DELINEATING THE TACIT KNOWLEDGE SEEKING PHASE OF KNOWLEDGE SHARING: THE INFLUENCE OF RELATIONAL SOCIAL CAPITAL COMPONENTS

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Abstract

Much knowledge on which performance in practice is based is tacit (Smith, 2001) making it a valuable, rare resource, which is difficult to imitate or substitute (Barney, 1991) and a vital source of organisational competitive advantage. However, there is limited research available delineating tacit from explicit knowledge (Insch et al., 2008; Perez & Mitra, 2007) and thus gaps in our understanding about how to derive the greatest value from it. Knowledge management (KM) is partly a socially constructed phenomenon embedded in people and relationships (Nonaka, 1991). However, KM research has neglected the role of the micro-level of individuals and social interactions (Foss, 2009). Furthermore, knowledge sharing research neglects to explore all phases of what is a bi-directional relationship. Scant research exists on the knowledge seeking process- from the seeker to the source (Hansen, Mors & Lovas, 2005) as the focus is on the uni-directional notion of knowledge sharing- from the source to the seeker (Kim, Song & Jones, 2011). This study utilises the social capital lens, which focuses on social relationships and in particular the *relations between*, rather than the *characteristics of*, individuals, groups, processes, or organizations, to explore tacit knowledge seeking processes. The data is based on five American multinational manufacturing organisations and interviews with 105 operators, technicians and engineers engaged in tacit knowledge work. The paper discusses the results of the investigation of the relational social

capital factors of trust, norms, sanctions and social identification and their influence on decisions to operationalise a tacit knowledge seeking interaction.

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Introduction

Strategy researchers from the resource-based view (RBV) identify unique organisational resources as one mechanism through which similar organisations produce differing performance results (Barney, 1991; Peteraf, 1993). Thus, unique resources facilitate sustained competitive advantage and supernormal performance (Barney, 1991; Hung, 2015). Those of the knowledge-based view (KBV), recognise knowledge as one such valuable resource for sustainable organisational competitive advantage (Argote et al., 2003; Dosi et al., 2008; Spender, 2005). This recognition has triggered discussion on the benefits obtainable from

explicit and tacit knowledge. It is argued that organisations can derive greater benefits from tacit knowledge (Argyris, 1999; Tsai, 2001; Zahara et al., 2000). Tacit knowledge is practical knowledge, which is individually held, difficult to articulate and consequently it's a valuable, rare resource, which is difficult to imitate or substitute (Barney, 1991). However, these same tacit knowledge characteristics are also those that hinder tacit knowledge sharing (Leonard & Sensiper, 1998) and consequently learning by others and retention in organisational memory. Despite recognition of the particular value of tacit knowledge, empirical research delineating tacit from explicit knowledge is limited (Insch et al., 2008; Perez & Mitra, 2007).

The knowledge management SECI model (Nonaka, 1994: Nonaka & von Krogh, 2009) and the organisational learning 4i framework (Crossan et al.'s, 1999) are informative in progressing research around tacit knowledge sharing and learning but suffer from insufficient detail on the mechanisms or empirical research (Ahn, J. & Hong, A.J., 2019; Freyens & Martin 2007; Gourlay, 2006; Zietsma et al., 2002 are exceptions) or they fail to truly delineate types of knowledge (Kump et al., 2015). This is despite the need for such distinction being highlighted in previous research in cognitive psychology (Anderson, 1996), organisational learning (Cohen, 1991; Kim, 1993; Kogut & Zander, 1992) and implied in the SECI model.

However both the 4i framework and the SECI model do make propositions about how to enable, respectively, tacit knowledge sharing and organisational learning. Also, a recent review of knowledge management (KM) research (Barley et al., 2018), identifies the centrality of social interaction for sharing tacit knowledge. Thus we adopt the social capital lens to investigate tacit knowledge sharing. The social capital lens focuses on social relationships and in particular the *relations between*, rather than the *characteristics of*, individuals, groups, processes, or organizations (Emirbayer, 1997; Mehra, Kilduff, & Brass, 2001; Rodan & Galunic, 2004). Using this lens responds to a number of gaps in the literature.

First, we recognise the (under-researched) 'individual first' strategy, which emphasises that knowledge resides foremost in the individual. We recognise the 'network first' strategy where individually-held knowledge is shaped through local social processes (Foss, 2009). KM research has neglected the role of the micro-level of individuals and social interactions (Foss, 2009).

Second, of the three components of social capital less is known about the relational component (Levin, Walter, Appleyard & Cross, 2016; Makela & Brewster, 2009; Moran, 2005) and the ways in which kinds of relationships condition information flow and learning in networks (Borgatti & Cross, 2003). A study by Lomi et al. (2014) highlights the need for research on how social and psychological mechanisms of social identification might affect social network characteristics for advice-seeking (a form of knowledge transfer).Thus we focus on key relational social capital components of trust, norms, sanctions and social identification (Nahapiet & Ghoshal, 1998).

Third, despite recognition that knowledge sharing is a bi-directional process, most KM or organisational learning research has focused on a uni-directional notion of knowledge sharing from the source to the seeker (Hansen, Mors & Lovas, 2005: Kim, Song & Jones, 2011: Lin et al., 2005; McElroy, 2003). Knowledge *sharing* is the behaviour of dissemination of individual knowledge to another person (Ipe, 2003; Ryu et al., 2003) and includes an individual's willingness to share knowledge (Alavi & Leidner, 2001; Osterloh & Frey, 2000). However, there are phases prior to that of *sharing*, which are a basis through which to initiate sharing (Hansen, Mors & Lovas, 2005), which include the *seeking* knowledge phase. Consequently there are calls for research on the knowledge seeking or "pull" perspective (Chatti, Jarke, & Frosch-Wilke, 2007; Hansen et al., 2005; Kim et al., 2011; King et al., 2008). Knowledge seeking is the behaviours of deciding to and initiating social interaction for the purposes of retrieving needed knowledge. Therefore, the objective of this paper is to

focus on tacit knowledge seeking through the lens of relational social capital composed of trust, norms and sanctions and social identification.

This study is important to the field of human resource development (HRD) as it engages with a fundamental and as yet under-researched HRD black-box. That is, what are the characteristics about relationships between individuals and how do these influence whether tacit knowledge is sought and knowledge flows between individuals which then facilitates learning. Our focus on knowledge seeking positions the learner as proactive in the learning process. This focus furthers HRD literature, as empirical research identifies that engagement in informal learning behaviours, which include information seeking, learning with others, learning by doing, learning from colleagues is significantly influenced by individuals' learning-related motives. Also, engagement in informal learning behaviours positively and significantly impacts knowledge/skill acquisition and performance (job, effectiveness, salary, promotions and project performance) (Cerasoli et al., 2018). Additionally, constructs akin to learner proactivity such as motivation to learn, motivation to transfer and learning goal orientation have significant positive impacts on training transfer (Bauer et al., 2016; Blume et al., 2010). Thus we expect that the focus on tacit knowledge seekers, whom are proactive, who strive to obtain more knowledge and learn, will advance both HRD and KM literatures.

Theoretical Foundations

In scenarios where tacit knowledge flows, it is available for individual, collective and organisational learning and thus the value of tacit knowledge benefits the organisation in terms of numerous outcomes such as learning, innovation, creativity, knowledge exploration, knowledge exploitation and organisational performance. The challenges with investigating

these scenarios include debate about delineating tacit from explicit knowledge and the fact that a key element of some tacit knowledge is that it is first and foremost individually held.

The lack of research delineating tacit from explicit knowledge is partly due to debate around the extent to which it can be shared or investigated. One perspective on tacit knowledge is that it is deeply personal and embodied in people, embedded in and inseparable from individuals work practices, cultures, socially constructed and interlinked to and inseparable from explicit knowledge- two sides of the same coin (Tsoukas, 1996). This perspective shifts the debate away from knowledge as a commodity and towards a focus on knowledge and knowing as something that individuals and organisations do (Blackler, 1995; Cook & Brown, 1999; Polanyi, 1966). Others argue that tacit and explicit knowledge are separate and distinct and can be separated from people and codified (Haas & Hansen, 2007: Voelpel et al., 2005)- two ends of a continuum.

