Journeys to the Edge: Exploring the Dimensions of Tacit Knowledge Sharing in Communities of Practice

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Abstract

Tacit knowledge sharing has featured strongly in knowledge management literature in the last two decades. Knowledge management is an essential component attributed to underpinning organisational success and tacit knowledge sharing contributes directly to enhancing knowledge creation and to obtaining a competitive advantage in the business environment. Over the same period Communities of Practice (CoP) have risen in prominence as vehicles for tacit knowledge sharing and are seen as hotbeds of informal learning processes. There is, however, limited research into what may influence tacit knowledge sharing in CoPs. Additionally, although recognised as knowledge intensive organisations there has been limited research into knowledge sharing within and across educational institutions. The higher education (HE) sector in general has undergone significant change from a complex evolving landscape of political upheaval, funding divergence and an increasingly competitive worldwide market. Knowledge creation, combining and leveraging to improve an institution's performance, should therefore be considered of critical importance.

Information Technology (IT) and Digital leadership have a key role in transforming Universities to meet the challenges in a global knowledge economy. The IT community within HE has a Sector Professional Organisation (SPO) that supports a number of voluntary CoPs which have operated over the last twenty years. The aim of the research was to explore the dimensions of tacit knowledge sharing in Communities of Practice working within the Higher Education Information Technology Sector.

The study was undertaken from an interpretivist stance and used a phenomenological design with semi-structured interviews with participants who had experience of membership spanning several CoPs as the key data collection technique. The analysis was thematic in nature and brought to light expected and unexpected themes from the experiences of the participants.

The key contribution is centered on the study findings that link the nature and movement of tacit knowledge from the core to the periphery of the CoP with its membership and leadership behaviors that are impacting on its success. From this a conceptual model that informs future HE IT CoP design and key leadership characteristics necessary for success, whilst supporting transferability, due to the findings' close association with tacit knowledge sharing was developed and is presented .

Dedication

For Corinne, Judith, Victoria and Nancy

&

Mum and Dad

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1. Chapter 1: Introduction

1.1 Chapter overview

It is generally accepted that knowledge management plays a critical role in the success of many organisations who perceive it as a strategic means for innovation and the management of competitive advantage (Chua, 2009). Consequently, there is a considerable body of research into this in commercial organisations and a growing interest and body of research into public sector organisations and knowledge sharing (Brown and Brudney, 2003; Sandhu *et al*., 2011). There are two key types of knowledge: explicit and tacit. Explicit knowledge refers to articulated knowledge generally expressed in words and numbers, which are easily transferred from person to person. Whilst tacit knowledge is related to the experiences, skills and wisdom embodied within the individual (Aljuwaiber, 2016). Knowledge management can be defined as "any process or practice of creating, acquiring, capturing, sharing or using knowledge wherever it resides to enhance learning and performance in organisations" (Scarborough *et al*., 1999: p699). Of the five components identified in this definition the key focus of this thesis is on knowledge sharing. One of the main matters for managing knowledge resources is diffusion of knowledge within organisations. In order to be able to codify knowledge it is necessary to be aware of the different formats in which it is presented. Internal individual processes like experience and talent are forms of tacit knowledge that are difficult to codify. Therefore, it cannot be managed or shared as explicit knowledge.

The shift to more distributed forms of organisation and the presence of inter organisational relationships have led to an increase in the transfer of knowledge between parties with asymmetric and incomplete information about each other (Nemoni, 2011). Therefore, knowledge sharing has taken on an importance in its own right. Fenwick & McMillan (2005) identified knowledge sharing as being a particular problem within public sector organisations and specifically within higher education institutions. Further, Fullwood *et al.,* (2012) suggested that knowledge sharing was deemed by academics to be a good thing that would enhance their

promotion prospects and their external profiles and they had a high level of affinity with their discipline rather than their institution. However, it is suggested that research into knowledge sharing in Universities and in particular within the academic communities is limited despite their role in the creation and exploitation of knowledge through research, teaching and learning (Fullwood *et al.,* 2012). Nonetheless academic communities are only one component of higher education communities and another major and often overlooked one in research is professional services in particular Information Technology (IT).

For the last twenty years within the higher education sector in the UK the IT Sector Professional Organisation (SPO) has been a central contributor to the sharing of IT knowledge through its extensive use of CoPs. SPO as an organisation created by its membership for its membership is a phenomenon distinct from the smaller range of Communities of Practice that operate within the sector. It is highly visible and accessible; it has longevity and has considerable success in retaining its membership and in developing best practice toolkits and case studies that are often innovative and highly influential.

From a personal perspective the membership has long expounded its knowledge sharing capabilities and recognised the value of not simply explicit knowledge but the tacit knowledge and learning that takes place within the CoPs. Although CoP literature is relatively new, first named by Lave & Wenger (1991), there is considerable literature in support of their tacit knowledge sharing properties, their structures and the motivations for individuals to be involved. There is though limited understanding of what characteristics of CoPs are affecting tacit knowledge sharing. Consequently, this study examined the key influencing factors in tacit knowledge sharing within CoPs in a Higher Education in Information Technology professional services setting.

1.2 Purpose of the study

From my experience of CoP membership and wider practice experience of knowledge management and tacit knowledge sharing as a Director of Information Services leading both Library and IT services, it was apparent to me there was a

lack of CoPs being used to share knowledge within or across institutions despite their place as knowledge intensive environments. I was increasingly aware of the effectiveness of the CoPs I was involved in and the phenomena that was SPO. Borne out of my experience and growing understanding of the value of knowledge sharing there was an opportunity to look at the characteristics associated with the successful tacit knowledge sharing going on within SPO that could inform and guide future CoP design both for HE IT but also more widely in Education.

The study will therefore look at a cross sector, cross-institutional group of communities of practices (CoP) collectively known as the Sector Professional Organisation (SPO). The SPO executive supports several CoPs based on subject area interest for IT people who volunteer to join and operate the CoPs. The CoPs themselves are currently focused on Corporate Information Systems, Networking, Infrastructure, Programme and Project Management, Learning & Teaching, Staff Development, Enterprise Architecture and Support Services. Many of these CoPs have been highly successful operating for many years despite changing personnel, others however have fallen by the wayside. The CoPs meet regularly around the country reflecting their membership and are seen as highly collaborative forums contributing to best practice, creating toolkits and forming new ideas and solutions to complex industry problems. The CoP volunteers also contribute as sector representatives to other bodies as well as lobbying institutions, government bodies and governments in support of IT and the value it adds to their institutions and the wider communities.

The CoPs themselves are similar to those described by Wenger, McDermott and Snyder (2001). Volunteers populate them with a leader/coordinator known as a ‘chair’ who plays a critical role in bringing the CoP together and focused on its topic area. The volunteers are passionate about their subject area and motivated by this to CoP membership. However, there are other motivations such as mid-career professionals who wish to network with colleagues and who see this as an opportunity to progress their careers.

Critically these CoPs, as suggested in the CoP literature, are viewed as an initiative for knowledge sharing (Aljuwaiber, 2016), antecedents to knowledge

sharing (Zboralski, 2009) and are hotbeds of informal learning processes such as storytelling, conversation, coaching and mentoring. What the CoPs are achieving is the sharing of knowledge but importantly the part known as difficult to codify or document, the 'know how' or tacit knowledge, is being integrated, shared and stored by the CoP increasing substantially the knowledge value (Nonaka & Takeuchi, 1995). The CoPs as volunteers can best be described as social structures that continue to share and store this integrated knowledge despite changing membership. Lots of learning may occur even within these CoPs who may run projects, events or develop case studies but the value of these individual activities are time based and therefore short lived. It is the CoP itself that retains the knowledge and importantly the 'know how' and evolving experience of those contributing their stories to the knowledge and current best practice.

The CoPs, as indicted above, conform to the known structural model. They have a domain, the sense of common purpose and interest quite clearly exemplified as topics or expertise related to IT. A community, this fosters interactions and relationships and encourages the conversation, storytelling, promotes sharing and fosters the sense of belonging. The practice, which develops the knowledge and understanding of its membership through a set of frameworks or toolkits and, in these examples, events such as seminars and conferences that embed the knowledge and create the basis of knowledge required to be a part of the community.

The CoPs share this basic structure and their membership brings new 'hot' topics to them in order to address known issues or identify new or developing problems to be solved. The SPO CoPs are seen as particularly successful because of their longevity and their contribution to the sector and beyond.

1.3 Aim and objectives of the research

The aim of the research was to explore the dimensions of tacit knowledge sharing in Communities of Practice working within the Higher Education Information Technology Sector.

The research sought to explore the views and perceptions of the CoP membership on the characteristics affecting tacit knowledge sharing in their CoP environments. The study was bound within four key objectives,

1. To critically examine the literature on CoPs and tacit knowledge sharing
2. Capture through semi structured interviews the lived experience of the CoP actors
3. Identify the characteristics impacting positively and negatively on the sharing of tacit knowledge through thematic analysis
4. Produce a set of recommendations to inform knowledge and practice and enhance the development of future CoP tacit knowledge sharing processes.

1.4 The Higher Education (HE) Information Technology (IT) context

Higher Education in the UK is delivered principally through publicly funded institutions of which, according to Universities UK (2017), there are 165 Universities or specialist institutions. The aims of Universities were established in the Robbins Report published in 1963 and outlined as: the instruction of skills; the promotion of the 'powers of the mind'; the advancement of learning; and the transmission of a common culture and common standards of citizenship. However, the Higher Education sector has seen rapid change in recent years with divergent funding models operating between Scotland and England. The Robbins Report (1963) furthered the cause of education in the UK by recommending its growth however, it omitted comment in areas such as research activity and commercial development activities. The Further Education Act (Scotland) 1992 extended the number of Universities to include Edinburgh Napier, Glasgow Caledonian, Paisley, Robert Gordon and Abertay, collectively known as 'post '92'. The continual upheaval occurring within the Education sector mainly due to funding has been added to through emergence of digital economy and technologies. This has seen many disruptive technologies enter into the market economies and an explosion in digital information and its exploitation.

The UK government reports that *'Today 82% of adults in the UK are online. Completing transactions online has become second nature, with more and more of us going online for shopping, banking, information and entertainment. Why? Because online services tend to be quicker, more convenient and cheaper to use'.*

Universities have been successful over a number of years in centralising, consolidating and designing their IT infrastructure, systems and services to be resilient, efficient and cost effective. IT deployment is seen within the sector as progressive, effective and innovative at implementing technologies, yet avoiding the pitfalls of being at the 'bleeding edge'. The sector has, however, seen significant impact of changes across the UK including the adoption of different models for funding and the considerable pace of technological change driven by the consumerisation of IT. Add to this the McClelland (2011) and Universities UK (2011) Reports here in Scotland and Department of Business Innovation and Skills (2011) south of the border. We have seen considerable government intervention in not only funding but also the operating models and the impact on the governance and administration of our Universities. The use of technology has also changed at considerable pace with the emergence of Bring Your Own Device (BYOD), Social Media, Software as a consumable item and Massive Open Online Courses (MOOCS), which are often demand-led and outwith the control of IT. Despite this pace of change, there are consistent and recognisable areas of business function for Universities:

- Learning, Teaching and Assessment
- Research
- Administration
- Commercial activity
- Internationalisation

IT systems enable all of these functions to operate under ever-evolving business processes, transactions and engagement with staff, students and partners on everything academic, social and business. IT departments therefore have a critical role in the operation and future aspirations of all areas of a University.

IT is now driving technological change in the way universities handle data, information and knowledge, which are now considered as key strategic assets. IT is at the core of the University's knowledge capital and its effective provision and management underpins what we do in teaching and learning, in research and knowledge transfer, in internal and external communications and in governance, management and decision-making. As such university knowledge and information is extensive and diverse and brings benefits to everyone in the community: students, researchers, teachers, professional services staff and partners across higher education and beyond.

The knowledge landscape is dynamic and much of this is becoming technology-driven with the emergence of 'big data'. (Brown *et al*, 2013) All irrespective of time and place require access and increasingly systems must interact effectively with one another to improve efficiencies. It is rapidly becoming the expectation that the provision and availability of electronic information and the analytics that can be drawn from them provide explicit knowledge of the business of universities as well as being at the heart of learning, teaching and research. Responding to these changes and the growing demands of users of information is challenging. The ready availability of information is a positive step but caution is required as this trend needs to progress alongside measures to ensure the security of the systems that supply that information is not compromised. A key operating assumption is that future users of services will be more demanding and discerning and there will therefore be a need to ensure that information and knowledge management continues to be relevant, providing a basis for improving delivery of services and facilitating provision of high-quality information.

Arguably, the Higher Education sector is behind in leveraging the effective knowledge level now evident in the commercial sector. It would though seem that disciplines such as IT within HE have kept pace with commercial and public sector thinking and are exploiting the use of vehicles such as Communities of Practice to share explicit knowledge but critically to enhance knowledge creation and innovation activities through the sharing of tacit knowledge to drive forward their membership and the discipline itself.

1.5 The researcher

I have worked within the higher education sector for 23 years initially as an application developer, designing and developing systems to exploit large bodies of data for the patent and trademark offices through European funding and later as an Assistant Director of IT and now Director of Information Services. As essentially an IT data and information specialist rooted in computer science, my career had influenced my philosophical stance which was positivistic in nature. However, with the assistance and personal development provided by the DBA I considered carefully my area of interest and the opportunities provided by an alternative philosophical approach and world view. It became clear that by adopting an interpretivist approach I would be able to consider more clearly how tacit knowledge may be affected within CoPs. Polanyi (1967) posited that tacit knowledge could not be codified and, although my work with Artificial Intelligence suggested otherwise through coding 'tacit like responses' it was evident to me that a positivistic view was unlikely to bring understanding of what was affecting tacit knowledge sharing within CoPs. I therefore made a pragmatic and rationalised decision to adopt the interpretivist philosophy to seek the data I was intent on discovering but also to challenge myself personally and hopefully develop further. I hoped also to inform my future work as an institutional and sector information leader and explore all possibilities to further enhance and improve knowledge share and knowledge creation.

