/person you approach the next most and so on. Place an (N) next to the position/person you never approach.*

Position/ Person (Engineers)	Position/ Person (Nurses)
<i>Managing Director</i>	<i>Nurse unit manager</i>
<i>Principal</i>	<i>Clinical nurse</i>
<i>National Manager</i>	<i>After-hours co-ordinator</i>
<i>State Manager</i>	<i>Clinical educator/facilitator</i>
<i>Associates</i>	<i>Nurse educator</i>
<i>Senior Engineers</i>	<i>Nurse preceptor</i>
<i>Engineers</i>	<i>Other nurse (same ward)</i>
<i>Graduate Engineers</i>	<i>Other nurse (different ward)</i>
<i>Designers</i>	<i>Other medical professional</i>
<i>Drafters</i>	<i>Nurse friend (not at same Hospital)</i>
<i>Other Engineering Professionals (Same Division)</i>	<i>Non-nurse friend</i>
<i>Other Engineering Professionals (Different Division)</i>	<i>Family</i>

The results, as depicted in Table 4, suggest that both engineers and nurses predominately had one to two contacts that they approached when faced with a work-based problem as presented in table four. Furthermore, 8.24% of engineers and 4.9% nurses contacted nobody when faced with a work-based problem. In summary, the findings delineate that overall both engineers' and nurses' do not possess the necessary amount of workplace contacts in order to seek an appropriate amount of information, knowledge and resources to support their ability to solve work-based problems.

 Insert Table 4 about here

To examine the second secondary research question which was: *“how important is the supervisor for nurses' and engineers' when having to solve work-based problems?”*, both engineers' and nurses' were asked to rate beginning with one who they approached when faced with a frustrating work-based problem (as above). The results indicate that engineers

approach mostly their principal (41.2%) and state manager (17.7%) when faced with a frustrating work-based problem (see appendix one). In the context of the engineering organisation been examined both the state manager and the principal could be considered as the direct supervisors of engineers and senior engineers. On the other hand, nurses approached mostly their Nursing Unit Managers (NUMs) (55.5%), who could also be considered the direct supervisor of nurses, when faced with frustrating work-based problems (see appendix two).

To examine the third secondary research question which was: “*how many relationships do nurses' and engineers' possess and are these ties mainly strong or weak?*”, both nurses' and engineers' were asked to rate how well they knew the person they approached for help from “not at all” to “close”. The results depicted in table five suggest that the majority of both engineers' (63.5%) and nurses' (61%) knew their workplace network contacts “fairly well” to “very well”. As a result, the findings suggest that the majority of workplace network relationships or ties can be considered as strong dyadic relationships. Furthermore, strong ties or relationships are considered to be a crucial component for sharing information, resources and knowledge for problem-solving.

 Insert Table 5 about here

This section will examine the relationship between sociability of both nurses' and engineers' as outlined within hypothesis one. Hypothesis 1 declared: “*The sociability of nurses' and engineers' is positively and significantly correlated with their perceptions of the usefulness of workplace social networks for problem-solving*”. A linear regression was conducted examining sociability as an independent variable and both nurses' and engineers' perceptions of the usefulness of their workplace network as the dependent variable. The findings support the hypothesis for both engineers' and nurses' because the linear regression analysis specifies the sociability of engineers' ($F= 120.02$, $R^2= 58.6\%$, $p< .000$) and nurses' ($F= 24.86$, $R^2= 13.4\%$, $p< .000$) is significantly and positively related with the perceived usefulness of workplace networks for problem-solving.

DISCUSSION

This study used two dimensions of SCT as a lens for examining the content, size and strength of workplace social networks, as well as the impact of sociability upon the perceived

usefulness of workplace social networks for solving work-based problems. In addition, it was also the intention of this study to examine and compare the factors for both nursing and engineering professionals. The structural dimension of SCT was captured by measuring the size of the workplace networks, the content of the networks and the usefulness of the networks. It was expected that professionals which rely on collegiality for transferring information (Friedman, 2001) would have had an extensive network of colleagues to access when faced with workplace problems. Instead the findings found an array of responses.