While acknowledging both perspectives, we concur with Schultze and Stabell (2004) and Hazlett (2005) whom argue that contradictions are inevitable and more can be learned by considering and integrating alternative perspectives, breaking the paradigm mentality (Wilmott, 1993) in relation to 'one right way', recognising epistemological continuums' and how multiple paradigms provide enhanced ability to analyse organisational phenomena (Gioia & Pitre, 1990; Palmer & Dunford, 1996), identify syntheses (Nonaka & Takeuchi, 1995) and facilitate cross-disciplinary debate and learning (Hassard, 1995). As such we draw on Ambrosini and Bowman's (2008) position of degrees of tacitness or explicitness and accept that there is some tacit knowledge, though individually held, that can be shared. We adopt a social, organic paradigm view of knowledge sharing which is people-centric and recognises the role of social capital (Alvesson & Karreman, 2001). We also draw on criticisms levelled at the community approach within this paradigm which includes that it is devoid of 'management' and does not reflect organisational needs resulting in organisational

vulnerability around tacit knowledge loss (Schultze & Stabell, 2004). This study is closer to the normative control approach to knowledge sharing, which adopts a stronger (but not technostructual) form of managerial intervention (Alvesson & Karreman, 2001).

The decision to share and learn from tacit knowledge resides with the individual who possesses it (Constant et al., 1994; Sadler-Smith, 2006). Consequently, organisational benefit is dependent on how individuals are enabled to share tacit knowledge such that it becomes collective knowledge, is learnt and retained within the 'memory' or 'collective mind' of the organisation (Walsh & Ungson, 1991). Collective knowledge exists between rather than within individuals. It can be more or less, than the sum of the individuals' knowledge (Glynn, 1996). Individuals can apply their own tacit knowledge to improve their performance or they can draw on others tacit knowledge and share theirs to generate linked tacit knowledge (Shamsie & Mannor, 2013) to enhance performance.

Despite these challenges, the opportunities to be derived from tacit knowledge flow are vast and thus there are calls for further research on tacit knowledge (Ambrosini & Bowman, 2008; Cordeiro & Hawamdeh 2011; Insch et al., 2008). To progress this agenda, we focus on two avenues notably; tacit knowledge seeking as a distinct phase within the tacit knowledge sharing process, as this positions the learner as proactive in the learning process; and the role of social interaction and social relationships

Delineating Tacit Knowledge Seeking from Knowledge Sharing

Tacit knowledge sharing and learning is intrinsically a bi-directional process between a knowledge seeker and a knowledge source and so it is influenced by the characteristics of the relationship(s) of individuals (Contractor et al., 2006; Cross & Borgatti, 2004; Hollingshead et al., 2007). Seeker-initiated knowledge sharing represents a knowledge pull perspective; the knowledge needed is based on a recognised need, gap or problem identified by the seeker,

whom then ‘pulls’ that knowledge from relevant sources. This perspective focuses on the need for employees to successfully seek and learn from this knowledge (Argote & Ingram, 2000; Quigley, Tesluk, Locke,& Bartol, 2007). The ‘knowledge push’ perspective is about the source determining what knowledge needs to be ‘pushed’ or shared with others (Holt, 2002). Therefore, the behaviours and the competencies of a knowledge seeker and source differ. For example, social interaction for sharing requires competencies to perform during social interaction such as the ability to interact effectively whereas seeking requires competencies to initiate and maintain relationships with others (Nangle, Hansen, Erdley & Norton, 2010). Also, the reason knowledge sharing is initiated and the determinant of what knowledge flows in the interaction varies with respect to whom the driver of the exchange is: the seeker or the source. Fundamental differences between the potential consequences of knowledge seeking and sharing make a focus on seeking and argument to delineate seeking from sharing worthwhile. For example, knowledge sharers present themselves as knowledgeable whereas knowledge seekers present themselves as lacking knowledge. Knowledge seekers are in a position of receiving knowledge, which may contravene their own mental models (Ghosh & Gilboa, 2014; Piaget, 1977) and may cause them and others to question their competence. Conversely, knowledge sharers are pushing their mental models out to others and demonstrating competence in their knowledge.

Despite this, the knowledge seeking phase is under-researched in the knowledge sharing literature (Hansen et al., 2005; Hansen et al., 1999) or at a minimum knowledge seeking is not delinated from sharing. Consequently, there is a lack of empircal evidence on factors influence the knowledge seeking phase as distinct from the knowledge sharing phase.

Socialising tacit knowledge: Social capital components

The importance of social interaction and social relationships for knowledge sharing is emphasised in informative theoretical frameworks and models (the 4i framework and the SECI model) and in a review of KM research (Barley et al., 2018). Thus the use of the social capital lens and specifically the relational components of trust, norms and social identification is appropriate.

Trust.

Available research on how trust influences knowledge sharing social relationships focuses on the knowledge provider as opposed to the knowledge seeker. Trust is defined as the willingness of an actor to be vulnerable, based on positive expectations about the intentions or actions of another, under conditions of uncertainty and interdependence (Mayer, Davis, & Schoorman, 1995). Trust in others is based on the person's ability, benevolence and integrity. Ability refers to the skills, knowledge and competencies to perform a task or job. Benevolence refers to the belief that a person wants to do good to another. Integrity reflects the belief that a person adheres to a set of principles and values that another finds acceptable.

Meta-analytic evidence suggests that knowledge transfer hinges critically on trusting social relations (van Wijk, Jansen, & Lyles, 2008). Though trust is considered essential in facilitating knowledge flows, there is limited research on what types of trust are associated with interpersonal knowledge transfer effectiveness (Alexopoulos & Buckley, 2013) and the research available produces inconclusive findings. Research identifies that affect and cognition based trust have positive influences on knowledge sharing at dyadic and team level (Chowdhury, 2005; Lee et al., 2010; Mooradian et al., 2006; Politis, 2003; Wu et al., 2007). However, there are inconclusive findings as to whether the effects are stronger where trust is founded in professional (e.g., Chowdhury, 2005; Holste & Fields, 2010) or personal relationships (e.g., Ko, 2010; Zhou et al., 2010). Alexopoulos and Buckley (2013) reported

that professional trust is particularly important for knowledge transfer in newer relationships, whereas personal trust matters only in well-established relationships.

In trust research focused on the knowledge seeker, Andrews & Delahaye (2000) found that individuals tend to share less knowledge with others whom are perceived to be very capable (ability) and more knowledge with those whom are perceived to be honest, fair and followed principles (integrity) (Bakker et al., 2006).

Research on the impact of types of trust on tacit knowledge sharing as opposed to sharing of knowledge in general is limited. Chowdhury (2005) and Levin et al. (2004) focused on complex and tacit knowledge but they did not consider knowledge seeking. Chowdhury (2005) found that cognition-based trust is positively associated with complex knowledge sharing. Levin et al. (2004) found that competence-based trust had a more significant impact on tacit over explicit knowledge sharing. They found benevolence-based trust to be significant in both tacit and explicit knowledge exchanges. Empirical research on knowledge seeking is also sparse. Andrews and Delahaye (2000) looked at knowledge seekers rather than sharers but did not distinguish between explicit and tacit knowledge. They reported that knowledge seekers determine whom to go to for knowledge based on the individual's perceived credibility, thus pointing to the importance of ability-based trust in the knowledge seeking process.

1. *What types of trust influence and what is the role of trust on operationalising a tacit knowledge seeking relationship?*

Norms and Sanctions.

A norm exists when the socially defined right to control an action is held not by the actor but by others. Thus it represents a degree of consensus in the social system (Coleman, 1990). Norms can be internalised or supported through rewards for accepted actions or disapproval

for unaccepted actions (Coleman, 1988). Sanctions are used to enforce norms or limit negative behaviours by members of the collective. A member of a collective whom conducts an unacceptable action is punished in accordance with the norms by ridicule, gossip and ostracism. Social sanctions involve the monitoring of members and the dissemination of information about the credibility of members (Hagen & Choe, 1998) or observation of the behaviour of members and sharing these observations with the aim of influencing the general reputation of the member.