1.6 Structure of the thesis

This thesis consists of 7 chapters with supporting materials in a series of appendices. Having provided the introduction in this chapter with the topic, aim and objectives clearly identified the thesis then follows the following structure:

Chapter 1 Provides an introduction to the thesis topic, and an overview of my own interest in the area.

Chapter 2 reviews and considers the literature on Communities of Practice and their role in tacit knowledge sharing is presented and consideration is given to the relevant tacit knowledge sharing literature. The chapter

concludes with a summary of the gaps identified from the review and the support for the questions posed by the study

Chapter 3: Considers the research methodology and the exploration of the options provided by the various philosophical stances. Careful thought and consideration was given to the ontological, epistemological and axiological positions adopted by me. Following a great deal of reading I concluded that as an interpretivist, a qualitative approach using a phenomenological design was the most appropriate for the research questions and the fundamentals of the topic to be explored. The use of semi-structured interviews was considered the most appropriate data collection technique. All ethical issues for this study were identified and addressed. Additionally, the pilot study and the data analysis technique are described.

Chapter 4: Presents the findings from the data collection and considers the emerging themes from the data analysis. From the findings, a conceptual model was developed and is presented on the characteristics associated with tacit knowledge flow from the core of the CoP to the periphery and back. Expanding on this flow was the identification of those behavioural characteristics impacting both negatively and positively on tacit knowledge sharing.

Chapter 5: Discusses the key findings in relation to the main literatures and presents a synthesised conceptual model for the tacit knowledge flow within CoPs and the characteristics identified. Discussion of those emergent themes that were unexpected and those impacting 'longevity' are also considered.

Chapter 6: Considers the extent to which the aim and objectives have been achieved, considers the limitations of this study and makes recommendations for both future study and practice.

Chapter 7: Provides concluding remarks.

2. Chapter 2 – Literature review

2.1 Introduction

This chapter presents a review of the relevant literature related to the research area and key research questions. The review is presented in three sections. Section 1 is concerned with providing an overview of the theoretical background of Communities of Practice (CoP) and their relationship to Social Learning Theory (SLT). Section 2 explores some of the seminal literature definitions of CoPs in particular, their purpose, structure, and their value and the relationship between CoPs and knowledge management. Elements of social interaction and the link with Habermasian communicative theory is also provided here. Finally, the literature on tacit knowledge sharing that indicates the value and contribution of tacit knowledge, its definitions, vehicles used to help its stickiness and exploit its potential and value to organisations is discussed.

2.2 Social Learning Theory (SLT)

Albert Bandura in his seminal work 'Social Learning Theory' (SLT) (1971) suggested that learning occurs in a social context. Bandura went on to outline the key features that learning cannot be described as purely behaviour and highlighting it as a cognitive process that occurs in a social context. Furthermore, Bandura correspondingly suggested that learning can happen through observation and indeed by observing the consequences of that behaviour. Although this observational learning occurs it does not necessarily lead to a change in behaviour thus supporting the notion of learning and that reinforcement does have a role to play but is clearly not the whole story. Positive and negative reinforcement or the consequences associated with action does though separate learning from simply imitating others and is referred to by Bandura as vicarious reinforcement. Critically Bandura (1971) posits that the learner is not a passive recipient of information, describing this as 'reciprocal determinism' Bandura is suggesting learners do not simply absorb information but are influenced by cognition, environment and behaviour (Bandura, 1971; Grusec, 1992).

Bandura's SLT brought together behavioural and cognitive theories to understand learning and how it occurs in wide ranging scenarios. Bandura explained that learning could occur through someone demonstrating the behaviours or through instructions where the activity was described in detail including all actions and thoughts in detail or through story telling whether fictional, multimedia or illustrations used to impart learning. In these approaches to imparting learning, vicarious reinforcement is described as the positive or negative reasons for changing individual or group's behaviour (Bandura 1971; Fahle & Edelman 1993).

Social Learning Theory has been linked to CoPs as learning vehicles or learning systems through offering observational learning as a cornerstone of advancement in groups. (Farnsworth, Kleanthouse & Wenger- Trayner, 2016). The more diverse the group participants the more innovative the group is likely to be, supporting the notion that CoPs although bound by a common interest or topic could benefit from the participation of those from different backgrounds with different world views (Zboralski, 2009). Innovation or problem solving thus occurs in social groups through participants' observing and abstracting from the range of models used to tell the story and impart the learning, recombining all the features to create new possibilities for problem solving or as a start of innovative solutions and ideas (Lee et al, 2010, Gong *et al*, 2014).

Communities of Practice are seen as vehicles for promoting innovation, developing new ideas and sharing tacit knowledge (Lee *et al.*, 2010; Farnsworth, Kleanthouse & Wenger- Trayner, 2016). It is suggested that identity is central to human learning and this can be extended to describing an individual acting as a member of a group or social community that reaffirms its identity though learning (Wenger 1998). It could be suggested then that learning might be viewed as often incidental to the social processes occurring. Communities of Practice are social in nature often voluntary or informally formed; it should be no surprise that although bound by a common interest or passion for a topic, that learning can occur both within the practice area or entirely coincidental to it (Lave & Wenger 1991).

2.3 CoPs as vehicles for social learning & the sharing of tacit knowledge

The concept of a 'Community of Practice' as a way of understanding learning in organisations was discussed initially by Lave & Wenger (1991). They define it as the major element of their theory of 'situated learning'. This theory referred to workplace learning that takes place through participation, practice, and interaction with colleagues (Sztangret 2014) rather than through the formal learning route. Bredillet (2008) suggests group members learn by participating in the community and practicing their jobs. Yet, the term 'Communities of Practice' cannot really be described as a new phenomenon. Anthropologist for decades prior to this understood, from studies of social learning and behaviour within communities, how social groups shared 'practice' and 'learning' to achieve goals. The collaboration involved in Communities of Practice that share a common goal or interest is suggested as critical to learning and is widely accepted from studies of social constructivist theories. This where learning requires activities associated with the learning and the outcomes of learning are affected by the context in which it is learned (Brown, Collins & Duguid 1989).

Wenger (1998) suggests the principles that support CoPs emerge from Social Learning Theory (SLT) and that they promote the primary components of learning which are meaning, practice, community and identity. Lave and Wenger (1991) argued that learning requires engagement, rejecting the concept of individual learning and the existing pedagogy based on lone research and study. They went on to propose a model for situated learning, linking knowledge with practice and context. The model originally proposed by Lave (1988) suggested knowledge needs to be shared in real life situations and therefore requires social interaction and collaboration. Through the engagement with the CoP the participant develops expertise from the learning culture. CoPs were believed, by those who formed the Institute of Research on Learning (IRL), to be a way of understanding how competencies are formed and sustained in organisations (Wenger, 1991). This thinking, related to social learning and identity formation in relation to the development of an individual's or organisation's research capacity was further developed by Corlett, Bryans & Mavin (2005: p158). They proposed that the process of social learning underpins the CoPs ability to promote reflexive learning

as a methodology to explore individual experiences. In their chapter they focus particularly on identity formation suggesting that CoPs enable “identity construction for new researchers and identity transformation for experienced researchers”. (2005:p157).

John Seely Brown, then chief research scientist at Palo Alto Networks and George Pake, who founded the Xerox Palo Alto research corporation, co- founded the IRL in response to the need for a new understanding of learning. This was to be different from the cognitive view of learning as an individual and internalised activity best separated from the rest of our activities. The Institute founders, having invited Etienne Wenger to join in 1990, went on to explore how the CoP concept contributed to the role of social and community learning in embedding expertise and knowledge in those participating in the community. Consequently, CoP theory and research have become increasingly prevalent in management literature and have contributed to knowledge management, the concept of a learning organisation and organisational performance (Senge *et al*, 1999). From its beginnings and emergence from IRL and its theoretical foundation, CoP literature has explored practical uses and value to organisations and, by the beginning of the last decade, was seen as a way for organisations to share, store and grow knowledge successfully (Wenger, McDermott & Snyder 2002).

Since then CoPs have moved online and become virtualised as technology has impacted on communities extending their boundaries globally. The period from the late 80’s through to the current time has seen an explosion in affordable globally connected computing creating knowledge storage and sharing capabilities for individuals, SME’s and global multinational companies (Couros, 2003; Siau,Erickson & Fui-Hoon Nah, 2010). Those of us working for large organisations may recognise learning through the information provided in training, manuals, directives and even job descriptions which often dictate how we are to work and the expectation of the organisation. But one can question the full extent of the value these organisational objects provide and closer observation of working practices indicate that activities such as storytelling, are often used as a method of sharing information and practice yet not visible in prescribed organisational objects.

Studies of the working practices of technicians have demonstrated that organisations may attempt to describe how an employee should operate and inadvertently get in the way of the essential knowledge sharing and innovative problem solving between colleagues who are sharing experience through the practice of storytelling (Orr 1990). The organisational objects described above are referred to as canonical descriptions and organisations that rely solely on this approach may suffocate creativity and innovation as well as suppress or de skill its work force (Brown & Duguid, 1991). Canonical practice could also damage the relationship between the employee and the organisation as the perception may be that it does not recognise the value of the employee and their contribution (Aydede & Robbins, 2009). Non-canonical practice requires the fostering of communities within a community that supports learning through sharing of experience. This sharing of experience often through storytelling allows for the story to be retold and the new storytellers to add to or share further experience in relation to the original. Such convergence of stories can be more insightful and contribute further to the communities' knowledge (Brown & Duguid, 1991). These communities are linking knowledge with practice, and if these are separated the experiential knowledge available to the employee and the organisation is limited as vital information is lost (Lave & Wenger, 1990).

The behaviour of large organisations is often inflexible and weak at innovation (Tushman & Anderson, 1986; Raisch, *et al.,* 2009) not just because of their size but because of their prescriptive approach to practice. Linking knowledge with practice and using Communities of Practice to bridge the gap is seen as critical to organisations successfully evolving and innovating. Ensuring opportunities for non-canonical activity to exist through fostering Communities of Practice frees employees to learn, share knowledge and innovate (Brown & Duguid, 1991). Critically knowledge is shared and evolves within the communities stored as stories and shared experience and available for reference and reuse. It could be argued that these communities are a human database adding its own metadata, description and coding to the stories and although factual errors may arise the fundamental practice survives as a pointer to further innovation or creative problem solving. (Moon *et al.*, 2011; Bosua & Venkitachalam, 2013)

2.4 The value and storage of practice and tacit knowledge

The value of knowledge and its ability to leverage competitive advantage is seen as strategically important to the commercial and public sectors (Allee, 2000). Many organisations have attempted to influence this advantage through the codification of knowledge with significant investment in IT to support this approach (Hansen, Nohria & Tierney, 1999). Codification attempts to capture 'explicit' knowledge in systems that can then be reused using rules, codes and descriptions to store knowledge in a database. However, this has proved problematic as only knowledge that could be easily stated, described, codified and understood could be stored leaving critical 'tacit' knowledge which is more difficult to code and record out of the system (Probst, Raub & Romhardt, 2000, Zboralski, 2008).

Tacit knowledge within individuals or groups in an organisation stems from experience, perceptions and values and is further dependent on the organisational or group context. Although difficult to quantify, tacit knowledge combines the experience, analysis and imagination necessary to equip individuals and groups with the intellectual capital to be creative and revise their understanding of a situation in order to achieve deeper understanding or a solution to a problem (Volpel, 2002). It is described by Herrgard (2000) as an iceberg where the 'below the surface' element, the analogy for tacit knowledge, is hugely valuable but difficult to see or access, whereas explicit knowledge is the 'top', visible above the waterline and easy to see. This know-how and experience referred to by Brown and Duguid (1998) has proved difficult to encode and store and it is argued that Communities of Practice are a mechanism necessary for organisations to utilise valuable shared experience and knowledge to be creative and innovative (Wenger, McDermot & Snyder, 2002).

The Conference Board and the American Management Association conducted a number of surveys in the late 90's and early 2000. The outcomes indicated that over 72% of organisations had some form of knowledge management initiative. A particular survey undertaken by FUMSI (**f**inding, **u**sing, **m**anaging and **s**haring **i**nformation), a UK business information society in 2009 on knowledge

management initiatives, highlighted that more than one-third of respondents indicated that knowledge management is more important than it was a year ago. More than half report that knowledge management is 'implemented from the top down'. Furthermore, those offline staff meetings are reported as the most effective tool for knowledge management due to the ease of sharing and face to face interaction. Intranets are used in more organisations, but are considered less effective. Online and offline communities of practice are used by similar numbers of respondents; however, offline CoPs are much more likely to be called 'effective' than online CoPs.

The rise of social networking has, not surprisingly, seen CoPs move online. Social networking sites such as Facebook, Instagram and Twitter, through their membership approach to online communities providing a combination of blogs, micro blogs and images, create ways of interacting and information sharing. This recent availability of technology supports CoPs and organisations such as Government, Education and private organisations which have established Virtual Communities of Practice (Siau, Erickson & Fui-Hoon Nah, 2010).

The outcomes of the surveys appear to support the value that organisations are placing on knowledge, with some organisations developing or implementing initiatives in this area. Additionally, the surveys suggest that CoPs are an effective method for successfully sharing and storing knowledge. The ability for any organisation to recall expertise or knowledge about its business or customers saves significant amounts of money and those companies successfully implementing KM solutions such as the World Bank, Dow Jones and Prat & Whitney are demonstrating considerable growth (Murphy 2007). Indeed, the literature suggests that for organisations that require to reuse best practice and achieve operational efficiencies, investment in an IT solution brings many benefits. In contrast, those organisations which require innovative solutions to organisational problems or involved in creative problem solving, benefit more from the sharing and storing of tacit knowledge in groups across the organisation. These groups share common goals and interests and could be described as CoPs (Hansen, Nohria & Tierney 1999; Wenger, McDermott & Snyder, 2002, Ardichvili, 2008, Carso, Giacobbe & Martini, 2009, Brown *et al*., 2013)

2.5 Defining Communities of Practice (CoP)

The reusability of the features associated with CoP theory and its implementation in practice may in part be due to its adaptability to different disciplines as a way of explaining how communities learn and share knowledge in different environments. Communities of Practice have a number of definitions and these have been adapted for their use in the practice of Knowledge Management, Organisational Learning, Social Networking and Information Science. (Kerno, 2008, Chua, 2009, Jeon, Young-Gul, & Koh, 2011) Indeed, the environment will make its own demands on a CoP and demand variation in its structure and scope. This does not necessarily change its basis in theory but rather it adjusts the definition to allow it to be ported to its application in the store of knowledge and its role in learning and innovation, as it responds to changing environmental factors (Brown & Duguid, 1991).