The majority of nurses and engineers did have either one or two colleagues that they could ask for assistance. However, approximately five percent of nurses and eight percent of engineers did not use their social networks to assist them when solving work-based problems. Moreover, less than 20 percent of nurses and 10 percent of engineers had at least six colleagues to turn to for assistance. Interestingly, almost seventy percent of engineers and fifty-eight percent of nurses turned to their supervisor for assistance. SCT would suggest that the greater the size of the network, the greater the access to information, knowledge and resources. The findings from this study suggest that while the majority of both engineering and nursing professionals had access to their colleagues, the size of the networks actually used suggests that the extent of assistance and support may also have been limited.

In addition, current literature suggests that relying on a small group of network contacts will limit the perspectives from which network members can gain new information and ideas from which to solve work-based problems. Furthermore, if the network an employee uses to gather information is limited, the employee is more likely to become frustrated at work and is less likely to put in effort or be innovative when solving work-based problems (Chang & Harrington, 2007). Past literature also suggests that employees require a vast array of network contacts that can provide new information if employees are to solve work-based problems innovatively (Janssen, 2005; Scott & Bruce, 1994). Therefore, based on the findings of this study the usefulness of workplace social networks is dependent upon the strength and number of workplace social network ties. In summary, based on the theory and the findings from this research, by increasing the number of workplace social network ties that engineers' and nurses' rely when solving work-based problems should increase the perceived usefulness of workplace social networks for problem-solving.

Secondly the findings suggest that the social networks of both engineers' and nurses' predominantly consist of strong ties. Previous research findings identified that weak ties or

weaker relationships are typically beneficial for creativity and innovation (Gummesson, 2007; Levin & Cross, 2004; Perry-Smith, 2006). In contrast, it is suggested that strong ties are beneficial for problem-solving. Therefore, the findings from this study suggest that the social network ties within the workplace are beneficial for problem-solving; however, the required amount of weak or strong ties is not present to support innovative behaviour or problem-solving in the workplace. In addition, with this said the findings suggest that while strong ties are present, the size of the network (the amount of colleagues that both nurses and engineers contact) is not enough to support or provide the required amount of information required to assist employees when solving work-based problems.

Moreover, the findings suggest that the workplace context that both nurses' and engineers' are utilising to assist in solving work-based problems predominately consists of their immediate supervisors. Additionally, the supervisors of both nurses and engineers primarily have power over the workplace social network and hold the central position within the network. This circumstance is appropriate if both nurses and engineers are able to contact their supervisors at all times; however, the fact of the matter is that supervisors are more often than not tied up in administration work, meetings or are unavailable. In summary, this study has found that there is a gap between what SCT suggests is the ideal method for developing social capital and the methods been undertaken within both the nursing and engineering profession. Therefore, under ideal conditions it is expected that the structures embedded within the organisation will support high quality relationships that will promote the development of both strong and weak ties that are appropriate for problem-solving and the disseminating of knowledge between workplace social network members (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998).

This study also aimed to examine the relationship between relational factors such as sociability and the perceived usefulness of workplace social networks for engineers and nurses. This relationship was examined through the lens of the relational dimension of SCT. The relational dimension theory suggests that under ideal conditions workplace social networks are developed and sustained depending on the social skill (sociability) of engineers' in the workplace (Chow, 2009; Taylor et al., 2004). Moreover, the results suggest that employees' perceive that they have an appropriate level of social skill to be able to effectively develop workplace social network relationships. However, in contrast the results suggest that the development of inter-division or inter-office networks is almost not existent.

Subsequently, while engineers perceive their level of sociability to be high, the results of developing vast workplace social networks rich in both strong and weak ties has yet to be achieved.

Therefore, based on the findings and current literature the system used to gather information, knowledge and recourses to support problem-solving is inefficient. As such, this inefficiency is potentially comprising overall organisational effectiveness and provides implications for management, because when employees do not have adequate avenues for seeking assistance, they are likely to become frustrated and this could reduce their ability to attend to patients or clients. Moreover, as previously mentioned, if an employee becomes frustrated when solving day-to-day work-based problems, such conditions are less than ideal for retaining professionals and the information and knowledge they possess. Additionally, during times of both engineer and nursing shortages it is imperative for organisations' seeking an improvement in organisational effectiveness or a competitive advantage to provide an environment where employees' have access to the information, knowledge, resources and support they require to solve frustrating work-based problems. However, at this point it should be re-iterated that this study is preliminary and as such there is a requirement for further indepth case study analyses into understanding the effectiveness of workplace social networks.