While research on norms and its influence on knowledge sharing and more specifically *tacit* knowledge *seeking* is lacking, there are indications of its possible influence. Community of practice (COP) research identified that sharing norms were positively related to knowledge sharing behaviour (Brown & Duguid, 1991; Chiu et al., 2006). Research on online communities or knowledge sharing repositories finds social norms have significant positive effects on knowledge transfer (Gopalakrishnan & Santoro, 2004) and intentions to share knowledge (Bock et al, 2005). However, these preceding studies on COP's and online fora do not represent the unmanaged, informal, day-to-day social relationships and behaviours more commonly used for knowledge sharing and learning. In fact, many suggest that the majority of learning in the workplace occurs through experience and informally (Tannenbaum et al., 2013, 2010) with estimates ranging from 70-90% of learning taking place informally (Cerasoli et al., 2018), making the focus on day-to-day informal knowledge sharing worthwhile.

The influence of sanctions on knowledge sharing can be understood somewhat through a study on external regulation (engaging in an activity in order to obtain a social (e.g. approval) or material (e.g. bonus) reward or to avoid a social (e.g. criticism) or material (e.g. job loss) punishment) (Gagne et al., 2019). This study found that external regulation led to more knowledge hiding (evasive hiding, playing dumb, rationalised hiding). This study did

not extract the specific influence of *social* sanctions on knowledge sharing which is of particular interest to this study. It also focused on knowledge sharing and therefore did not differentiate between explicit and tacit knowledge or the phases of seeking and sharing.

2: *How do norms and sanctions influence operationalising a tacit knowledge seeking relationship?*

Social Identification.

Social identification is the connection that exists between people— personal affiliation, closeness or similarity (Schaubroeck & Lam, 2004; Smith & Kim, 2007; van Dijk et al., 2006), a perception of oneness with a group of persons (Ashforth & Mael, 1989; p.20). Group level identity is based on in-group members being liked not as unique individuals but as embodiments of the group (Hogg & Hains, 1996). Organisational structuring reinforces social identification by separating personnel into social groupings and providing a heuristic for defining and attributing characteristics to others (Tajfel & Turner, 1985).

Social capital theory makes propositions about the opportunities and costs derivable from being members of cohesive or closed social groupings. Closed groups are likely to demonstrate greater solidarity, reciprocity norms, trust and sanctions against self-serving behaviours (Granovetter, 1985; Krackhardt, 1999). Those in such organisational sub-units attribute positive characteristics to members of the same unit and evaluate them as more trustworthy, loyal, helpful and valuable (Hewstone, Rubin & Willis, 2002). Furthermore, group closure enables the development of other forms of trust such as deterrence-based trust (Shapiro, Sheppard & Cheraskin, 1992). Deterrence-based trust is developed and sustained through fear of punishment (e.g., loss of reputation, relationships) and provision of rewards for preserving it (Lewicki & Bunker, 1996).

Closure leads to increased identification with the in-group so those whom identify with a group hold attitudes and behave in ways that benefit the group (see Brewer & Brown,

1998; de Cremer & Van Vugt, 1999). Social identification is argued to enable increased trust, shared goals (Inkpen & Tsang, 2005), mutual understanding of norms and sanctions (Huysman & De Wit, 2004), social learning (Ashforth & Mael, 1989; Bandura, 1977) and increased psychological safety (Kahn, 1990; May, Gilson & Harter, 2004).

In the context of knowledge sharing, social network research finds that closure (see Brewer & Brown, 1998; de Cremer & Van Vugt, 1999) enables both ease of and increased knowledge flow between members of the in-group but poses challenges for knowledge flow with members of the out-group (Burt, 2005; Coleman, 1990: Hansen, Mors & Lovas, 2005). However, we know less about the relational factors driving this behaviour, though Levin et al. (2016) investigate how trust might remedy the issue. Social identification studies find that identity (with a team) is significantly positively related to intention to share knowledge (Liu & Phillips, 2001). However, concomitantly excessive group closure can also lead to strong norms against associating with the out-group (Brewer, 1979). Attributing membership to an out-group can be based on different department, role or rank (Tajfel & Turner, 1985). Strong levels of group identification, are associated with lower levels of knowledge sharing between groups (Argote & Ingram 2000; Burt, 2000; Gargiulo & Benassi, 2000). The research on the relational social capital component of social identification and its impact on knowledge sharing does not focus on tacit knowledge or knowledge seeking.

3: *How is social identification manifest and what is the influence of social identification on the operationalisation of a tacit knowledge seeking relationship?*

Research Design

The study objective is to explore the influence of the relational social capital factors of trust, norms and sanctions and social identification required to facilitate tacit knowledge seeking in day-to-day knowledge work environments. Within the field of social capital, there is a

paucity of empirical studies on the relational component of social capital (Kang et al., 2007). Additionally, Lee (2009) calls for more qualitative research to elaborate on the preponderance of quantitative studies on social capital. A qualitative approach is adopted as it *is "preferable when addressing the process, content and dynamics of networks, rather than purely structural matters (Lechner and Dowling, 2003)"* (Jack, 2005; p. 1239) and *"to build up an understanding of the meaning of experience rather than verify predetermined hypotheses"* (Riege, 2003; p. 77). Within research on tacit knowledge seeking, there is a paucity of empirical studies in general. Past research focused on knowledge in general or explicit knowledge in particular (Ambrosini & Bowman, 2008; Cordeiro & Hawamdeh 2011). Past research has failed to delineate the distinct phases within knowledge sharing, specifically knowledge seeking and therefore extract factors particular to knowledge seeking (Hansen et al., 2005). Consequently, a qualitative design is most relevant for its ability to yield new insights into the complex and the less understood social phenomena (Eisenhardt & Graebner, 2007; Silverman, 2005) of social relationships for tacit knowledge seeking.

This study is part of a wider study of tacit knowledge circulation processes in multinational manufacturing corporations internationally. This paper reports on findings from 105 semi-structured interviews with operators, technicians, engineers and managers from five case study manufacturing sites in Ireland (See Table 1). The interview participants engage in routine and non-routine tasks, which demand use of both explicit and tacit knowledge. The initial interview participants meet the following criteria: a cross-section of views and participants work included routine and non-routine tasks, which demand the use of both explicit and tacit knowledge. A snowball sampling approach (Noy, 2008) identified further populations whom were important to the focal individual's tacit knowledge sharing requirements. The snowball sampling approach was based on answers to questions on the interview schedule (see Appendix 1) on knowledge sources, with respect to the critical

incident(s) being discussed. This approach to collecting data on sources or others in the focal persons' network is grounded in social network analysis methodology. The qualitative methodology consisted of semi-structured interviews based on the interview schedule (Miles & Huberman, 1994; Streb, 2009), which used the funnelling approach (see Minichiello et al, 1992). Interviews ranged in duration from 75 to 120 minutes. To focus the interviewees on tacit knowledge seeking incidents, the critical incident interview technique (Ellinger & Watkins, 1998; Flanagan, 1954; Gremler, 2004) was utilised. Examples of non-routine incidents which required use of own and others tacit knowledge included machines breaking down in a manner not seen before and which the manual did not cover. Interviewees were asked to identify one to three examples of tasks they encountered in an unexpected or non-routine manner and for which there was no or limited documented or procedural knowledge (explicit knowledge) to resolve the issue. Once one to three examples were cited, probing questions were utilised to complete the interview schedule and maintain a focus on tacit knowledge sharing incidents. The interviews are audio recorded, transcribed verbatim and content analysed using NVivo software.

INSERT TABLE 1 HERE

Interview transcripts were analysed following the qualitative analysis procedures recommended by Miles and Huberman (1994) and Strauss and Corbin (1998). The qualitative analysis software NVivo facilitated the 3-step coding process. Phase 1 is open coding and focused on identifying critical incidences and attaching pre-determined codes that related specifically to the phase of seeking. Phase 2 then focused on attaching pre-determined codes to the dimensions of relational social capital as described in the social capital literature as they pertained to the outcome of tacit knowledge seeking (Yin, 2009). The elements coded at this level included broad statements regarding trust, norms and sanctions and social identification embedded within the seeking process. Phase 3 coding consisted of analysing

interviewee's experiences and the role of trust, norms and sanctions and social identification dimensions and sorting them into thematic dimensions.