The seminal work by Wenger, McDermott & Snyder (2002: p4) describes a Community of Practice as 'groups of people who share a concern, a set of problems, or passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis'. It is further suggested (Aljuwaiber, 2015) that CoPs are the 'invisible key to success' and Stewart (1996) suggests that for global business CoPs are informal groups formed from within by people with a common problem and complementary skills and resources. Wenger-Trayner (2015:p1) updated the definition stating that CoP's are "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly". Such groups should be encouraged but not managed, and even allowed to trade secrets with cooperative outsiders. This type of informal network includes small groups of people who have worked together over a period of time and through extensive communication have developed a common sense of purpose and a desire to share work-related knowledge and experience (Sharp, 1997). It could also be argued that the definition can become refined and capable of being ported to different applications as the theoretical definition evolves and then becomes adopted into practice. It has certainly been suggested that Wenger (2002) is moving from a theoretical development of the concept of CoPs circa 1998 to a more

managerialistic viewpoint based on practice in 2002 (Sharp, 1997; Couros, 2003; Cox, 2005).

The CoP relationship to knowledge management is also espoused by Marco & Rodríguez (2010) for fundraisers and is described as; “Knowledge is integrated in the life of communities that share values, beliefs, languages, and ways of doing things”. These are called Communities of Practice. Real knowledge is integrated in the doing, social relations, and expertise of these communities. Virtual Communities of Practice (VCoP) and studies in this area have added to the CoP definition by defining a VCoP as a collective of voluntary knowledge contributors, distributed across traditional organizational boundaries, which enables members to share insights, experiences, and practical knowledge (Zhang & Watts, 2008; Bourhis & Dubé, 2010). This concept of VCoPs does contradict the notion of face to face communication and groups of people sharing knowledge through the non-spoken elements of information exchange. It remains to be seen how these communities will develop and how successful the potentially global distribution of these communities will be without the visual and tonal spoken exchange (Cox, 2005).

It is suggested here that CoPs are recognisable for most of us as something we are all involved in to a lesser or greater extent in our places of work. These communities are often informal gatherings at the vending machine, coffee room or meeting places. We participate in these communities at different levels depending on our interest or motivation and we contribute from our knowledge or experience. In sharing each other’s knowledge we can occasionally solve a problem or discover a new or innovative solution (Wenger, McDermott & Snyder, 2002). However, for many, if asked to define a CoP they may not automatically associate this activity with this terminology.

From the review of definitions of CoPs thus far it is suggested that a CoP could be described as local or remote community informally engaged in sharing information, practice and learning and, through interacting, they perpetuate and disseminate knowledge and experience, leading to problem solving and innovation, mutually benefiting themselves and their organisations. We

participate in CoPs informally but they differ from informal networks in having a purpose, common interest or goal. The commonality in the definitions is found in the voluntary and self-organising aspect of CoP formation and operation that is very different from other types of teams.

2.6 Perceived differences between CoPs and teams

Communities of Practice are fundamentally different from teams primarily because they are not associated with any hierarchical or organisational structure (Gilley & Kerno, 2010). The literature on teams and team types is extensive but there is commonality in their construction and characteristics. Teams are specifically organised and designed and importantly they are managed or empowered through their supervisors. Their management or supervision is the binding of the team and the source of their direction. Teams in essence are groups of people that are put together administratively and can be described as 'primarily a construction of the system' and are tactical i.e. focused on problem solving, goal delivering or creativity (Larsen & Lafsto, 1989, Melcrum, 2000, O'Donnel *et al.,* 2003, Pryor *et al.,* 2009).

CoPs by comparison are not time bound or goal driven in the manner that project teams or organisational units are (**see Table 1**). They also lack the accountability normally associated with teams designed and developed for a specific purpose or function. Contrast the above with CoPs that are not formally bound or led and come together informally with a common interest or goal. It becomes apparent that they do not necessarily fit within a structure though they may well exist within a team. They can however extend across teams and organisations evolving and growing as long as a shared interest or goal exists. The membership is fluid and shrinks as individuals lose interest or grows as new members join (Wenger & Snyder, 2000; Wenger, Snyder & McDermott, 2002).

Table 1: Comparative table of CoPs and other structures adapted from Wenger and Snyder, (2000)

	Purpose	Members	Binding	Duration
CoP	Develops members' capabilities to build and exchange knowledge	Formed informally by those with common interest or goal	Personal commitment, social compatibility, identification with group's	As long as interest is maintained
Formal work group or team	Delivery of product or service	Team defined by the organisational structure and reporting to a leader/manger/ supervisor	Job specification/ requirements	Until organisational change
Project team	Task specific	Assigned by Senior management	Project goals and objectives	Until project completed or stopped
Informal network	Collects and passes on business information	Friends and business acquaintances	Mutual need	As long as a reason to connect exists

Melcrum (2000) proposed that teams are described by instrumental logic and that CoPs belong to the 'life-world' with characteristics associated more with communicative logic. CoPs as discussed earlier are not necessarily goal driven but are driven by common interest and shared values and importantly motivated altruistically rather than by command. However, little is written in academic literature about how agreement between group members is bound and whether a possible unspoken social contract based on a complex natural social bonding exists.

Table 2 links Habermasian life-world communicative logic to CoPs and compares it to a team's instrumental logic. Jurgen Habermas, a sociologist who developed a theory of communicative rationality, suggested that communication has the potential to formalise into explicit knowledge (Feteris, 1999). Melcrum (2000) and O'Donnel *et al.,* (2003) explore and relate Habermas' theory to assist in describing CoPs communication, underpinning the belief they are excellent vehicles for knowledge. Further, it is argued that treating people as instruments of logic is dangerous and believing they will behave as the organisation wishes is a fallacy leading to the belief that any significant organisational change programme that ignores informal networks is a risky strategy (Handy, 1996).

Table 2: Comparing teams using instrumental logic and CoPs with Habermasian 'life-world' characteristics (Adapted from O'Donnell *et al*., 2003)

Teams		**CoPs**	
Instrumental logic	Description	Communicative logic	Description
Driven by deliverables	Allocated goals shared by the team. Valued according to their ability in meeting of their goals	Driven by value	Common interest Evolving and re-evaluating value
Defined by task	Have interdependent tasks with clear team boundaries	Defined by knowledge	Interdependent knowledge and permeable boundaries
Developed through a plan	Tasks and objectives are managed and monitored and related to a work plan	Develops organically	Variable contributions facilitated by Informal social connections
Bound by a commitment	Shared accountability with agreement with manager/supervisor	Bound by identification	Shared identity based on trust with an emergent leader or coordinator
Reflexive learning	Cognitive focus: Which may suggest direction or shifting by management Attribution focus: Possible expected outcomes as prescribed by the organisation	Reflexive learning	Dialogical focus: A democratic approach to action (Laidlaw 1994) Constructive focus

Laidlaw (1994) discussed dialogical focus, which she described as the communication of the positioning and counter positioning between her and her student (Hermans & Hermans, 2010) as a way of enabling her to 'live out' her values and enabling others to do the same. An observation could be that in this exchange of values not all values will be explicit and that some level of social agreement is taking place similarly between CoP members, forming a tacit social contract. The democratic discussion that leads to agreement in direction by CoPs and the dialectical relationship between their actions and their mutual facilitation or agreement to share knowledge may be evidence to support why CoPs have agility and the ability to transform the group as well as the individuals. This may suggest that the CoPs' ability to decide its own outcomes and the tacit

agreement required to shift focus between ‘cognitive focus’ and its ‘attribution focus’ may be part of the complex social interaction and self- awareness required to learn and share quickly. Thus, bypassing the need that teams require to learn to work together and overcome the resistance a team may have to its prescribed direction or goals.

2.7 The role of Community of Practice

According to Bridwell-Mitchell (2016:p165) Communities of Practice are groups of professionals who share practices, communicate frequently through informal channels and develop a set of independent identities that relate to work and cultural understandings of their group. A sense of community of practice seems to play a similar role to that of group cohesion in small groups and according to Nistor *et al.,* (2015:257) both sustain participant’s knowledge sharing, which in turn substantiates the socio-cognitive structures that make up the CoP such as scholar identities, practical repertoires in research and teaching or relationships between colleagues. When applying a CoP definition to academia there are at least two possible ways to define the CoP boundaries. The first, Academia may be seen as a single, large CoP with individuals being able to share practice in their own and with external institutions and because of the continual evolution of international collaborative academic research (Huang *et al.*, 2014). The second, academic CoPs rooted in their discipline but operating in small clusters are operating in socially connected academic environments (Dornbusch & Brenner 2013).

Wenger, McDermott & Snyder (2002) proposed a structural model that all CoPs can be identified by. As discussed earlier the definition of a CoP has many forms, however identifying the group or team as a CoP regardless of its evolution is suggested as having a ‘unique’ combination of elements. The model itself has three elements which are Domain, Community and Practice. Together these constitute a CoP and define participation as a joint enterprise (Ackerman, Petter & Laat, 2007).

2.8 The CoP Domain:

A CoP cannot be described simply as a group of people or connections between them. Networks are groups of interconnected people and the connection may not be obvious nor state any agreement on why the connection exists. It is the domain that defines a CoP and differentiates it from general networking by describing the membership's common interest. Membership of the CoP and ownership of the domain itself suggests commitment to existing shared or evolving competencies (Wenger, 2006). The shared interest of the domain forms the CoP's identity and in sharing the interest and the responsibility for it fosters joint responsibility; a key feature in establishing the commitment to the CoP (Allee,2000). It cannot simply be described as a group of people or connections between them. Networks are groups of interconnected people and the connection may not be obvious nor state any agreement on why connections exist. It is argued that the successful development of a CoP and the establishing of its legitimacy in an organisation are dependent on the communal dialogue that shares understanding and brings about agreement to commit to the domain through this shared understanding. The questions necessary in negotiating and agreeing the domain are suggested as;

1. What topics are of interest?
2. Does the topic fit with the aims of the organisation?
3. Are we ready to lead in this topic?
4. What's in it for us?
5. What is the leading edge of our domain?
6. What kind of influence do we want to have?

(Adapted from Wenger, McDermott & Snyder, 2002: p75)

Collaborative activity and participation realised through people coming together for similar reasons, such as the shared motivation of solving a problem or expanding their skills or knowledge, is strengthened through the members of the community working in a domain that matters to them (Ackerman, Petter & Laat, 2007).

2.9 The Community:

The community is formed by participants engaging in discussion and activities to assist each other to learn and share knowledge and competencies (Wenger 2006). In engaging with the community, members are collaborating and building relationships with each other that allows for openness and ideas sharing based on trust and supportive learning (Wenger, McDermott & Snyder, 2002). Sharing activities and learning from each other within the community does suggest a form of social learning apprenticeship. (Corlett, Bryans & Mavin, 2005) However, this is not depicting adequately that its community members are actively participating in the sharing of knowledge and learning together and describing to each what it represents to them as individuals (Cox, 2005). Communities require to be nurtured and to meet regularly to ensure interest is maintained and that they can mutually reach agreement on any issues or conflict. It is important that the community deals with promoting new membership and to widen its expertise and maintain momentum (Wenger, McDermott & Snyder, 2002).

In his work, 'Beyond Certainty', Handy (1996) likened a company to a village with communities as a means of explaining community ownership as a shared entity. In sharing the community social responsibility, members help their community to discover its direction and balance, strengthening its identity and creating the social cohesion that supports its members to bind together (Wenger, McDermott & Snyder, 2002).

2.10 The Practice:

This element suggests CoPs are not simply about sharing interests but that those interests should lead to the participants becoming practitioners (Wenger, 2006; Sim, 2006). Informal participation in networks may facilitate interesting discussion or interaction but is not necessarily strong enough to develop practice. CoPs by developing practice embed resources that can become a toolkit to facilitate capability using vocabulary, routines, documents and artefacts (Allee, 2000). Unlike structured teams that have been established by an organisation and, form as instruments of logic, CoPs do not prescribe behaviour for the community, but rather it agrees behaviour and standards that are expected together and puts

them into practice. In essence, the practice element of CoPs defines them for the organisation where they belong by answering key questions such as, 'What knowledge should be shared?', 'When processes should be standardised?', and 'What development project should the community tackle?'. This aligns them with the aims and possible goals of their organisation (Wenger, McDermott & Snyder, 2002).

In summary, to ensure its ongoing stability, the CoP requires to address and balance the above criteria for success. This balancing act needs careful attention on an ongoing basis, similar to a business case, to ensure it is meeting its original goals. This potentially benefits the CoP and its members by assisting discussion on the fundamental reason for its existence and allows it to adapt and grow as new understanding is reached. Considering the business case analogy may also assist the business or organisation to understand how the CoP is aligning itself to its aims and goals. (Wenger-Trayner 2015) It may also provide the justification for support or resources from the organisation and present an image that is less challenging or misunderstood. This balancing of the CoP with the organisation could allow the organisation to input into its reason for being while allowing the CoP to form organically and build on its existing personal networks (Wenger, *et al*., 2002)

2.10.1 Membership

Wenger, *et al*., (2002) suggested three degrees of separation in CoP membership, those at the core of the community surrounded by those members active in the community and an outer ring of members on the periphery (see Figure 1). Membership of a CoP takes many forms and does not require to be explicit in every CoP formation however there are some key roles required to sustain, motivate and connect CoP membership. As Wenger *et al.,* (2002) allude to only engagement as a feature of the degrees of participation, it is suggested that others may be open to consideration. As an example the researcher suggests what features motivate the CoP knowledge sharing characteristics? and what features of the roles might help connectivity and therefore engagement either consciously or unconsciously? Does the literature explain this adequately

or is there the sense its variously identified characteristics have a role to play but are as yet unexplained?