Conclusion

This study has made several contributions to current literature about SCT. The overall contribution to SCT was conducted by applying two social capital dimensions to examine the propensity of both nurses' and engineers' to develop useful workplace social networks to assist in solving work-based problems. Furthermore, as previously mentioned such knowledge is imperative if a better understanding is to be developed about the factors that impact on both nursing and engineering professionals' ability to solve work-based problems and the effect this has on productivity. Furthermore, by comparing engineers to nurses this study provided insight into the similarities and differences between the two professions, especially when considering the use of workplace social networks to solve work-based problems. In summary, this study has contributed to SCT within the context of both nursing and engineering professionals.

Addition to journal and practice/ implicarions

Future research

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Appendix One

Who engineers access when they have a workplace problem

Member status	Percentage
<i>Managing Director</i>	5.9
<i>Principal</i>	41.2
<i>National Manager</i>	11.7
<i>State Manager</i>	17.7
<i>Associates</i>	5.9
<i>Senior Engineers</i>	11.7
<i>Engineers</i>	3.5
<i>Graduate Engineers</i>	2.4
<i>Designers</i>	0
<i>Drafters</i>	0

Appendix Two

Who nurses access when they have a workplace problem

Member status	Percentage
NUM	55.5
Senior Clinical nurse	11.4
Other nurse same ward	16.2
After-hours coordinator Clinical Educators (not on ward and not in all hospitals)	6.4
Other nurse different ward	2.3
Other medical professionals	1.7
Nurse friend not at this hospital	4.1
Family	1.2

Tables & Figures

Table One. Survey Demographics

Surveys	Engineering Professionals (N =85)	Nursing Professionals (N=164)	Total (N=85)
Gender			
Male	59 (69.4%)	20 (12%)	79
Female	26 (30.6%)	144 (87%)	170
Total	85	164	249
Age			
<30 years	54 (63.5%)	36 (22%)	90
30 – 45 years	23 (27.5%)	73 (44.5%)	96
> 45 years	8 (9%)	55 (33.5%)	63
Total	85	164	249
Education			
High School	9 (10.6%)	20 (12.2%)	29
TAFE	10 (11.8%)	30 (18.3%)	49
Undergraduate	51 (60%)	48 (29.3%)	90
Postgraduate	15 (17.6%)	66 (40.2%)	81
Total	85	164	249

Table Two. Means, Standard Deviations and Correlations of the organisational factors tested for engineers

Variable	Mean	SD	Sociability	Usefulness of workplace networks
Sociability	4.99	.86	(.873)	
Usefulness of workplace network	4.15	.77	.654**	(.895)

N= 85. Numbers in parentheses on the diagonal are the Cronbach's Alpha in coefficients of the composite

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table Three. Means, Standard Deviations and Correlations of the organisational factors tested for nurses

Variable	Mean	SD	Sociability	Usefulness of workplace networks
Sociability	4.89	.77	(.834)	
Usefulness of workplace network	4.83	.82	.366**	(.765)

N= 164. Numbers in parentheses on the diagonal are the Cronbach's Alpha in coefficients of the composite

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table Four: Number of Contacts used for work-based problems

No. of Contacts	Frequency (Nurses)	Frequency (Engineers)
0	8 (4.9%)	7 (8.24%)
1	32 (19.45%)	23 (27.06%)
2	70 (42.7%)	36 (42.35%)
3-5	23 (14.05%)	10 (11.76%)
6-10	18 (11.6%)	6 (7.06%)
11+	12 (7.3%)	3 (3.53%)

Table Five: How well did you know the top five people that you contacted for help with frustrating work-based problems?

Closeness of contact	Frequency (Nurses)	Frequency (Engineers)
Not at all	5 (3%)	7 (8.2%)
Slightly	29 (17.7%)	9 (10.6%)
Fairly well	52 (31.7%)	24 (28.24%)
Very well	48 (29.3%)	30 (35.29%)
Closely	30 (18.3%)	15 (17.7%)