Findings

Based on open codes analysis referring to trust in tacit knowledge seeking interactions, what emerged is that respondents ask '*what trust do I need to place in you in order to initiate tacit knowledge seeking?*'. Two sub-themes emerged. First, ability-based trust in the knowledge source is key in decisions to operationalise tacit knowledge seeking and appears to be the initial consideration. Second, benevolence-based trust emerged as important to knowledge seekers decision-making processes particularly when the seeker is considering seeking knowledge from sources outside of their perceived social group.

Knowledge Seeking: What trust do I need to place in you?

The first research question is what types of trust influence and what is the role of these types of trust on the operationalisation of a tacit knowledge seeking relationships. The results reveal multiple references to concepts broadly associated with ability and trusting or seeking out those trusted and perceived to be competent. Two broad themes emerged: *how ability-based trust is determined* and *how trust in another's ability develops and becomes shared*.

How ability-based trust is determined: Those seeking tacit knowledge referred to seeking from those whom were more 'experienced' or working in a unit, organisation or with a piece of equipment 'the longest'. They also mention seeking from those whom had the 'most training' or were the most 'proficient'. This equated to ability and resulted in individuals being classified as experts and trusted as a competent source of tacit knowledge.

> *"talking to the older, more experienced guys ….you could experience ten problems…he could have experienced ten other problems…."*

Knowledge seekers equated 'time spent' with familiarity with a particular task or machine and this produced a 'tacit' understanding of the machine/task/process. This 'tacit' understanding is equated with competence and sufficient trust in the knowledge source to justify seeking knowledge from them.

> *"they are the people running the machine every day, ... so they know how it runs and how it should run. It's like your own car really. They know exactly what is wrong with it, if it has gone down they know how to fix it"*

How trust in another's ability develops and becomes shared: Ability-based trust in others exists and is reinforced through the social networks of employees. Undocumented broadly shared knowledge about a pool of trusted competent others existed amongst employees. This is further perpetuated when newcomers or knowledge seekers were informed about and given the names of the perceived experts for a particular machine, task or process. This shared list remained largely unchallenged and is, for the most part, reinforced when multiple respondents identified the same lists of 'experts'. *"If you just came to anyone they would know who those people were".* Based on these 'criteria', tacit knowledge seeking relationships are operationalised.

INSERT TABLE 2 HERE

Two broad themes illustrated that benevolence-based trust in a knowledge source is also important in decisions to seek tacit knowledge. This is manifest in perceptions about specific *personal attributes of the source* and *evidence of benevolent behaviour by the source*.

Personal attributes of the source: A number of benevolent person attributes are important determinants in knowledge seekers decisions to seek knowledge from a source. Knowledge sources likely to be utilised included persons whom were 'open', 'helpful', 'easy to get on

with', 'obliging', 'approachable, will 'support' you and whom are interested in their jobs. Such attributes were so significant as to result, in one organisation, in knowledge seekers by-passing those whom should provide them with the knowledge, as defined by the organisational hierarchy and instead seeking from those to whom they attributed ability and benevolence based trust. Therefore, while competent others were identifiable through the organisational hierarchy and processes, knowledge seekers emphasised the need for both ability *and* benevolence based trust before operationalising a tacit knowledge seeking interaction. Knowledge sources whom were thus 'supportive', 'approachable' and 'won't make you feel stupid' were sought out over those knowledge sources supplied by the organisation, who were not perceived to meet such benevolent criteria.

> *"Operators always tended to .. contacting engineering with their issues when there wasn't an engineering issue... but they would get a better reaction from engineering…… but if there is a technician there and he wants to be ignorant and sort of treat people with short change [limited information] ….then there is a tendency for the operator not to ring them"*

Benevolent behaviour: Respondents also made distinctions based on evidence about a knowledge sources likelihood of behaving benevolently. Respondents distinguished between those that 'look after you' and those that 'go behind your back' and 'hang you to the managers' and between those whom are forthcoming with information to help you and those whom would hold it back until a problem arose or until they were asked directly for it.

> *"Because you feel that they are not going to hang you to the managers. Whereas certain people in X function,..they are nice to your face but then you feel they are going behind your back and saying he called me saying he was doing this and he should have been doing that..."*

The most frequently cited benevolent behaviours were; protectionist behaviours, active support behaviours, willingness to share behaviours and altruist behaviours. Respondents

cited knowledge sources whom demonstrated both positive and negative behaviours across these themes. Knowledge sources operationalised were those whom; were trusted to protect the knowledge seeker from harm such as negative repercussions from management, looking stupid or incompetent; provided active and involved support to the knowledge seeker rather than passive; were forthcoming and willing to share their knowledge; showed concern for others; demonstrated cooperative behaviour above and beyond what was expected and without any personal gain.

> *"some of them are much more forthcoming with information and they would tell you something upfront it they see something wrong. Whereas another person might wait until something goes wrong"*

INSERT TABLE 3 HERE

Overall, the results demonstrate that ability-based trust is the dominant dimension in decisions about operationalising knowledge seeking relationships. Subsequent to this, benevolence-based trust is important. However, benevolence-based trust is more frequently cited as an issue when respondents referred to knowledge sources whom resided outside their immediate function or those in higher positions in the hierarchy or professionally (as defined by respondents). Thus ability-based trust is central to knowledge seeking decisions when considering knowledge sources in ones 'in-group'. However, in instances of requiring tacit knowledge from a member of an 'out-group', an additional form of trust- benevolence-based trust- is required for a knowledge seeking relationship to be operationalised.

The results also address part of research question three on the influence of social identification on operationalisation of a tacit knowledge seeking relationship. Social identification with particular functions, levels in the hierarchy or profession by respondents, produces boundaries which impact both decisions to seek and the criteria under which a knowledge seeker will seek tacit knowledge. In this instance, the boundaries inform whether ability-based trust is sufficient before operationalising a knowledge seeking relationship or

whether an additional layer of trust- benevolence-based trust- must be tested before operationalising a knowledge seeking relationship.

Knowledge Seeking: What Will You Do, Think, Say To Me If I Ask You?

The second research question asks how do norms and sanctions influence operationalisation of a tacit knowledge seeking relationship by a seeker? Based on open codes analysis referring to norms in tacit knowledge seeking interactions, what respondents consider is:' What will you do, think, and say to me if I ask you?'. Three social sanction themes emerged; *fear of ridicule or embarrassment*, *fear of being perceived as less than or incompetent* and the *desire to be independent of others*, which all reduced the likelihood of seeking knowledge. However, the desire to be independent had a double-edged effect. F*ear of being unable to manage or cope* in the absence of key knowledge sources encouraged tacit knowledge seeking as individuals wanted to learn in order to be sufficiently competent and independent to do their job/task. Interestingly here is that the results illuminate that it is perceptions of social sanctions, not norms, that influenced decision making on operationalising tacit knowledge seeking interactions.

Fear of ridicule or being perceived as incompetent: Respondents referred to either reluctance to or avoiding tacit knowledge seeking for fear of looking 'stupid' in the eyes of others. In particular, respondents were conscious of looking stupid in the eyes of those whom worked in different functions or whom they perceived worked in more 'professional' roles to them. Respondent's preferred instead to seek knowledge from their peers and equals.

> *"almost regardless of the problem, I will go to another operator like me first and confirm that I'm not doing anything stupid. What I hate doing is ringing up engineering and saying how…., like that's grand when you are starting out…..but if I*

*rang up engineering today and said "I can't see what's wrong here", they'd tell me what was wrong and you get the feeling.. that they are going "f**** eejet" [idiot]"*

Conversely, the fear of being perceived as less competent or incompetent is discussed more in terms of seeking knowledge from peers or those in roles of equal status.

This theme is also partly connected to respondent's desires to be *independent of others* and sufficiently competent to not need help from others. This is particularly so in organisations where respondents were conscious of being in situations where they would be expected the take the lead when the experts were unavailable e.g out sick or on holidays etc. In these instances, respondents feared being 'found out' as being incapable or incompetent.