Figure 1: Degrees of Community Participation (Wenger, McDermott & Snyder, 2002, P.57)

2.10.2 Key CoP roles

The literature identifies a number of key roles which together help the development and functioning of a CoP, for example, the role of the leader, facilitator or co-ordinator is central to the cultivation and ongoing performance of any CoP and if they are to be motivational tools then events, meetings and discussion have to be lively, interesting and inspiring. CoPs should be socially constructed and therefore find their own level and social order and although there are naturally emergent leaders, they cannot act unilaterally given the volunteer and democratic nature of the CoP (Wenger, *et al*., 2002).

2.10.3 The role of the coordinator or facilitator

Alive' CoPs, a term coined by Wenger, (2009:p2) have a co-ordinator who functions as event organiser and as an integral member of the core group at the heart of the domain and who can communicate and connect to those who may be interested in the CoP activity. The online Oxford English Dictionary defines a facilitator as 'someone who makes progress easier' and this assists us in our expectation of this role. Within a CoP, facilitators are believed to support sustainability and play an important role in nurturing it (Fontaine 2001). A facilitator may simply organise events and, like a co-ordinator, manage communication between members to encouraging participation. This role is suggested as the foundation of the success of a CoP and, in those that are more intentionally formed in organisations, can be tasked with identifying new recruits, encouraging new members as well as sourcing support and sponsorship (Wenger, *et al*., 2002).

More recent research has suggested the need for a facilitator who can break down barriers and display the skill associated with bringing the best out of people to achieve success for the CoP (Tarmazi, Vreede & Zigurs, 2007). Although this tends to focus on the role of a facilitator in online communities, the role of facilitation adds to the co-ordinator role through not only bringing people together but in acting as a signpost for key topics. Additionally, inefficiency that might creep in through loss of focus could ultimately result in the disintegration of the community (Kimball & Ladd, 2004). There is limited research on the role of facilitators in Cops, however there appears to be the beginning of some understanding in comparison to other disciplines and the benefits they can bring (Johnson, 2001).

2.10.4 The role of the broker

The role of the broker has emerged as another fundamental role in negotiating the learning contained within CoPs. The role of the broker is a complicated one in that they support the linking of practices being shared within the CoP. Further, the broker participates in ensuring learning from one practice informs another. If we accept that CoP's can be heterogeneous and attract people from different

functional areas, then we can see opportunities for cross fertilisation of ideas that possibly will bring about new understanding or knowledge. Members from different disciplines have characteristics, language or alignment to subjects that cause resistance or challenges in cross fertilisation of ideas and it is this crucial point that the broker can intervene to ease communication by identifying commonality, thus bringing together those who might benefit from sharing (Hallam *et al.,* 2009). This is not to be confused with the facilitator or co-ordinator role as, interestingly, the individuals who naturally gravitate towards this role tend to be on the periphery of the community core and may not wish to have a leadership role or deep interaction with the group (Wenger, 1998).

2.10.5 The role of the leader

Wenger, *et al*., (2002) suggest the role of the community co-ordinator is essential in a CoP's formation. They go on to describe community leadership with the role of the community co-ordinator. This may be because they are concerned with their notion of a CoP as being a socially formed phenomenon and have a certain discomfort with leadership in its traditional team description. More recent research has begun to separate and define these roles in relation to the challenges of CoP leadership highlighting the importance of those in control of ensuring practice develops (Probst & Borzillo 2008).

Some studies suggest that leadership is a critical role in intentionally supported or formed CoPs in organisations (APQC study of 12 organisations, 2000) whilst others suggest it is required to tease out the role of leadership either emerging from informally formed CoPs or those created intentionally.

Muller (2006) suggests that membership of a CoP is made up of specialists who may not interact on a day to day basis and that they have only a partial understanding of the workings of the whole community. Muller (2006) goes on to suggest that these co-ordination problems can be resolved by a leader. The description of such a leader is more defined and acknowledged in the IT community through its role in virtual communities and the association with open source communities in acting as intentionally formed CoPs (Kogut, 2000; Kogut & Metiu, 2001). Returning to Muller's (2006) commentary it is suggested that the

leadership role induces activity rather than co-ordinating it as understood in the social sciences. Further, this role in CoPs is different to being a co-ordinating agent, solving problems that the community might have in rapidly changing environments. There appears to be a theme here that links co-ordinator with leadership that may define the leadership role for CoPs in assisting agility rather than as the inhibitor of democratic shared decision-making by controlling or managing contribution inappropriately.

Muller (2006) proposes that emergent leadership in CoPs is connected to signaling dynamics that promote an individual into the leadership role because of their high participation and contribution to the group. Nonetheless, Wenger (1998) suggests the CoP co-ordinator, which he later refers to as a leadership role, should facilitate while managing and promoting shared decision making in a consensual win-win environment. Power dynamics however are emergent and the co-ordinator, as described by Wenger (1998), is an agent for controlling the power struggle. The leadership role discussed in subsequent research suggests an 'influencer' role tasked with diffusing conflict and managing the membership's different levels of authority and experience (Garavan, Carberry & Murphy, 2007).

This would suggest this coordinator/leadership role has to be occupied by someone who is able to identify and apply behaviours to the group required to 'manage' difficult situations brought about by those less 'aware'. The leadership role in CoPs is, as we might expect, a complex one and may in fact be defined by the formation of the CoP and its environment (McDonald *et al.*, 2012). The decision to adopt different tasks could be dependent on the style of the formation or the differences in level or experience and authority of its membership. Alternatively, the leader may emerge with a willingness for the community, with differing knowledge and experience, but consistent authority levels, to tacitly agree to democratically share responsibility (Wenger –Traynor 2013). This level of social agreement may occur for a number of reasons but still requires an understanding of individual self-awareness, trust and emotional intelligence amongst the community members that quickly allows them to have the confidence to share and agree behaviours (Garavan *et al*., 2007).

2.10.6 Membership and participation in CoPs

The architecture of a CoP is important in attracting membership. The participation of members will occur on different levels depending on how interesting the particular phase of development is to its members and the contribution individuals can make or gain from its existence. Its 'aliveness' is dependent on this multi-faceted aspect of the community design, its domain and the practice emerging from it. Consider the opportunity and the attractiveness of a CoP which is continually evolving and those who are at the center of the development of sharing ideas and learning are attracting those on the periphery to delve into what's going on. In time there is potential for those who were on the periphery to become central to the CoP function. However, there is also the possibility that through their participation they may gently displace those who initiated the current evolution until such time as the core activity again sparks their interest and re-engages them (Wenger & Snyder 1998; Wenger, McDermott & Snyder 2002; Connaghan, 2005).

Wenger, *et al*., (2002) suggest CoPs have a core group that is generally small but are displaying the highest levels of participation with an active group in attendance but contributing less to the discussion than the core. They go on to note a peripheral group who may participate by reading notes or output from the core and more active members. Wenger *et al.,* (2002) discuss the logical structure and participation as drivers for members engaging and disengaging at will. They do not appear to consider the personal relationships and the cause and effect of personal and individual characteristics playing a role in pushing some away and for others engaging. It could be argued that those who engage or disengage do so because of how they are treated or affected by the characters at play within the CoP.

This voluntary traversing of the levels of participation applies little pressure on individuals to be involved. However, the feature is important in the cultivation of CoPs and the fluidity of membership that brings participation which is motivated and willing, with a wide range of skills, not normally associated with intentionally formed groups or teams. Participation should be imagined as social rather than

prescriptive or directed (Greeno, 1998). These levels therefore could be described as grey areas rather than lines of demarcation, suggesting barriers to participation. CoPs can be homogenous, particularly at the outset, with like-minded people from related disciplines, but the fluidity of membership, as an indication that they can be more heterogeneous, fits more with the understanding of communities naturally forming either for a social reason or with the intention of solving problems (Brown & Duguid, 2001).

2.10.7 The benefit to the individual of CoP membership

Many benefits exist for CoP members, not least the sense of belonging in an activity motivated from interest rather than direction. Practice emerges from the CoP based on the domain of interest. This practice facilitates personal development. CoP Members can gain personal benefit from implementing this learned practice and from the continuing professional development through the learning taking place in CoPs (Schlager, 2003).

Within any CoP are sources of expertise and members profit from access to each other's specialist discipline or subject expertise. CoPs that form across organisations bring knowledge and expertise from different functional areas and each member will have personal experiences as a manager or specialist to bring to the community. This fosters trust in the CoP, enhances sharing of knowledge and expertise and provides confidence in the sharing process. Participation in CoPs that have meaning for its members will have a wider acknowledgment as a forum of expertise. This positive contribution to a subject area or organisation will, by association, enhance the personal reputation of its members. Members have access to a knowledge resource and can often gain simply from the discussion or the sharing of a problem with a trusted community, having participated in discussing difficult or controversial topics or through simply getting to know the community and its members (Bettoni, *et al.,* 2002, Wenger, *et al*., 2002, Gannon-Leary & Fontainha, 2007).

2.10.8 CoP Lifecycles

As you would expect from any living organism an 'Alive' CoP emerges and evolves over time. It is a temporary formation and the expectations of how it should evolve and its reason for being are different from those normally associated with teams within an organisational structure (Wenger 1998). The life expectancy of a CoP much like our own is not predictable, but the life stages can be described and the activity levels to some extent modelled. Cambridge, Kaplan and Suter (2005) proposed that CoPs grow with strategies and plans for each phase of their lifecycle, each plan leading to the next stage of its evolution. They proposed a sequence of phases that would result in the adopting of the community into the organisation as a 'value added' core component through:

- Enquiry: the identification of goals, purpose and audience
- Design: The activities, technologies and goals of the group
- Prototype: Pilot the CoP with a small group of stakeholders
- Launch: Roll out of the community to a wider audience
- Grow: Engage more members

  Cambridge, Kaplan and Suter (2005: p2)

Wenger, *et al*., (2002) appear less rigid in their description of CoP lifecycle possibly because of their concept of cultivation rather than Cambridge, Kaplan and Suter's (2005) prescription for the successful implementation of CoPs in education organisations. In cultivating CoPs, it is proposed that they traverse their lifecycle through 5 stages including potential, coalescing, maturing, stewardship and transformation (Wenger *et al*., 2002) In terms of potential a CoP, through a loosely formed social network, may discover a common interest or goal. Some time may pass as the members explore their shared capability and knowledge and any alignment with the needs of the organisation. The scope and draft plan are developed by the early members looking for catalysing triggers rather than a completed scope and plan. Taking the literal meaning of coalescing as 'coming together', the development framework is expanded for CoPs to include the need for the energy necessary for the CoP to form. In doing so the value of sharing

knowledge requires to be established and the necessary trust embedded to allow difficult problems or controversial subjects to be discussed. (Preece 2004; Cambridge, Kaplan & Suter, 2005; Brattstrom & Richtner, 2014)

As the CoP grows it matures and at this stage it may be beginning to widen expertise and resources. The initial idea or concept is developing and being subjected to new scrutiny by the new members and the strengthening interest. However**,** the CoP's widening participation and expanding of its topic requires careful stewarding to keep focus on its goals and ensure energy and 'liveliness' is maintained. Sustaining and retaining key members is critical during the CoP lifecycle and commitment is required from those playing a pivotal role. Stewardship is also necessary to ensure learning is not lost and the documentation and recording of learning or the agreement on practice is careful logged to retain value and share with the organisation or wider community. Finally**,** as with any community there is inevitability to its demise. Some CoPs may transform or fade away through diminishing interest in the subject or solutions may have been found and a conversion to practice undergone. There is an element of closing that must be addressed but that is not to suggest it needs to be hard or prescriptive (Wenger, *et al*., (2002).

In summary, CoPs conceived to share an interest may form for many reasons, regardless of their intended formation or their emergence from people socially combining with a common interest or shared goal voluntarily. A lifecycle will see its formation, evolution and demise and the group's awareness of the CoP's need for stewardship and commitment will be important to its success. The CoP's self-awareness and the tending to its 'aliveness' with care and attention to maintain interest and the thrill of the discovery will determine its sustainability and its ability to be successful either for the CoP members or the organisation of which they may be part.

2.10.9 The benefits of CoPs to organisations

It is not difficult to imagine that a highly motivated group of people socially interacting and working together, acting as a CoP, has the potential to bring benefits to any organisation. Those linked intrinsically with business process in

an organisation will have members who link knowledge with practice and bring the outcomes and capabilities of the CoP to the benefit of the organisation (Wenger, McDermott & Snyder 2002).

Organisations benefit from the activities of CoPs in a number of areas. Studies have indicated that collaborative working as a strategic objective has been promoted through CoPs. Issues discussed in CoPs have shown a contribution to improving operational performance and cost saving (Millen & Fontaine, 2003; Fugate *et al.,* 2009). Establishing a knowledge library, documented from CoP stewardship, has been of tangible benefit to employees across the organisation as a whole (Scarso, Bolisano & Slavador, 2009). Indeed, Probst and Borzillo (2008) cite a number of case studies where CoPs have contributed successfully to an organisation's supporting structures. They present case studies are from a Swiss hospital where it is suggested that problem solving amongst cardiologists benefits from external CoP members who bring new perspectives and approaches to problems. They also highlight the IBM electronics CoP as an example of benchmarking within the organisation to test new concepts of circuit design and test innovative designs amongst a wider organisational audience. One further case study is an example of a geo dispersed or distributed CoP in Oracle that brings together expertise in optimal database usage to share shortcuts and data processing techniques amongst the CoP members.

Wenger, *et al*., (2002) describe the interwoven CoPs with business processes in an organisation as a 'double knit' organisation. The CoP is not acting as a center of excellence, rather it is directly involved in the organisational business processes. This would suggest near field expertise in close proximity to improving practice, with CoP members contributing knowledge and expertise from a range of backgrounds, bringing that expertise to bear on improving the operational efficiency of the organisation.

2.10.10 Good CoP, bad CoP

Not surprisingly, there are aspects of unfavourable components of CoPs evident in the literature. Communities are not always conducive to longevity and harmony mainly because they are based on relationships and as with any relationship things can go wrong (Brattstrom & Richtner 2014). Previously the concept of a CoP 'Lifecycle' was discussed and it is pertinent to understand what factors feature in relationships going through different stages. As in any voluntary community and those described as CoPs, the domain of interest that brings a likeminded group of people together can become boring or lose its momentum. However, this voluntary participation may also contribute to its own break up by losing key members core to the initial formation and whose initial enthusiasm for the subject inspired others to be involved (Pemberton, Mavin & Stalker 2007).

Despite their value the literature also highlights a number of limitations of CoP's (Wenger, *et al.*, 2002, Roberts, 2006, Kerno, 2008, Probst & Borzillo, 2008) CoP's are not stable or static entities but rather evolve over time as new members join and others leave. Wenger *et al*., (2002) referred to the downside of such groups when they argued that the qualities that make a community of practice a beneficial structure of learning are the same communities that 'can hold it hostage to its history and its achievements' (Wenger *et al.*, 2002:141). Kerno, (2008: p69) also cautioned of the dangers of viewing communities of practice as "magic bullets capable of enabling an organisation to seamlessly disseminate knowledge, or to overcome both organizationally and socially constructed barriers". In their paper Probst & Borzillo (2008) provided a clear distinction between the characteristics of a CoP and a project team by suggesting that in a cop roles are not defined, contracted or assigned formally. Additionally CoP members share a common interest in developing practices in specific fields

In some areas CoPs resemble formal teams (See section 2.3.1), although they operate quite differently when formed on a voluntarily basis. Successful CoPs like formal teams may suffer from an effect known as 'self-serving bias' where the community believes in itself so much that it ignores signals that it may be beginning to underperform and in effect perceives itself more positively than it

should (Corgnet, 2010). Lewinsohn *et al.,* (1980) argue that people see themselves more positively than their peers and, in a community where there is a lack of self-awareness in its membership, then deterioration in the CoP's ability to engage and attract new members may occur as well a decline in achievement leading to the deterioration or the failing of the CoP.

As tacit knowledge stores, CoPs can be extremely useful to organisations particularly when combined with the expertise to evaluate the knowledge and produce new knowledge or innovative solutions. However, they can miss key factors or issues in the knowledge they retain as they become complacent about their ability to critically analyse the information and may not ensure that new forms of analysis from different world views are developed (Brown & Duguid, 1998). The behaviour of the CoP members in this limited viewpoint stance can be attributed to self-delusion where each member re-enforces inaccurate assessment of the information and knowledge they have. Garud & Rappa (1994) suggest the key feature in avoiding the detrimental effects of this delusion is separating evaluation from belief to ensure that any evaluation is considered on its merits and avoiding personal or community belief from affecting any newly discovered proposition. This would suggest that the members must be aware of their viewpoint and the limitations of their understanding in order continue to evaluate their knowledge and grow their understanding correctly. This may also be further evidence to suggest that self-awareness and the ability of members to regulate their emotional impact and belief systems on themselves and each other is critical in ensuring that 'belief' does not get in the way of independent evaluation.

2.11 Knowledge sharing & tacit knowledge

Knowledge management is recognised as critical in the modern organisation that is competing in a global information and digital environment (Gao & Clark, 2008). Explicit knowledge can be seen in all organisations usually in the form of instruction manuals, data manuals, operating manuals and books. Tacit knowledge is more complex to define and was suggested by Polanyi (1967) to be difficult to transform into explicit knowledge. It is suggested that tacit knowledge

is ‘rooted’ in the actions and procedures followed by individuals that are described through commitments, ideas, values and emotions (Schon, 1983). Nonaka & Takeuchi (1995) developed Polanyi’s concept in order to describe the differences between explicit and tacit knowledge describing tacit as knowledge of experience, simultaneous knowledge of the here and now and practice which they described as analogue knowledge. Further they described explicit as knowledge of rationality, sequential knowledge described as the ‘there and then’ and digital knowledge or theory. Nonaka & Takeuchi (1995) concluded that tacit and explicit knowledge were integrated to describe the whole and importantly described the integration as formed from the social interaction between humans. They described this integration as knowledge conversion.

2.12 The value of tacit knowledge

Clark (2010) suggested that knowledge capital was critical for organisations to maintain competitive advantage. The literature on Communities of Practice (CoP) is crammed with the concept of CoPs being seen as a key tool in promoting and sharing knowledge successfully, (Yang & Wei, 2010). The value and role CoPs play in knowledge sharing and the importance associated with tacit knowledge and its exploitation to provide solutions to real world problems emphasises the role of CoPs in discovering, sharing and using knowledge successfully. Particularly that which cannot be quantified or stored (Lave & Wenger, 1991, Hildreth *et al*., 2000, Hildreth & Kimble, 2002). Polanyi (1967) suggested that knowledge is personal and therefore socially constructed and therefore all knowledge is rooted in tacit knowledge. Nonaka (1991) proposed that explicit and tacit knowledge are intrinsically linked and challenged Polanyi’s (1967) view that tacit knowledge was inexpressible. However, subsequent literature suggests that tacit knowledge is difficult to articulate but that the main problem is making the mistake of trying to codify it and store it rather than using an entity such as a CoP to share it (Winograd, 1986; Lave & Venger 1991; Von Krogh, 1998). Hildreth & Kimbele (2002) argue that knowledge is in fact a duality and that knowledge and tacit knowledge are not mutually exclusive.

They further argue that, as knowledge resides in people, this further supports the notion that CoPs assist people to develop knowledge through interaction with others thereby by providing an entity that shares, sustains and grows knowledge (Hildreth & Kimble, 2002).

I would argue that CoPs as vehicles that support tacit knowledge sharing do so because those pieces of information that complete the jigsaw for those sharing knowledge are based in the personalisation of the individual's experience. These personal experiences or reflections are the glue that holds knowledge together and brings it to life when shared and leads to knowledge acquisition or creation (Polanyi, 1966; Oztock, 2012). Polanyi (1959) argued that tacit knowledge 'is the dominate principle' of all knowledge and suggested this resided in the knowledge sharing in CoPs where personal experiences and reflections took place within CoP members creating understanding and giving meaning to the knowledge shared (Wenger 1998). New meaning can be derived from these reflections and sharing of personal reflections by adding to knowledge the 'why' and the 'how' (Duguid, 2005). Seeking knowledge is therefore reliant on the willingness to learn from others, however it is possible to learn without realising it and this knowledge sharing is therefore unpredictable (Leonard & Insch, 2005).

Tacit knowledge as suggested earlier is complex and difficult to codify because it is integrated with action, procedures, commitment, values and emotions (Mládková, 2011). Tacit knowledge therefore can be described as embedded in the minds of individuals and is therefore interwoven in the stories and emotions surrounding the knowledge (Shamsie & Mannor, 2013). Knowing what, knowing how and knowing why, it is argued, integrates those aspects of knowledge that complete the whole picture and that it is understanding of what makes up the whole that delivers the knowledge (Stone, 2013).

2.13 Ba and the Socialization, Externalisation, Combination and Internalisation (SECI) Model

In their book 'The knowledge creating company' Nonaka & Takeuchi (1995) brought the concept of an integrated whole world view of knowledge and expressed its building blocks from a foundation of a Japanese philosophical concept by Kitaro Nishida (1958) known as 'Ba'. Ba's key themes are centered on those interactions that support and encourage the sharing of knowledge (Jones *et al*., 2003). Clarke (2010) suggested that the concepts related to current day knowledge sharing in four key areas, the first 'originating' which is the initial knowledge sharing act that occurs through face to face interaction facilitating tacit knowledge and ideas sharing. The second 'interacting' is the place where the knowledge sharing occurs and in the context of this study both 'originating' and 'interacting' are occurring in the CoP environment or place. 'Ba' can translate to 'place'. Cyber Ba is the place where tacit and explicit knowledge combine creating a new and enhanced form of the knowledge and exercising Ba is the place where explicit knowledge is transformed into tacit knowledge often associated with practice or learning through training.

Nonaka & Takeuchi (1995) took these building blocks and developed their seminal theory for knowledge creation and the process for knowledge Conversion. Importantly this theoretical framework was developed into a process for describing 'knowledge conversion' from tacit to explicit, which it was suggested was critical to allow organisations to exploit the deep understanding when tacit and explicit knowledge combine to describe an enhanced or entirely new idea (Nonaka, Toyama, & Konno, 2000). Nonaka & Takeuchi (1995) went on to describe the process for combining tacit and explicit knowledge as occurring through Socialisation (tacit to tacit), Externalisation (tacit to explicit), Combination (explicit to explicit), and Internalisation (explicit to tacit) and adopted the acronym SECI.

Socialisation describes the sharing of knowledge through practitioners demonstrating how to do a task. This task may have a manual that informs the order of things to be done but it is the tacit knowledge transfer that develops the skills and the whole picture for the learner. A CoP example is one such as the SPO Infrastructure Group passing on practitioner information to junior network engineers. This is fundamentally a tacit to tacit knowledge sharing process based on shared experiences. It is the transfer of emotional and situational context that allows for the embedding of one person's experience into the mind of another. (Polanyi 1966; Goffin & Konners 2011; Chugh 2015)

Externalisation crystallises knowledge by making tacit knowledge explicit through sharing experiences and telling the story of those experiences to consider how a process or task might be improved. This is fundamentally a knowledge creation process that makes tacit knowledge explicit through analogies, metaphors or conceptual models. The SPO Information CoP annually identifies the top ten concerns of the sector and then through storytelling and rich discussion arrive at mitigation or solutions to address the real world concerns of its membership.

Combination can be described as the bringing together of different bodies of work and combining them to deliver enhanced knowledge. SPO as a sector organisation often combines versions of approaches to information security, as an example, to create a sector approach or model that can be considered and adopted across all its membership.

Internalisation is the transfer of explicit knowledge to tacit and closely relates to 'learning by doing'. This is not simply documenting someone's experiences, although these can be internalised by individuals and become their own. Rather it is the stories and combination of experiences such as customer complaints or feedback that enhance the knowledge and support the transfer and embedding of this knowledge in others. SPO's support services CoP, as an example, documented customer feedback from databases from their call centres and combined it with the experiences

of their customer service teams in order to inform how systems or processes might be improved.

Nonaka & Konno (1998) combined the Ba and SECI models in what they described as a spiral for knowledge creation. The cyclical nature of the process suggests an evolving knowledge process that not only ensures tacit knowledge transfer and therefore retention within organisations but also delivers knowledge creation or new knowledge and ideas. The foundation for this new conceptual model grew out of Nonaka's early work on 'the knowledge organisation' and fundamental to his approach was the understanding of the combining of Japanese and western epistemologies (Nonaka, 1991). Nonaka & Konno (1998) argued that their new 'theory of organisational knowledge creation' would require a new ontology that could underpin and help explain knowledge innovation, the 'cornerstone' of which is the distinction between tacit and explicit knowledge. The ontology being those features defined as knowledge creating elements such as individuals, groups, organisations, and cooperating sectors.

2.14 The tacit debate and the challenge to the SECI process

Gourlay (2006) was critical of Nonaka's theories suggesting that there was little evidence for the four modes of knowledge creation through the interaction of tacit and explicit knowledge. Gourlay (2006) went on to argue that Nonaka proposed only two modes of knowledge conversion, tacit to explicit (externalisation) and explicit to tacit (internalisation) suggesting that the other two 'socialisation' and 'combination' were in fact modes of knowledge transfer. Importantly two schools of thought began to emerge because of this work; the first, that tacit knowledge can be converted into explicit (Nonaka, 1995, Spencer 1996, Torff (1999), Boiral 2002) and the second that the tacit to explicit conversion needs a more complex and significantly deeper synthesis for this to occur (Collins 2001; Ambrosini & Bowman, 2002; Chisholm, Holifield & Davis, 2005).

The debate continues over whether tacit can in fact be made explicit and those proposing it can appear to currently hold sway. However, it is also argued that not all tacit knowledge can be made explicit as it is rooted in our deep anthropological history and evolutionary social practices (Collins, 2001). Tacit knowledge therefore can at best be described as how we position ourselves in the world and in particular how it is described (Stone, 2013). CoPs it could be argued present Higher Education IT with opportunities to create competitive opportunities and contribute new learning for their institutions (Palmer *et al.,* 2012).

Tacit knowledge and the complexity surrounding its use and value remains a key feature in Knowledge Management research (Garavan, O'Brien & Murphy, 2007). Organisations that understand the value of the concepts of tacit knowledge and its ability to release and to share that knowledge within the organisation, are likely to be able to leverage opportunities from knowledge and to react to the ever changing threat landscape proliferated by disruptive digital technologies and challenging business environments (Clarke, Holifield, & Chisholm, 2004). However, the absence of consensus on the definition of tacit knowledge, along with the earlier indicated challenges in codifying and storing it, would suggest that consideration should be given to what factors in CoPs can affect its stickiness or leveraging to advance shared knowledge (Castillo, 2002; Ray 2009; McIver *et al.,* 2012). However, it is argued that when exploring the stickiness of tacit knowledge in the context of sharing and creating in CoPs this knowledge can only be achieved indirectly by managing behaviour and that successful knowledge sharing is affected by all the actions people take (Gourlay 2006).

Tacit knowledge is therefore important to organisations and its value is clearly described and supported in the literature. Communities of Practice have become a vital tool in retaining this valuable asset both for organisations and in the context of this study to the whole sector, that of Higher Education and the IT practitioners who operate within it.

2.15 Emotional Intelligence (EI), learning and tacit sharing

We began this literature review from the standpoint of organisational learning and its relationship to social learning and Communities of Practice. It was suggested that Knowledge Management in organisations and the retention of experience, expertise and problem solving as tacit information, is critical to innovation and creativity and its relationship to explicit knowledge storage in IT systems. The argument that tacit knowledge is important was made and an understanding of the challenges in promoting social learning and the storage and retention of this knowledge appeared possible within CoPs, rather than systems (Brown, Collin & Duguid 1989**;** Lave & Wenger 1991; Orr 1990a, 1990b; Probst, Raub & Romhardt, 2000; Allee, 2000). More recently the growth in understanding and research in social learning and its application in organisations, attention has turned to the relationship of learning and how emotional intelligence may impact learning capability (Vince 2004).