"well I would like to make sure that I have exhausted all my own knowledge first before I would go to anyone else because it is always more satisfying to … do something …off your own back than to get help from others"

INSERT TABLE 4 HERE

The results illuminate why a focus on tacit knowledge seeking is important. While empirical research and organisations place a lot of emphasis on knowledge sharing, when the focus is on knowledge seeking rather than sharing and tacit rather than explicit knowledge, what emerges as the dominant theme pertains to social sanctions not norms. The action of knowledge seeking poses different risks to knowledge sharing. A key concern for knowledge sharing pertains to an individual's knowledge being used by others for personal gain or used incorrectly. So, the concern for knowledge sharing relates to the value obtained from the knowledge commodity. However, in the case of knowledge seeking, concerns relate to the individual in terms of how they will be perceived by others as a result of seeking and how they will perceive their own competence as a result of needing to seek another's knowledge.

More specifically, the data illustrates that these perceived social sanctions point to feelings about psychological safety and its impact on decisions to operationalise tacit knowledge seeking relationships. Psychological safety is about "feeling able to show and

employ one's self without fear of negative consequences to self-image, status, or career" (Kahn, 1990; p.708). The results indicate that in decisions to seek knowledge from those in the in-group, the knowledge seeker's dominant psychological safety concerns relate to self-image, status and career in terms of how seeking will impact perceptions of his/her competence. In decisions to seek knowledge from those in the out-group, the knowledge seeker's dominant psychological safety concern relates to negative reaction by others in the form of ridicule or embarrassment.

Furthermore, these results also provide insight on research question three on how social identification with particular groups influences operationalisation of a tacit knowledge seeking relationship by a seeker. While psychological safety impacts decisions to seek tacit knowledge in general, the precise aspects of psychological safety that are most important vary with respect to whether an individual socially identifies with a group or not.

Knowledge Seeking: Are You A Member Of My Gang And If So Am I Safe To Ask?

The third research question is how is social identification manifest and what is the influence of social identification on the operationalisation of a tacit knowledge seeking relationship. The preceding sections identified how social identification influences operationalisation of tacit knowledge seeking relationships. Here we discuss the results on how social identification manifests and what is its influence on knowledge seeking. Based on open codes analysis referring to social identification in knowledge seeking in general, respondents considered: *'Are you a member of my gang and if so am I safe to ask?*'. Three themes emerged which illustrated that social identification with certain groups resulted in positive dispositions towards answering knowledge seeking requests within that group and inhibited it outside of that group or with specific other groups. In addition, a hierarchy of social identification emerged from the data. The social identification dimensions were identification

with: *a specific technical function or team, a specific working time shift* and *with the organisation.*

Identification with the function or team: In the organisations studied, personnel are organised according to their technical expertise and placed in functions or teams with similar others. This method of structuring encourages frequency of interaction through team/function meetings, provision of communication media such as walkie-talkies or pagers and work interdependency. The organisations have a central location in the building where all members of this function/team can convene or they work within the same area. This facilitates physical proximity. Members of this function/team are likely of the same broad educational or apprenticeship background such as engineering or specifically backgrounds in mechanical or electrical and thus are more homophilius. Thus, the elements are in place to facilitate the development of close relationships amongst members of the same function/team.

The results reveal that respondents responded positively to knowledge seeking requests due to a sense of identification with a specific function or team and consequently held positive beliefs about; helping each other out, engaging in reciprocal behaviour, collaboration and sharing. This behaviour is seen as for the common good and there is evidence of a presence of a cultural understanding that sharing knowledge amongst the function/team is the 'norm' and accepted as 'the way things are done around here'.

> *That's the way things work in X [function], everyone is happy to tell everyone everything else..*

Conversely, this sense of within function/within team identification resulted in knowledge hoarding or more reluctant or passive efforts to respond to knowledge seeking requests from outside teams or functions. The basis of respondents distinguishing themselves from those outside their team/function included their identification with the function/team

and its designated technical role. Respondents were conscious of sharing 'their' role knowledge and hence their power position, outside of those in their technical function/team.

Identification with a specific working time shift: Respondents also identified with those in their shift. However, given that each shift is composed of multiple functions, there is evidence of layers of social identification. While respondents identified with their shift and were positively disposed to answer knowledge seeking requests from within their shift for the benefit of the overall shift, these behaviours were somewhat tempered by a stronger sense of identification with a precise function/team within that shift.

> *The shift do help each other out… they tend to ask each other before asking [person next in line in hierarchy of functional expertise and located physically in another room] or myself [supervisor]…they generally do work as a shift should, they would help each other out*

Respondents sense of identification with their shift appeared more strongly when reference is made to 'the other' shift. In this regard, respondents' identification with a precise shift and the consequent less knowledge sharing across shifts is driven by a sense of competition or rivalry between shifts to be the better performing shift. The implications of being the under-performing shift are both verbal sanctions for underperforming and reward-based sanctions.

Identification with the organisation: Though less evident than identification with a function/team/shift, the results illustrate that some respondents identified predominately with the organisation. Consequently, these respondents believed in responding to knowledge seeking requests because they felt it is expected of them by the organisation or because that

by having signed a contract to work for that organisation that knowledge sharing is part of that role and the knowledge is owned by the organisation.

> *I think the knowledge I know, it cannot be owned by me- Company X owns it. So to keep it to yourself is sort of kind of like a company crime. You shouldn't do that- it's like stealing from a company.*

A number of respondents' identification with the organisation translated into knowledge sharing because they wanted the organisation or the products they were involved in, to survive or succeed. Indeed, in two of the organisations studied, respondents referred to personnel whom were about to be made redundant but whom still responded positively and in-depth to knowledge seeking requests with those whom would take on their roles.

INSERT TABLE 5 HERE

Discussion and Conclusion

Two theories influencing this study are Nonaka et al.'s SECI model (Nonaka, 1994: Nonaka & von Krogh, 2009) and Crossan et al.'s 4i framework (Crossan et al.'s, 1999). Both emphasise propositions regarding the centrality of social interaction for, respectively, tacit knowledge sharing and organisational learning. However, both are criticised for being vague about the 'what' and the 'how' of social mechanisms through which tacit-explicit-tacit conversion and individual to collective learning, respectively, occurs (Crossan et al., 2011; Kump et al., 2015; McIver, 2012;). This study utilises the social capital lens to describe the development of the relational facets of trust, sanctions, and social identification and the impact on decisions to operationalize relationships for tacit knowledge seeking. As such it draws on prominent social capital theorising which specifically pertains to relationship mechanisms of contacts, links, paths, networks, channels, which can be 'used' to gain resources, like tacit knowledge (Gubbins & Andriessen, 2009). More specifically, once the

‘contacts’, ‘links’, ‘networks’ are illuminated through the critical incidences cited, this study zones in on the relational mechanisms, which provide more substance to relationships and influences the extent to which their ‘use’ delivers value, in this case tacit knowledge.

The power of social identification with respect to tacit knowledge seeking relationships and its impact on trust and norms is illuminated. Respondents socially identified with a number of groups: technical function or team, specific working time shift and the organisation. There is evidence of identification with multiple groups and layers of social identification such as one could identify with the organisation but then more specifically with a shift and further still with a function or team. Consequently, what an individual defined as the out-group varied with the nature of the knowledge being sought and the consequences of same. If the knowledge sought is likely to impact negatively on a team or function based on their specialist area of expertise, then this aspect of social identification is activated most strongly. If the knowledge sought benefitted another competitively e.g another shift or organisation then this aspect of social identification is activated such that knowledge is less likely sought or shared across these boundaries. Second, social identification is more likely to confer ‘in-group’ ability-based trust on sources. Third, social identification is more likely to confer a greater sense of psychological safety for tacit knowledge seeking in ‘in-groups’.