When organisational teams are formed, some anxiety and a feeling of discomfort will be present amongst members due to the unfamiliarity, the risk associated with new relationships and the reluctance to embarrass oneself (Vince & Martin, 1993). Kolb (1984) suggested learning is both a tension and a conflict related process and De Loo (2002), in discussing management control, suggested that distinct values were present at different levels of management and that these values could impact on personal and team growth and Knowledge Management. Although in some respects a simplistic argument, it does indicate the growing awareness and the need for research into emotional intelligence and CoPs. Negative emotions exist in organisational teams and CoPs due to ‘threats’ to the organisational structure that develop defenses and avoidance strategies for managing threat. Individuals will focus on threat to themselves and their allies from organisational change, rather than the productive focus on learning (Wang & Noe, 2010). This is further exacerbated by power relationships and competition between groups, teams and individuals, all of which consume emotional energy for less than positive reasons (Vince 2004).

Social competence has been suggested as a factor in learning which is improved through membership of a CoP (Wenger 1998). However, little is written about the impact of Emotional Intelligence on the performance of the CoP and what features of EI facilitate improved formation and sustainability. Studies on team interaction identified team bonding as being related to social competence which in turn facilitates sharing of information and knowledge. Additionally it is suggested that a caring environment, mutual trust, empathy, and support improve team learning and the role of the leader is critical in fostering good relationships and bonding the team to be helpful and supportive to its members (Abrams *et al.,* 2003). Similarly, the strength of engagement could be dependent on either the ability to deal with stress or the team's attitude and therefore reluctance to engage in stress and the emotional outfall from it. (Von Krogh, 1998; Zarraga & Bonache, 2003; Back, Von Krogh & Enkel 2007).

Cop's have been described as agile, innovative and positively contributing to Knowledge Management (Kotter 2014; Clarke, 2017). However, there also appears to be limited research and understanding of how Emotional Intelligence may be overcoming anxiety and other limiting factors for CoP members. The coming together and successfully sharing knowledge and development of practice would suggest a high degree of EI and the associated social competence in CoPs. However; at this present time there is no evidence in the literature of a study on CoP's and EI.

2.16 Emotional intelligence characteristics

A number of definitions exist for EI in academic literature however, the two most regularly cited are: "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990). And "The capacity for recognising our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" (Goleman, 1998). There are also three recognised models of emotional intelligence which are Adapted from The Encyclopedia of Applied Psychology (Spielberger, 2010)

- The Mayer-Salovey model which defines this construct as the ability to perceive, understand, manage and use emotions to facilitate thinking;
- The Bar-On model which describes EI as a cross-section of interrelated emotional and social competencies, skills and facilitators that impact intelligent behavior
- The Goleman model which views it as an array of emotional and social competencies that contribute to managerial performance;

Goleman (1998) suggests the key characteristics of Emotional Intelligence as Self-management, through self-awareness and understanding your impact on others; Self-regulation, consisting of the abilities of self-control, trustworthiness, conscientiousness, adaptability and being comfortable with innovative; Motivation, demonstrated as achievement drive, commitment and initiative readiness. Goleman (1998) also suggests the need for social skills of Influence, communication, conflict management, leadership, initiating change, promoting collaboration & cooperation and empathy

2.17 Knowledge Management & Emotional Intelligence

It is suggested that a relationship between knowledge management and competitive advantage in organisations existed. Evidence was provided to support this from surveys indicating the prominence of initiatives in KM linked to the understanding that organisations had about the leveraging KM would give them in their business. Interestingly as with KM, Emotional Intelligence (EI) has emerged in the context of impacting on organisational competitive advantage and much like KM it has interest in this area in recent years. Researching the literature has suggested that up until very recently, little EI research had been undertaken in the organisational context (DuleWicz & Higgs, 2000). However, in the last few years EI has grown as a topic for research and a number of studies have been conducted in EI and its impact and value to leadership, teams, organisational commitment and now increasingly in Knowledge Management (DuleWicz & Higgs, 2000; Stys & Brown 2004; Karkoulian, *et al.,* 2010;).

2.18 Conclusion: Research themes and questions

The theoretical underpinning of Social Learning Theory was introduced in relation to its influence on situated learning in CoPs as expounded by Lave & Wenger (1991). The review of the literature then focused on CoPs and provided a critique of the research on the role of CoPs in relation to knowledge sharing and tacit knowledge in particular.

A gap has been identified in relation to the function of tacit knowledge sharing in CoPs in HE, IT and the behaviours impacting the knowledge sharing and functioning of a CoP. Through this review process the literature on the emergence of CoPs and their relationship to organisations was assimilated and the concept of value as a motivating factor to organisations was explored. It was observed that CoPs, correctly formed, played an important role in successful Knowledge Management initiatives.

The literature suggested that value is added to organisations through practice built on the collective experience and ability of its staff given the opportunity CoPs provide for organisational learning and development. CoP membership and their characteristics were reviewed confirming the view that little research had been undertaken on what impacted the flow of tacit knowledge sharing in CoPs and any resultant effect on their sustainability.

Debate continues on whether tacit knowledge can in fact be made explicit but the argument for it to be so seems to be gaining momentum. Nonetheless, CoPs are seen as successful vehicles for knowledge sharing and for retaining tacit knowledge within organisations. Critically the sharing of tacit knowledge that occurs often provides CoPs with the tools to explore, retain and create new knowledge or ideas.

The review then focused on the relationship between a CoP's culture, structure and tacit knowledge sharing. Specifically, the literature is concerned with opportunities for organisations to exploit this valuable resource in pursuit of sustainable competitive advantage. The purpose of this review was not to

suggest new definitions of knowledge, knowledge management or to define tacit knowledge and its relationship to explicit knowledge. Rather, it was to identify key themes to inform the study. Critically, these were around: CoPs as tacit sharing vehicles; the functioning of CoPs in order to support tacit knowledge sharing; and the value and characteristics of tacit knowledge sharing. Consequently, the study needed to address that nature of tacit knowledge sharing within CoPs, how the behaviours of the CoP members impacted tacit knowledge sharing, how the membership returned value to their institutions from the CoP and how their topic or area of interest tacitly enhanced their practice. These are presented in the summary **Table 3** below that outlines thematic linkages to topics for investigation and key authors. The themes informed the direction of the study approach and research design as outlined in the following Chapter.

Table 3: thematic linkages to topics for investigation and key authors

Research Aim	Theme	Topic for Investigation	Key Authors
To explore the dimensions of tacit knowledge sharing in CoPs working within the Higher Education Information technology Sector.	**Flow of Tacit knowledge sharing**	What types of CoP are there and what are their boundaries	Wenger *et al*., 2002
		How do CoPs support learning?	Brown & Duguid 1991
		How does a CoP function and support the sharing of knowledge?	Lave & Wenger, 1991
		What is the value of tacit knowledg	Garavan *et al.,* 2014
	Influences on Tacit Knowledge sharing	What are the features of tacit knowledge sharing?	Polanyi, 1966; Becerra, 2008
		Is there a link between tacit and explicit knowledge sharing?	Nonaka & Takeuchi, 1995, 2000; McIver *et al*., 2012
		What supports tacit knowledge sharing in CoPs?	Abrams *et al*., 2003
		What is likely to impact negatively and positively on tacit sharing?	Wang & Noe, 2010
	Impact of Tacit Knowledge sharing	What affects sustainability in CoPs	Polanyi, 1966; Becerra, 2008
		How does leadership affect the performance of the CoP?	Nonaka & Takeuchi, 1995, 2000; McIver *et al*., 2012
		What causes tacit sharing to fail?	Abrams *et al*., 2003; Wang & Noe 2010

3. Chapter 3

3.1 Research Methodology

3.1.1 Introduction

This chapter outlines the strategy adopted for the conduct of the research in terms of the philosophical perspective, methods, the associated ethical issues, and provides the rationale for the selection of the research strategy. The first section considers the research philosophy and its implications, followed by a discussion of the methodological issues associated with the study. Observations on the role of the pilot study, and the significant impact on the data analysis process finally selected for the main study are considered next, after which the chapter concludes with the outlining of the main study data analysis plan.

It should be noted to begin with that, in places, the first person is used. On occasion, I have chosen to write in the first person rather than use a more conventional, impersonal form of writing since it was important for me to make clear that I was responsible for the interpretation of the data. This point of style implies an awareness that interpretations other than the ones I am putting forward might be possible and plausible.

3.1.2 Identification of the research philosophy

At the heart of scientific research are core philosophies that guide the researcher's choice of methodology and their approach to the questions being addressed. The philosophical paradigm adopted for any research study can be defined as "the basic belief system or world view that guides the investigation, not only in choice of method but in ontologically and epistemologically fundamental ways" (Guba & Lincoln, 1994:105). Nevertheless it would be wrong to assume that any one distinct philosophical paradigm ought to be considered right or better for a particular study as this should ultimately depend on the research question to be addressed (Saunders *et al*., 2012). Consequently, identifying the philosophical paradigm adopted for this research study was considered of

Figure 2: The interrelationship between the building blocks of research (Grix 2010)

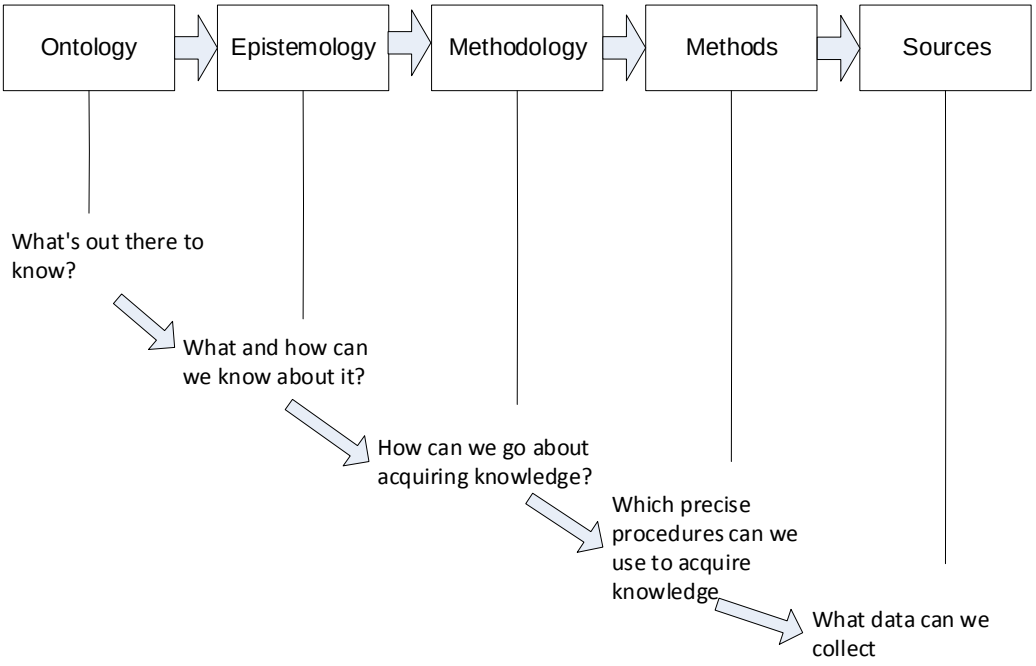

Figure adapted from Hay, 1902, P64

fundamental importance in determining how the study would be shaped and developed. Crotty (2006) cautioned that it can be difficult to divide ontology and epistemology conceptually due to the convergence between the two concepts. However, Grix (2010:59) propositioned that "ontology is the starting point of all research, after which one's epistemological and methodological positions logically follow". The approach to providing an understanding of the research philosophy for this study is built on the considerations of Crotty (2012) and Grix (2010) which help to explain the key features of the philosophical perspective

Crotty (2012) in his research suggested that research should follow a 'typical string' with this string dependent on the theoretical standpoint being considered. As a means of providing a clear framework this chapter will follow the building blocks suggested by Grix (2010) which shows a string of activity as presented above.

3.1.3 Ontology

Ontology is concerned with the nature of reality (Saunders *et al.*, 2012) and could be considered the answer to the question "what kinds of things are there in the world?" (Benton & Craib, 2011:P4), or what's out there to know? (Grix, 2010). While a number of different ontological positions exist it is clear that to develop the research questions in any research study and to be cognisant of the philosophical considerations of the research, personal understanding of ontological perspective will affect the determination and style of research questions, the methods used and both the analysis and interpretation of the data. Grix (2010) points out that a researcher's ontological position is implicit in the way in which they interact with the world even if they know it or not.

Developing an ontological perspective is a reflection of the senses and values that have been built up during an individual's development of understanding and perceptions. Bryman (2001) suggests that social phenomena and their meanings are represented by external factors, which can be objectively studied to be understood. This is an objectivist view of external influencers, which exist in their own right i.e. the consideration of a social existence devoid of personal influence. Anderson (1990: P.268) argues a "constructivist worldview is emerging in opposition to the objectivist view of an absolute and permanent rightness". The ontological position adopted for this research was informed by social constructionism, which is "principally concerned with explicating the process by which people come to describe, explain or otherwise account for the world in which they live" (Gergen, 1985:P.226). From this perspective, it is argued, there is no single reality rather individual actors create reality through a variety of social means. An important consideration related to the research question was the concept of 'how the CoP and the social phenomena associated with it had developed and its relativity to the CoP's social context' placing the question within a Social Constructionist ontology (Vygotsky, 1978; Grix 2004; Fisher, 2012).

3.1.4 Epistemology

According to Benton & Craib (2011) epistemology can be defined as the philosophical enquiry into the nature and scope of human knowledge, concerned with distinguishing knowledge from belief. In this study knowledge development was driven by a concern to develop context sensitive, meaning rich and experiential accounts of the sense CoP members associate with their actions. Aligned well with a social constructivist ontology throughout this thesis the design used to understand the experiences of the interviewees is taken from an interpretivist stance. Explicit within this epistemological position was the assumption human knowledge is constructed through the interactions and interpretations of everyday life and that different subjective interpretations of these interactions are both possible and probable. Key to this position was the need as a researcher to use a research design and data collection technique which would support the development of understanding building on the perceptions of the participants within the context of their daily life. The choice of design and data collections techniques used to support this view are provided later in this chapter.

3.1.5 Axiology

Although not explicitly identified in the model proposed by Grix (2010) a third and important consideration for research is the identification of the researcher's axiology. This is particularly important when the research is taking an interpretivist approach. Creswell (2007:17) suggests axiology is understood to ask "what is the role of values?" Heron (1996) contended values were the guiding reasons for all human action and consequently axiology should be understood as the role values have played in the researcher's choices throughout their study. This view was supported by Grix who suggested that social phenomena do not exist independently of the interpretation of them, and therefore "researchers are inextricably part of the social reality being researched" (Grix, 2004:83).

The personal values underpinning this study may be described as representing an emancipatory axiological position. Here, and related to the ontological and epistemological positions noted above, the study was concerned with giving voice to participants in order to understand their interaction with CoPs and to enhance

CoP functioning. Key to this was exploring participant's perceptions in order to capture their beliefs and feelings related to CoP membership and the impact on knowledge sharing. Consequently, this led to exploring qualitative methodologies to elicit in- depth accounts of those experiences.

3.2 Methodology

As suggested earlier, work environments, like all social situations, are perceived differently by those who experience them, those who are participants in them and those who observe or research them. For each person the experience is also different, leading to varying views about what occurred and why, whether it was a success or a failure, and if it was good or bad. I was of the view that an understanding of differing experiences of the participants within the CoP would be enhanced by an application of these diverse perspectives. However, in following this research aim, I was conscious of the value that my conclusions might generally have for my own practice area. I therefore needed a research method that represented these considerations as much as possible.

My research aims required a research method that would allow me to identify, examine and describe features or characteristics, which may be impacting on tacit knowledge sharing. I was interested in how each group member experienced CoP membership and wanted to understand those features associated with knowledge sharing occurring within the CoP. Further, I sought to explore those features present both perceived and described that were identified from the review of the literature on CoPs and tacit knowledge sharing. The previous chapter presented an extensive search of literature on CoPs and demonstrated the lack of research conducted in this area and, consequently, the lack of understanding of what factors have the potential to impact knowledge sharing, specifically, what features and characteristics played a part in a CoP. In exploring, the range of potential methods available and having concluded that my research aims would be better served by a qualitative approach. The starting point for the study was an attempt to build an understanding of experiences and perspectives of the participants and not a hypothesis to be tested. I expected that there was not one reality, but many, which would describe the experiences of the individuals within the CoPs. Ritchie

& Lewis (2010: P4) offer a detailed simplified breakdown of qualitative research from a methodological stance perspective, as detailed in **Table 4** below. They drew on the work of Immanuel Kant to acknowledge the researcher's own abilities to interpret the phenomena being studied and to understand the social world surrounding them

Perspective of the researcher and the researched

- Taking the 'emic' perspective i.e. the perspective of the people being studied by exploring their frames of meaning.
- Viewing social life in terms of processes rather than in static terms.
- Providing a holistic perspective within explained contexts.
- Sustaining empathetic neutrality whereby the researcher uses personal insight while taking a non-judgmental stance.

Nature of research design

- Adopting a flexible research strategy.
- Conducting naturalistic inquiry in real-world rather than experimental or manipulated settings (using varying methods to capture naturally occurring or generated data).

Nature of data generation

- Main qualitative methods include: observation, in-depth individual interviews, focus groups, biographical methods such as life histories and narratives, and analysis of documents and texts.

Nature of analysis/interpretation

- Based on methods of analysis and explanation building that reflects the complexity, detail and context of the data.
- Identifying emergent categories and theories from the data rather than imposing a priori categories and ideas.
- Respecting the uniqueness of each case as well as conducting cross- case analysis.
- Developing explanations at the level of meaning rather than cause.

Nature of outputs

- Producing detailed descriptions and 'rounded understandings' which are based on, or offer an interpretation of, the perspectives of the participants in the social setting.
- Mapping meanings, processes and contexts.
- Answering 'what is', 'how' and 'why' questions.
- Considering of the influences and the researcher's perspectives.

Table 4: Methodological stances associated with qualitative research (Adapted from Ritchie & Lewis, 2010)

Before moving on it is important to outline the consideration that was given to other potential qualitative designs and why these were not considered appropriate for this study. Such designs range from pure description for example, phenomenology, to description and interpretation, such as hermeneutic research or description, interpretation, explanation and action evident in action research (Marton & Booth, 1997). However, all are concerned with ensuring that the original voices of the participants are preserved but, as these methods incorporate greater explanatory content, the voice of the researcher is added to that of the participants.

Variations arise between qualitative methodologies in relation to the object of their inquiry, the purposes to which the research will be applied, the aim of the research, the nature of the data, and the role of the researcher. Each design is based on its own philosophical orientation, which in turn influences purpose, sampling, data collection and analysis (Brink, 1989). Three potential qualitative research designs were explored- ethnography, grounded theory, and phenomenology.

Early on in the study I concluded that an ethnographic design would not suit my purpose. Lave & Wenger (1991) were social anthropologists and so their research covers areas such as social interaction and its impact on CoP formation. However they do not go beyond the cultural and social activities into the realm of social characteristics hence the view required from my research on what characteristics have a role and what is their impact on knowledge sharing? This was because the aim of ethnography is to understand people, their ways of living, and the ways that people use cultural meanings to organise and interpret their experience (Leninger, 1985; Clifford, 1997).

This focus on culture is the essence of ethnographic research and distinguishes it from other qualitative designs. The researcher takes on the role of a participant or non-participant observer who enters the culture or sub-culture to study the rules and the changes that occur over time (Burns & Grove, 1993; Clifford, 1997).This design was considered unsuitable for two main reasons. Firstly, I was

a manager involved in the community of practice and would have found it difficult to be able to take on a research role within my group. Secondly, my primary interest was not the culture of participants as distinctive groups but rather how the socialisation activities were facilitating or impacting tacit knowledge transfer.

Another possible method was grounded theory (Glaser & Strauss, 1967). This approach uses similar data collection and analysis processes to phenomenology, however, grounded theory is often conducted from a perspective which searches for the unconscious intent of the interviewee, rather than the integrated, situational and personal focus, which was my interest.

In phenomenology, the study population is typically small because the interest is in thick and accurate description (Holloway, 1997). Each individual experience is expressed from a variety of angles. A phenomenological study might be the expression of just one person's experience. Typical questions asked may include 'How does the employee experience their world?' or from a personal perspective, 'How did I experience this incident?".

The research question related to identifying those influencing factors associated with tacit knowledge sharing in a CoP and to understand the impact on the CoP and its members. The focus on examining possible reasons of why tacit knowledge sharing was taking place between the CoP members suggested the need to explore individual's views on interactions, relationships and the features of the CoP that were recognised by them. Consequently, the research questions were designed to investigate the CoP as viewed by the members and not separate from it (Fisher, 2012). The rich and necessarily deep understanding of the role of tacit knowledge sharing and the need to establish the lived experience of participants in CoPs through observation, conversation and questioning led to my choice of a phenomenological research design.

3.2.1 Phenomenology

The etymological derivation of the word phenomenology is a conflation of two Greek terms – 'phenomenon' meaning appearance and 'logos' meaning reason. Husserl is often credited as the founding father of the phenomenological movement (Dowling, 2007). According to Creswell (2007), the purpose of phenomenology is to take people's experience of a shared phenomenon and discover the universal essence of that experience. It aims to describe the point of view of the participants of the phenomena being studied thereby viewing these experiences as conscious (Manen, 1990) and arriving at a description of the essence of these experiences, not explanations and analyses (Moustakas, 1994; Creswell *et al*. 2007).

More than one variant of phenomenology exists (Giorgi & Giorgi, 2008). One of the principal approaches is hermeneutic phenomenology (Manen, 1990; Moustakas, 1994). According to Heidegger, phenomenology, as a preliminary to ontology, must be hermeneutic (Heidegger, 1962). Hermeneutic in its strictest sense denotes the development and study of theories embracing interpretation and the understanding of narratives. Van Manen (1990) describes the hermeneutic approach as an interpretation of the "texts of life" and suggests that phenomenological research is "not only a description but also an interpretive process in which the researcher makes an interpretation of the meaning of the lived experience". (Creswell *et al*., 2007:253).

For Heidegger people are 'in the world' (Reed, 1994); he interpreted human existence as comprising a temporal structure - a constant projection towards the future and a constant re-assessment of the past. Within the parameters of this dynamic he identified two separate but interlinked questions which together comprise the core of ontological inquiry: 'how do people come to understand things?' And 'what does it mean to be a person?' (Leonard, 1999). For Heidegger understanding what it means to be a person is synonymous with understanding the other phenomena of existence. In other words, to analyse the human condition is to analyse the conditions in which human understanding takes place (Gadamer, 1976).

Although the hermeneutical approach offers a vehicle for understanding the lived experience of people, it places overt emphasis on the importance of prior understanding of the phenomenon under investigation (Koch, 1999). With regard to the specific focus of the current research study prior understanding was present from personal experience and critique of the existing literature.

While phenomenology posed an alternative to the absolute positivists it very much offered a philosophical understanding which is not a mystery to the majority of the population. As Halling (2008: P.145) suggests “In everyday life each of us is something of a phenomenologist as we genuinely listen to the stories that people tell us and insofar as we pay attention to and reflect on our own perceptions”. With this approach in mind, phenomenology was an ideal design for the research as it allowed me the opportunity to examine in greater depth the multifaceted elements of the expressive discussion flowing from the interviews to understand how participants perceive, relate to and achieve meaning.

3.3 The pilot study

The primary objective of the pilot study was to trial the data collection technique and to ensure the questions and approach were appropriate and elicited the required type of data (Saunders *et al.,* 2009, Arthur et al., 2012). The pilot study was conducted in one University using an existing practice based CoP. Three participants were selected who had diverse roles within the University. This ensured that appropriate respondents could be interviewed to review the questions and approach.

The interviews were organised and held at locations chosen by the interviewees and this included on one occasion a Skype call to a participant’s office, which allowed me to trial the data recording methods. The pilot tested the use of the conceptual themes in the research and reflected the dynamic nature of the questions (Kvale & Brinkmann, 2009). The dynamic aspect of the conversation emerged through the story telling and expansion of the area explored by the question(s) bringing out examples of the individual’s view of CoP membership; what they viewed as the benefits; how they shared knowledge; how they interacted

with each other. Rich data were gathered in all these areas and key learning points were observed, and some questions were adapted slightly in order to help the focus of the main study. Significantly, in the discussion surrounding knowledge sharing, different viewpoints began to emerge on how this occurred. Conversations grew from simple ‘I don’t know why I don’t engage with that person’ to ‘I trusted this person and so valued their thoughts on how best to solve this problem’. Critically it was acknowledged that the participants when discussing known solutions appeared to be exploring components of tacit knowledge or the ‘know how’ (Nonaka, 1991) that brings the knowledge shared to life.

It was fundamental to ascertain respondent’s level of participation and their ability to comment on the functioning of the CoP. I was also interested in the interactions with others that exemplify the importance of tacit knowledge sharing. However, this was without the need for participants to understand the theoretical frameworks associated with tacit knowledge sharing. Engaging with the interviewee was enhanced by using learned techniques from coaching training including ‘active listening’ and encouraging the interviewee to expand on observations and stories relating to the questions. Also reflecting back observations and the feelings the interviewees were expressing (Reisser & Roper, 1999).The key outcome from the pilot study was the reconstruction of questions in order to enhance the depth of response elicited. Additionally, the questions used in the opening conversation were redesigned to contextualise the interview and establish a sense of ‘comfort’ for the interviewee.

The experience of conducting the pilot informed the preparation of a clear plan of how the environment would be managed, the research role I would adopt and how the interviews would be recorded. A letter of invitation was sent to all participants which included the necessary disclosure, ethical assurances, research information, how the interviews would be conducted and, finally, how the data would be anonymised and used in the thesis. I then initiated a conversation by telephone with the participants to provide further background information and help assure them. Finally I ensured the interview room or online environment would be a private space, prepared the recording device (iPad) and subsequently Skype for Business.

3.4 Process of conducting the main study

Kvale (1996) suggests that the qualitative research interviews are an appropriate method of data collection as they fulfill the need to capture meaningful experiential information to enable the area to be explored in depth. The rationale for the use of interviews in this study was because it provided an opportunity to explore in detail specific aspects of the participants views of CoP experience. Interviews can be categorised into three formats: Structured; semi-structured and unstructured. The structured interview uses questions with fixed choices that are best used when large amounts of data is already evident about the phenomena (Bryman 2008). However, the comparative closed nature of this approach limits the depth of understanding and therefore was not considered suitable for this study which looks to illicit deep understanding of the lived experience of CoP members.

A less restrictive approach is the semi structured interview which uses open ended questions around a pre-determined schedule (Mason 2006). Semi structured interviews also provide an opportunity to address questions emerging from the dialogue between interviewer and interviewee (Kvale & Brinkmann, 2009). Finally, the third format of unstructured interviews is useful for the exploration of new or partially familiar topics or ideas. However, a possible disadvantage to this approach is the potential for the interview to not focus on the key themes identified from the literature review. The unfocused nature of unstructured interviews therefore has the potential to miss the depth of understanding required of the key themes under investigation.

In the current study, a semi structured interview technique was employed as it afforded a certain degree of standardisation and openness of response from the interviewee (Chamberlayne *et al.*, 2000). This data collection technique allowed the agenda to be set for the interview and afforded an opportunity to probe more deeply if required and ask supplementary questions dependent on the responses of the interviewee (Miles & Huberman, 1994).

Having decided on the data collection technique, I moved on to consider the research protocol for the interview process. As a phenomenological study it did

not seen appropriate to generate a series of detailed questions for the interview. Hatch & Cunliffe (2006) suggest that the challenge in phenomenological investigation is to both assist the research participant in producing a coherent account of their experiences, and then to translate the individual's own words into relevant outputs through selection and analysis. In order to support the research participant and to provide a degree of structure to the interviews the main themes of CoP tacit knowledge sharing drawn from the literature review were then used as a framework to inform interview design.