Evident from these results is the complex interplay between social identification and the psychological factors of trust and psychological safety with decisions about with whom to operationalise tacit knowledge seeking relationships. As a consequence of the value in knowledge sharing across organisational groups, there is vast interest in developing understanding of the conditions under which relationships are more likely to occur within and across group boundaries (Lomi et al., 2014; Tortoriello et al., 2012) and different knowledge pools. This study provides insights into a call by Lomi et al. (2014) about how social and psychological mechanisms of organisational identification might affect the emergence of

network range in advice-seeking (a form of knowledge transfer) relationships. Network range is important as it is associated with greater capacity for successful knowledge transfer (Tortoriello et al., 2012). Lomi et al.'s (2014) study on intra-organisational advice seeking networks, similarly identified that individuals whom identify with their subsidiary (in-group) are less likely to seek advice outside that group. Additionally, individuals whom identified with the organisation were less likely to seek advice from those in their subsidiary (in-group). The Lomi et al., (2014) study could not explain these findings in terms of elements of homophily such as gender, grade, education, seniority, formal position, function or status and so suggested other social or psychological factors were at play.

The results of this study illuminate the complex relationship between social identification and decisions on 'with whom'- the 'in-group' or 'out-group'- to operationalise a knowledge seeking relationship. This complexity consists of at least two issues: an observation by Brass et al. (2004) regarding the 'duality' of 'groups' and of individuals, because ties between people in different groups also create ties between units; teams, departments or the organisation. This result in layers of social identification or individuals identifying with different 'groups' and thus with different consequences for tacit knowledge seeking. Barley et al., (2018: p.298) argued that KM research needs to engage with a knowledge network perspective and investigate precisely this issue. They argued that cross-level relationships are important because "the composite of micro-level processes exhibit emergent outcomes that can create group-level effects; at the same time, collective structures constrain and enable lower level processes."

Additionally, the results of this study provide insights into and deserve further exploration in the context of other discussions in the trust and social network literatures. In decisions to operationalise tacit knowledge seeking relationships, ability-based trust is the first consideration by the knowledge seeker. Benevolence-based trust comes into

consideration when the source is in the ‘out-group’. First, this insight speaks directly to calls to better understand the role of context as an antecedent to trust dimensions and the sequence of the development and application of different dimensions of trust (Tomlinson et al., 2020). In this case different layers of social identification, needs to be given much greater consideration as it may give rise to the development of different trust dimensions. Second, the results merit the question if the effects of social identification on trust development and activation are due to network closure in ‘in-groups’ (Ferrin et al., 2006).

Personal and subjective judgements about tacit knowledge sources are developed and shared through the social networks of the organisation and are the basis on which knowledge sources are conferred ability and benevolence-based trust. How seekers determine and confer ability-based trust in a knowledge source is insightful in a literature on trust, which as yet knows very little about the antecedents of trust types and what gives rise to dimensions of trust (Tomlinson et al., 2020). These results also illuminate the potential mechanisms through which third party influence in the form of trust transferability (third parties conveying their trust-related judgements to others) (Ferrin et al., 2006) impact the development and sharing of trust perceptions of others.

These meta-knowledge insights- specifically, understandings of “who knows what” and “who knows who” in organizations (Jackson & Klobas, 2008; Nevo & Wand, 2005)- are precisely what needs to be revealed, as it extrapolates how meta-knowledge is developed and shared and can help illuminate the role it plays in organisational processes (Barley et al., 2018). Cross et al., (2002) suggested that this meta-knowledge could make the expertise of others more visible and articulate organizational networks that were previously obscured (Cross et al., 2002). Additionally, the importance of meta-knowledge is based on recognition that KM creates more than a static network of organizational knowledge, but can facilitate a context for active *networking* in organizations in which individuals seek to influence

perceptions of knowledge held by coworkers, and to locate new sources of insight in the pursuit of innovations (DiMicco et al., 2009).

Ability and benevolence based trust are also important in the knowledge sharing process but the focus is on the sharer and the knowledge receiver determining whether to use the knowledge 'pushed' to them based on their ability and benevolence based trust perceptions of the sharer. However, unlike the seeking phase, this consideration only takes place after the knowledge has flowed between parties. In seeking, no knowledge will flow until seeking is operationalised and this is determined by the seekers perception of the ability and benevolence based trust in the source. Secondly, as perceptions of ability and benevolence-based trust are socially dispersed, this third party or closed group influence exasperates, correctly or incorrectly, the ability and benevolence based trust perceptions and thus the likelihood that knowledge seeking relationships are operationalised and any knowledge will flow. Whereas in the knowledge sharing phase, the knowledge is pushed before such considerations are taken into account and the sharer has the opportunity to first influence the social narrative created about them.

The results reveal that rather than norms being a key factor in decisions about operationalising tacit knowledge seeking relationships, it was sanctions and relatedly psychological safety feelings. This is significant given that knowledge sharing research and practice privileges norms as key factor in the knowledge sharing phase. Psychological safety concerns around perceptions of competence are most prevalent in decisions to seek tacit knowledge from the in-group and fear of negative reactions and sanctions arise more where individuals must seek from the out-group.

The clarity and implementation of sanctions in a collective provide indications to individuals about which to determine their sense of psychological safety in that collective (Brown & Leigh, 1996). Psychological safety is "feeling able to show and employ one's self

without fear of negative consequences to self-image, status, or career" (Kahn, 1990; p.708). Psychological safety, in the context of knowledge seeking, sharing and learning, essentially refers to one's beliefs about how others will respond when s/he asks questions, seeks feedback, reports an error or comes up with a new idea (Carmeli & Gittell, 2009; Edmondson, 1999). If individuals engage in these behaviours, they consider if others will hurt or act in a way to embarrass them (Edmondson, 2004). Sanctions in this context refer to formal sanctions driven by the organisation such as removal or reduction in extrinsic rewards or, as in this study, social, normative sanctions driven by the members of a collective (Lam & Lambermont-Ford, 2010; Pan & Scarborough, 1998). The impression management perspective argues that knowledge seeking can hurt or be perceived to hurt the seeker's reputation as they need help, which suggests incompetence, inferiority and dependence to others which can damage ones' public impression (Burgess, 2005; de Paulo & Fisher, 1980; Lee, 2002;). However, in perceived psychologically safe contexts, excessive concern about humiliating reactions are alleviated and help and feedback seeking behaviours are promoted (Edmondson, 2004). Feelings of psychological safety facilitates the sharing of ideas, where employees do not fear criticism or looking stupid (Kahn, 1990). Employees working in perceived psychologically safe environments feel free to engage in the types of risk-taking behaviours that are crucial for learning to occur (Edmondson, 1999).

This study progresses some of the questions posed by Crossan et al. (1999) in the seminal paper on the 4i framework, which is as yet insufficiently investigated (Crossan et al., 2011). A first question is "how do individuals/groups experience developing shared understandings?". Our results illustrate how competence-based trust may be at play here and further still, in interaction with social identification. Shared understandings may be more likely to be developed in scenarios with the 'in-group' where members are more likely to be conferred competence-based trust. Whereas in scenarios involving the 'out-group' and

members being less likely to be conferred competence or benevolence based trust, there may be a hesitancy to develop shared understandings of tacit knowledge.

A second question is “how do individual insights become shared and integrated?”. This study illuminates the role of informal social networks dispersing details about the ‘experts’ on tacit knowledge being sought. An informal social network in action in this way is influencing whose knowledge is sought and as such it influences the content of knowledge flows. This informal social network can also influence perceptions of competence and benevolence based trust in others, and indeed an informal hierarchy around social identification. As such these social networks influence what insights and thus knowledge flows, which impacts what insights become integrated. For example, where competence and benevolence based trust is placed in a knowledge source and this is shared through the social network, then the seeker is more likely to listen and work to integrate the knowledge shared (Andrews & Delahaye, 2000; Edmondson & Moingeon, 2001).

The third question which this study informs is “what impediments are there to integrating individual perspectives”?. Specifically, the results around psychological safety, trust, social identification and how knowledge of experts is shared through a social network are informative. Where individual perspectives are not sought either due to being in the out-group, the presence of negative perceptions about competence or benevolence based trust and psychological safety to seek and not being included in the network of identified knowledge ‘experts’, then opportunities to integrate perspectives from these individuals is negatively impacted.

Finally, Crossan et al. (1999) pose the question “do individuals have the motivation to interpret?”. This study focuses on seeking rather than sharing. Seeking comes from the knowledge pull perspective, it positions the learner as proactive, as such it suggests that knowledge seekers and the knowledge seeking processes are pre-dispositioned to possess

some motivation to access, interpret and at a minimum action the tacit knowledge shared and at a maximum integrate the tacit knowledge sought into their own mental models.

Limitations and Future Research Directions

A number of limitations of this study need to be considered in interpreting the results and which point to future research directions. This study focused on social factors impacting tacit knowledge seeking. However these factors do not occur in a void but rather in a broader organisational and environmental context. For example, organisational cultures across the case studies, department, team and shift cultures, organisational structures, management culture may further impact our results pertaining to social identification, psychological safety and trust. However, analyses of this additional layer of factors was outside the scope of this study. Future research could usefully address this limitation.

Social relationships, by their nature, are dynamic. This study provides insight into the social factors of importance in tacit knowledge seeking and the complexity and interplay between these factors, however, future research needs to explore, where tacit knowledge seeking is operationalised, how these relationships change, how trust, psychological safety and social identifications change and the consequent impact on subsequent tacit knowledge seeking decisions. As such longitudinal research would be valuable.

Third, this study provides insights into questions posed by the 4i framework and the SECI model and adopted a social, normative-control perspective. To delve further into the mechanisms behind the 4i framework and how 'socialisation' facilitates tacit knowledge seeking, an activity based perspective on KM research (Schatzi et al., 2001) could be utilised. Such an approach queries how knowledge is shaped by language-in-use, by participation in action, how elements produce knowledgeable action, how learning is evidenced in altered practices and how expertise emerges etc. (Barley et al., 2018).

An aim of this study was to progress dialogue and empirical research about delineating knowledge seeking from sharing and tacit from explicit knowledge. Future research directions include recognising that seeking is a distinctly different process from knowledge sharing and that knowledge seekers and sharers, while possibly influenced by the same social processes such as trust, norms, sanctions and social identification are differentially influenced. These are different processes and roles and result in different concerns, benefits and risks. The knowledge seeker risks; ridicule and a challenge to their own mental models or cognitive schema by obtaining possibly contradictory knowledge Ghosh & Gilboa, 2014; Piaget, 1977). However, they benefit from changing their cognitive schemas i.e learning as a result of social interaction (Zerubavel, 1997). Individuals have cognitive limits with regard to the storing and processing of information. This results in highly specialised and domain specific individual tacit knowledge (Lam, 2000). This is insufficient to deal with complex multi-disciplinary problems encountered in organisational work. Knowledge sharers can benefit from more positive perceptions of competence and being seen as an expert. However, they risk becoming overly confident of their own knowledge, at the expense of further learning.

Future research also needs to delineate tacit and explicit knowledge and while accepting the debates around the nature of knowledge and its investigation and 'management', it is necessary to further progress our understanding of tacit knowledge sharing from multiple paradigms and perspectives (Alvesson & Karreman, 2001), given its importance for individual, collective and organisational learning.

This study illustrates the interplay between social identification and the other socially influenced mechanisms of trust and psychological safety. To further our understanding of this interplay, multi-level modelling research would be informative both to the topic of tacit knowledge seeking and the HRD field (Garavan et al., 2020).

Implications for Practice

The interplay between social processes, organisational structuring and its impacts on social identification and individual behaviour- specifically tacit knowledge seeking- are significant for practice. Awareness of the interplay as opposed to treating each challenge independently provides novel insights into how HRD initiatives need to be re-designed or designed to further tacit knowledge seeking and thus learning. There needs to be greater emphasis placed on the fact that individual learners are part of a complex social system which has psychological and behavioural implications.

The consequences of social identification with groups such as those identified in this study are significant for organisations, whom operate as one integrated entity. A lack of or reduced knowledge sharing between such 'groups' reduces organisational knowledge, results in reinventing the wheel of knowledge in distinct groups and negatively impacts overall organisational performance (Reagans & Zuckerman, 2001). The results reveal that the groups 'identified' were due to formal organisation structures. While organisations must inevitably have a structure, greater awareness of the implications of these invisible (or visible if mechanisms are in place to distinguish between social groupings) boundaries and the consequent implications for tacit knowledge seeking and sharing can illuminate solutions. Organisations can look to identify how to break down or reduce the boundaries. Solutions may include rotating members in teams, secondments to other functions, teams or shifts, mentoring partnerships across functions or shifts, more opportunities for social interaction by members in the different teams/functions/shifts and learning events where members from different social groups share and discuss insights on non-routine problems encountered. Such initiatives while not novel, need to be designed with the consequences of social identification on tacit knowledge seeking to the fore. More importantly, initiatives, need to be designed to

address the interplay between social identification and competence and benevolence based trust in knowledge sources and psychological safety. As such organisations need to investigate where individuals most strongly socially identify. Then, initiatives need to place greater emphasis on developing awareness of competence in others and a sense of psychological safety in others perceived to be in the 'out-group'.

Social networks are used to disseminate knowledge about knowledge sources. This can result in over-reliance on certain knowledge sources, the dissemination of a narrow bank of tacit knowledge on problems encountered and knowledge silo's amongst those in the 'in-group' of 'experts'. This is concerning if those considered the best sources of knowledge are incorrectly considered experts. This could perpetuate poor practices. Knowledge seekers limit their exposure to sources of knowledge on a problem, to those identified as 'experts'. This limits the evaluation and integration of an array of knowledge to ascertain the best available evidence. Consequently, initiatives that increase awareness of individuals' areas of competence and expertise need to move beyond KM systems and be underpinned by social interaction thus mirroring the reality of social environments.

Organisations need to give greater attention to the pull element of knowledge sharing and create environments where sources respond to knowledge seekers benevolently. This may include rewards for benevolent sharing and repercussions for hoarding knowledge or engaging in negative behaviours around the seekers lack of knowledge.

Psychological safety factors impede tacit knowledge seeking and consequently learning. This illuminates a need to focus more on developing environments where individuals feel as safe to ask as they do to share. For example, creating environments and educating employees to view seeking as learning rather than incompetence. HRD initiatives can focus on developing a greater understanding of the value of learning-on-the-job, action learning initiatives and any learning practices that require social interaction. Emphasising that

informal learning is considered as valuable as more formal training, education or assigned mentoring systems is important. Indeed, a recent meta-analysis reports that those whom engage in informal learning behaviours average 32% higher performance than those who do not (Cersoli et al., 2018). The purpose of initiatives should be to counter individuals intrinsically driven fears of seeking. Such initiatives should emphasise the value the organisation places on individuals, whom are adaptable, resilient and learning agile through their ability to learn and meet ever-changing organisational and job circumstances.

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Tables

Table 1: Details on Interviews

Organisation	Industry	Number of interviews	Number of Hours of Interview Recordings
1	Pharmaceutical	30	39.5
2	Technological	24	36
3	Pharmaceutical	17	24
4	Pharmaceutical	18	26
5	Pharmaceutical	16	21
	Total	**105**	**146.5**

Table 2: Ability-based Trust Dimensions derived from transcripts

Ability-based Trust Dimensions	**A sample of open codes from respondent transcripts based on the ability-based trust**
How ability-based trust is determined	**Defining Ability-based trust broadly** • More experienced • Working on it longer • They've got quite intensive training in it • Senior guys • You're talking to older more experienced guys • He is here the longest of us • He is fairly proficient at what he does • The people who actually built the equipment • They are the experts on the machines...these guys do nothing else but those • It's their core skills, their knowledge of an area • If they don't have as much exposure as me, so I wouldn't ask them • Finding the person who wrote it (the original procedure) • He is the expert on the topic • Would have worked on areas that I would not have worked on • He would be more familiar with them than I

	• he'd have knowledge, he has experience of feeding 12 hour shifts here, he works as well weekends and stuff….. • the best person to ask is the operator. They know because they are stuck on it [the machine] for 12 hours watching A go to B go to C and if B doesn't go to C they can usually tell that pretty quick **Defining ability-based trust as tacit understanding** • It's their knowledge • Seen these problems before • They know equipment • They operate the machine • They know the right way it should operate • Well familiar with equipment and how they run • Will have experienced their own different problems • A lot of maintenance guys may have all the technical ability in the world but they don't know the machines
How ability-based trust in others develops & becomes shared	• Ask the operator • Team coordinator would be most trained • X is the best man to point you in the right direction • X knows- he has been talking to them (vendors) before • Maybe your best technician wouldn't sort it out so you do rely on your vendors • If I had a problem with a particular piece of kit then I would know who's strong in that area so I would go to them • They are the experts on the machines • He knows this stuff inside out…he'd be the man to ask • He is the expert on the topic • If you just came to anyone they would know who those people were

Table 3: Benevolence-based trust Dimensions derived from transcripts

Benevolence-based Trust Dimensions	**A sample of open codes from respondent transcripts based on benevolence-based trust**
Person attributes	• Person who is open with you • Someone that wouldn't be too helpful • He is easy to get on with, he just shares information easily • He is always helpful • He'd be obliging • …probably got a better reaction from engineering • Some are more approachable than others • No, I find someone else (who is interested in their job) • Helpful with their information • If they weren't helping around, being lazy like (would not seek from them) • They just couldn't be bothered (to help) • Some people are very cooperative • Some fellas are a bit more forthcoming than others • There may be 2 or 3 people in [X function] who have the same

	level of experience but only one of them will pass the information onto you so you're wasting your time going to the other guys
Benevolent Behaviours	**Protectionist** • You know he will look after you • Feel they are not going to hang you to the managers…going behind your back and saying he called me saying he was doing this and he should have been doing that and that sort of carry on • Sometimes …people [here] have the attitude sink or swim…is someone up to it, throw him in at the deep end and see **Active Support** • Easily approached and willing to show you new things • It's much better to go to someone who will act upon and listen • He'll voice that support • Come along and work with you as well on the job **Willingness to Share** • Some lads it's hard to extract information from because they just don't want to give it • Not willing to share it • People who won't dig it out [what you need] • Some people you'd have to ask for the information, whereas others will give it • Some of them are much more forthcoming with information and they would tell you something upfront if they see something wrong. Whereas another person might wait until something goes wrong **Altruism** • I suppose I think of myself at times when I started first …it was great to get guys to help you, to bring you along and to say 'I will show you this' • That's just two friends phoning each other • Sunday evening and I phoned the engineer at home

Table 4: Perceived Social Sanction Dimensions derived from transcripts

Perceived Social Sanction Dimensions	**A sample of open codes from respondent transcripts based on perceived social sanctions which *inhibit* knowledge seeking behaviour**
Psychological safety concerns	**Fear of Ridicule or Embarrassment** • I'll ask anyone for anything... Even if it might be a stupid question with a stupid answer, if I don't know the answer ill still want to know, it's only stupid to me. • I'm terribly proud and if I thought somebody was saying…. She came asking me for such a thing, that's so stupid and basic. • I'd be wary of asking anybody …. in case they .. ridicule you. • They might mean it in a joking way but when you're asking for help that's not what you want to hear • Some people come across very blunt at times because you've asked

	them before and that would put you off • I would kind of think I'm not going to ask again because I know I've been told • Need to avoid embarrassment • If you feel a bit intimidated by somebody • Grab another operator and go through it first to make sure there is nothing stupid that you aren't missing. • I'd see them as professionals, people who are dedicated to their jobs…. whereas operators more laid-back • It's kind of under pressure really. Intimidated. Kind of sneering. **Fear of being perceived as less/incompetent** • Some won't seek as others will think they don't know anything • If it is something that I really feel I should know, you might feel a bit shameful about it • You'd feel they were going 'he doesn't know that' or he has to ask me. **Need to be independent of others** • Because then- I don't need any skills. If I go do that …you don't need to train for anything only how to ask • Well I would like to make sure that I have exhausted all my own knowledge first before I would go to anyone else because it is always more satisfying to resolve or do something off your own back than to get help from others. • Not wanting to be seen to need others-…to be independent • If you just ask them they will break it down simpler.

Table 5: Social Identification Dimensions derived from transcripts

Social Identification Dimensions	**A sample of open codes from respondent transcripts based on social identification**
Identification with the function/team	• If you pass on the knowledge everyone can help each other • The more others know the less I have to do so we work better as a team • At some point the manager will be on his own, I wanted him to be familiar with everything • All of the engineering team that are here we are all good to each other like, there is no holding of information • It's one of the beauties of the group being unionised is that you being a star is of no benefit to you … • Some of them don't want to talk to the operators, because there is a cultural thing in here where the operators are here [lower level hand gesture] and everybody else is up here [higher level hand gesture]. • The maintenance people are fairly integrated together and between things like protecting their own jobs and look after one another….
Identification with the shift	• There is from time to time a bit of rivalry between the shifts

	• I was away [on a training course] with Chris and Patrick off the other shift and another guy and we're all fairly close now across the four shifts….so it helps relationships… • The other shift …. they won't admit [they know how to fix it and wont share that knowledge] so they [other shift] look better • He is in [another room] he will come in and help you out …he doesn't want anything to go wrong • I want everyone to be able to do everything. I want him to know as much as I know • If someone is off or someone is sick, there are people to step in • It's not protocol it is just we are all in there together and we stick together
Identification with the organisation	• Well before the guys left [to work in a takeover company where 1 product line remained owned and manufactured in the original company] …you had new guys working alongside the guys who were transitioning across to [the takeover company] • These guys jobs are finished- being let go- and they are training up and sharing their knowledge with those whom will take their place otherwise this plant will fail

Appendix 1: Interview Questions

1. Demographic Information
2. Opening Questions to get Job and Task Insights on which to ground critical incidence question
   - What is your role and the tasks within the role you do now
   - To what extent does your current role utilise the knowledge you acquired from your education and training
   - What other roles and tasks have you worked in
   - How similar are these to the role and tasks you perform now? Explain.
3. Focusing on non-routine job tasks
   - How did you first learn to do this job element (dealing with non-routine tasks)?
   - To what extent did this prepare you for doing the job in real-life circumstances?
   - How effective was this method of teaching you about this job element? Why?
   - Anything about this way that could be improved or better?
   - Did you ever experience situations after you first started working on this job element (non-routine tasks- get example) when you did not know what to do?
   - How did you find out how to do it?
   - How effective was this way of finding out how to do this job element? Any challenges with this method?
   - Anything about this way that could be improved or better?

4. Critical Incident Examples

In relation to the Non-Routine/Reactive element of your job:

- Can you give me one example (focus on examples of job tasks that are dependent on tacit not explicit knowledge) of a non-routine task that you have conducted in the last 6 months?
- In relation to this (example) can you describe the task?
  - **Task Description**
    - What triggers the beginning of this task?
    - What did you do to execute the task?
    - How do you know the task is completed successfully?
    - What procedures are required for this task?
    - Are there opportunities to work-around the procedures or are there unwritten practices that happen that enable the work to get done but are not proceduralised? Tell me about them?
    - Why are they not proceduralised?
  - **Knowledge Requirements**
    - What knowledge do you need to conduct the task?
    - Describe the knowledge you need to do this task?
    - How much about this task did you learn from your peers?
      i. What?
      ii. Whom have you learnt most from?
      iii. What obstacles are there to you learning from your peers?
  - **Knowledge Seeking**
    - How do you go about getting this (non proceduralised/documented knowledge) knowledge from here?
    - Are there any challenges or difficulties in getting this knowledge this way?
    - How do you know where to get it?
    - Why do you go to this source?
    - What do you have to do to get this knowledge? What is the process you have to go through?
    - How effective is this process/mechanism? Is there anything that needs to be done to improve it?
    - Are there examples of knowledge that you need that you cannot get access to or find great difficulty in accessing? What knowledge were you looking for? Explain the difficulties.
    - Are there incidences where you asked for this type of knowledge and the answer has not been provided?
    - Why was it not provided?
    - Whom asked?
    - Why did they not answer?
    - How often does this happen?
    - What can be done/needs to be done to improve this?
  - **Knowledge Sources**
    - In relation to your work as a X and the Non-routine/ reactive tasks you perform can you tell me:
      - Whom do you most frequently work with/engage with to get the knowledge you need to do these types of tasks?

- What for
- What knowledge do they have that you need
- Why do you go to this person for this knowledge specifically?
- Are there others that have this knowledge?
- Why do you not go to them
- What motivates you to source and utilise their knowledge?
- What reduces the likelihood of you sourcing or utilising their knowledge?