3.4.1 Sampling process

A key methodological decision for researchers relates to sampling. Miles & Huberman (1994) advise that the sampling approach when employing a qualitative design relies on a smaller sample of participants. They suggest that the natural approach to sampling in qualitative research tends to be purposive in nature and selected to suit the specific requirements of the phenomena under study. Whilst this approach may initially appear easier Silverman (2009:141) warns that this "demands that we think critically about the parameters of the population we are studying and choose our sample case carefully on this basis".

The sampling technique used in the study was purposive sampling as this allowed me to choose participants with experience of CoP membership within the HE IT environment. Blaikie (2009:141), who argued that it was a "matter of judgement" for the researcher to determine the sample from the most appropriate population, supports this perspective. In the event ten individuals were selected from four distinct CoPs. Seven were men and three were women ranging in age from mid-30s to mid-50s. Participants were all from different institutions across the UK. As a former member, coordinator and leader of a CoP I had an extensive network to approach to participate in the study. The interviewees held a range of roles within IT in the higher education sector ranging from senior managers, programme managers, technologists and technology specialists and were drawn from different institutions as well as different CoPs currently operating under the auspices of the umbrella organisation. This range of interviewees reflected the different types of institutions and CoPs. This allows any findings to have a level

of transferability both to CoPs in different sectors or indeed those organisationally constructed. **Table 5** below provides insight into the participants in terms of role and experience of being a member of a CoP.

Participant	Role	Years of experience in role	Years of experience of CoP membership	Gender	CoP role
Participant 1	Senior Manager	5	3	M	VC
Participant 2	Senior Academic	10	7	F	M
Participant 3	Senior Manager	4	2	M	M
Participant 4	Senior Leader	3	4	M	CH
Participant 5	Senior Manager	3	8	M	CH
Participant 6	Senior Developer	8	4	M	M
Participant 7	Senior Executive	12	15	M	M
Participant 8	Senior Customer Executive	2	3	F	CH
Participant 9	Senior Customer Executive	1	2	F	M

Table 5: Overview of Sample in Terms of Role, Experience and introducing CoP membership

Table Key: CH: Chair, VC: Vice chair, M: Member

3.5 Ethical Considerations

Throughout the research the principles contained within the university ethics and governance procedure were the foundation to the approach adopted and in addition the core principles suggested by Sieber (1992, p.18). From her perspective, ethics should consider:

- Beneficence – maximising good outcomes for science, humanity, and the individual research participants while avoiding or minimising unnecessary harm, risk or wrong.
- Respect – protecting the autonomy of (autonomous) persons, with courtesy and respect for individuals as persons, including those who are not autonomous (e.g. infants, mentally ill, senile persons).
- Justice – ensuring reasonable, non-exploitative and carefully considered procedures and their fair administration; fair distribution of costs and benefits among persons and groups (those who bear the risk of research should be those who benefit from it).
- Process of ethical approval.

For both the pilot and main study, an application was submitted to the University Research Integrity Committee. In both cases, ethical approval was granted and both components of the study completed. As a condition of this approval copies of the information sheet and the consent form were made available for all participants and prior to commencing the data collection a check was made that there were no questions or concerns that needed to be addressed. Once the consent forms were signed the interviews began. A copy of the information letter, consent form and approval letter is available in **Appendix 1: Consent forms**. The University process ensures the researcher follows a set of standards to protect the anonymity of participants and to meet the requirement all transcribed interviews were maintained on a password-protected computer. Each participant was allocated a pseudonym, which only I could recognise (Patton, 1990).

3.6 Individual Interviews

The interviews aimed to encourage participants to comment on specific aspects of their experiences of working within the community, both in the institutional setting and the practice arena. It seemed inappropriate to specify my actions within individual interviews beyond this general level of the topic choice for a number of different reasons. Firstly, specifying my own actions in some detail in advance of the interviews could considerably reduce the extent to which the informants could control the direction in which they wished to pursue topics. Secondly, an attempt to standardise my own procedures across interviews would also have been markedly inconsistent with the view of talk, social interaction, and the local, situated construction of meaning. Finally, even had a standardised procedure been desired, a considerable amount of research evidence clearly indicates that this is an unattainable ideal. Indeed, Mishler (1986:P.44) notes "25-40 percent of the questions asked by interviewers depart significantly from the wording of the questions in the schedule".

Each interview was recorded and then transcribed verbatim. Transcripts were supported by observations noted at the time of the interviews and shortly afterwards. The interviews captured the personal experiences of the individual, their views in their own words and provided an opportunity for them to tell their stories. These stories engendered discussions of the participant's experience of tacit information sharing in the CoP. This process created large amounts of rich data analysed through the extraction of meaning from summaries of the text, which were in turn themed (Bryman & Bell, 2007; Saunders *et al.*, 2009). Following Cortazzi (2001), this process of storytelling encouraged the participants to relate their experiences of knowledge sharing and the effect of member relationships within the CoP. What emerged were descriptions in relation to their experiences of the CoP and this allowed an understanding of the internal and external characteristics surrounding tacit knowledge sharing and of the behaviours and relationships displayed by the membership.

3.6.1 Transcribing the data

The transcribing of the data was probably one of the most challenging and time consuming aspects of the study. Firstly, an hour or more of audio recording takes considerable time and effort to transcribe even before any analysis takes place. Secondly, the researcher realised it was best to listen to the recording and where possible transcribe it soon after the interviews to maximise the understanding and to ensure no thoughts from the interviews were lost.

3.6.2 Data Analysis

Data analysis is a practice in which raw data are ordered and organised so that useful information can be extracted from them (Grbich, 2013). The process of organising and thinking about data is key to understanding what the data do and do not contain. According to Bryman & Burgess (1996), the main emphasis in qualitative data analysis is to define, categorise, theorise, explore and map the data. However, in qualitative naturalistic studies, the researcher is subject to the influence of personal experience and must be cognisant of the impact personal preconceptions and interpretations may have on data analysis. Therefore, an additional process of causal mapping was employed during the analysis process to sense check the themes emerging from the data and link them back to the key responses from the interviews.

The data were subjected to thematic analysis which was described by Grbich (2013) as a process of data reduction and one of the main analytic options available. This approach may use inductive or deductive features, or indeed a combination of both in the early stages of the analysis. Data were reviewed using a deductive approach where initial themes were identified from the structure of the interview schedule and the key literature. A more inductive approach followed as a more in-depth analysis of the interview material was conducted. Three stages of data analysis were conducted in order to investigate the role of tacit knowledge sharing occurring within the CoP:

Stage 1 – Identification of 10 initial themes

Stage 2 - Grouping together and the order of themes

Stage 3 – Emergence of the three core themes

Stage 1

The process of analysing the data started with reviewing my notes and diary data recorded following each of the interviews to summarise key points, feelings and intonations from the participants. These were reflections about the process of the interviews, which were important to consider because they contextualised the manner of the responses and what had occurred in the research process, what had been learned and the insights it provided (Ely *et al.*, 1991). At the end of the transcription process I went through each transcript with a highlighter pen picking out statements and points made by all participants and looked for key words and phrases relating to explicit and tacit knowledge exchange (leCompte & Preissle, 1993; Boyatzis, 1998; Saunders *et al.,* 2009). I used different colours to link topics from each participant, between participants and across participants. These topics formed the basis of the initial thematic analysis. Ten themes were identified as shown in Column 1 **Table 6** below. The themes were then entered into a spreadsheet with all the associated stories and statements totaling in excess of 1100.

Stage 2

I then transferred all the statements pertaining to the 10 themes to a spreadsheet. Stage two analysis allowed me to reduce the initial ten to six themes. The 'core values' theme was initially developed because of the key terms used by participants, however, through re-reading it was identified that they were discussing the value of relationships similar to that in the 'relationships/personalisation' theme and therefore the data in these two themes were merged. A similar process occurred with 'CoP type', 'purpose and boundaries', 'people/experience', 'benefit' and 'social' (Themes 1-5) as the analysis showed that these themes were describing the tacit knowledge sharing and flow activities within the CoPs. Then the merged themes of 'relationship /personalisation' and 'core values' were identified with the themes of 'behaviours' and the 'role of the leader' as those that appeared to influence tacit knowledge sharing.

Stage 3

The coding and analysis of the first set of groupings (initial themes1-5) indicated these groupings contained characteristics that described the flow of tacit knowledge sharing in CoPs (Stage 3, Theme 1). The analysis of the second set of groupings (which contained the merged themes 6 and 7 in conjunction with themes 8 and 9 described those characteristics as having influence on tacit knowledge sharing (Stage 3, theme 2). Finally, theme 10 has remained throughout the analysis as a separate theme describing the impact of tacit knowledge sharing on CoPs. At the end of the analysis process three core themes emerged which form the structure of the Findings chapter:

- The flow of tacit knowledge sharing
- Influences on tacit knowledge sharing
- The impact of tacit knowledge sharing.

Theme	Stages of Iterative Analysis		
	Stage1 (10 themes)	**Stage 2- (6 themes)**	**Stage 3 (3 themes)**
1	CoP type		
2	Purpose and Boundaries	**1-4** Knowledge Sharing	**1-5** What happens and where does it happens - flow of knowledge
3	People /Experience		
4	Benefit		
5	Social	**5** Places	**Flow of Tacit Knowledge sharing**
6	Relationships /personalisation	**6 & 7** Relationships/ personalisation	**6-9** What affects the flow of knowledge?
7	Core values		
8	Behaviours	**8** Behaviours	**Influences on Tacit Knowledge sharing**
9	Role of the leader	**9** Role of the leader	
10	Good CoP bad CoP	**10** Good CoP bad CoP	**10** Good CoP Bad CoP -Flow – the impact on and the impact of **Impact of Tacit Knowledge sharing**

Table 6: Analysis Process

Finally, by way of a sense check I then applied an approach known as causal mapping. This involved working from the original raw data afresh in order to ensure that the themes emerging from the iterative analysis were confirmed as evident in the raw data. Bringing the two approaches together allowed comparison of the data set with the second approach, producing useful visualisations of the activities under investigation.

3.7 Causal Mapping

Cognisant of my insider role I wished to ensure that the themes emerging from the data were not overly influenced by my insider perspective. As a means of sense checking the original themes emerging from the thematic analysis a second level of analysis was employed described as Causal mapping.

Causal mapping is a formal technique where specific thinking about a problem or issue is modelled using directed graphs. Generally, there are two main types of causal mapping techniques, idiographic and comparative. Idiographic causal mapping collects and describes the causal ideas of a *single* person or collectivity, such as a CEO or a group of managers, and presents them using a single *composite* cause map (Cosette, 2002; Eden & Ackermann, 1998). This resembles techniques like concept (idea/mind) mapping, typically used for pragmatic and/or personal heuristic purposes. In this study, this form of causal mapping was used because of its ability to respond to the demands of idiographic data.

Comparative cause mapping (CCM) extends the general causal map platform to research tasks, which require eliciting several individuals' causal ideas and the comparison and aggregation of their causal beliefs/knowledge patterns. When studying any cognition-related construct such as attitudes, values, or mental models, the self-evident problem is that such a construct or the contents of a person's cognitions, like causal knowledge/beliefs, cannot be observed nor elicited directly and independently of that person. Correspondingly, causal maps (or equivalent tables or matrices) do not exist as distinct entities and cannot be acquired as such. In all cases, they must be constructed (by researcher and/or appropriate software) from respondents' *causal statements* (A → B, B → C), which are either embedded and located in their communications such as interviews and transcripts, specifically administered texts/essays or questionnaires, or acquired by some structured method from the respondents as discussed below.

3.7.1 Process of Causal Mapping

In the majority of study cases, causal mapping is concerned with individual and social *cognition*, more specifically social actors' knowledge and beliefs, their formation, attributes and impacts in social contexts such as organisations or cultures. Usually, causal maps refer to graphic network representations and consist of nodes and arrows. Causal map *nodes* depict concepts (people, phenomena, their features) of the area of investigation, in this case CoP tacit knowledge sharing, the *arrows* indicating the concepts' interlinked causal relationships, usually as perceived by the researcher or research participants. Accordingly, causal mapping was considered as well suited in this study for not just structuring, coding and making sense of the rich idiographic data concerned with the explorations of social practice, but also as a sense checking exercise.

3.7.2 Process of Conducting Causal Mapping in the Study

The process began by re-listening to the recordings of the interviews, with a copy of the raw data in spreadsheet format, which had been constructed from a list of potential impacts on tacit knowledge sharing in CoPs. The importance of this ‘first pass’ was to ascertain in almost real time those activities or characteristics having an impact on tacit knowledge sharing. Bryson *et al.* (2004) described this visible thinking achieved through causal mapping as a way of helping to understand challenging situations.

Therefore in adopting this approach causal mapping was employed as a useful way to visualise and consider the thinking of the participants and their responses to the questions asked. This was followed by the creation of a draft map with an initial list of ‘causes’ whilst concurrently checking the raw data for evidence to underpin the initial map. What followed was an iterative process of linking raw data to the causes and a series of underpinning statements formed into linked lists for the map. Using the raw data in this way allowed the map to be continually updated whenever a new or previously unrecognised causal effect became obvious. This supported my ability to ‘think out loud’ and to look closely at the

relationships formed between causality, that which appeared to be impacting the activity, and the relationship to activities such as behaviours or sharing types supported from the rich idiographic data from the transcripts and notes. This was followed by listening again to the recordings but now specifically listening to the statements and the tone and emotion in which they were delivered to understand the depth of feeling and implications of what the participants were saying (Pyrko *et al.*, 2016).

What formed by continually returning to the raw data and regrouping it was the identification of a potential causal effect. Referred to as cognitive mapping because of its relationship to personal thinking which may only be able to hold onto several concepts at any given time. However by cross- referencing the map to the statements of the participants and then evolving multiple versions of the map it was possible to surface, from considerable complexity, the key emergent themes from the underlying data. This supported the key themes emerging from the previous qualitative thematic analysis. The technique identified and made conscious the decisions as to what elements were relevant to the study.

The outcome of this exercise served several functions in relation to the trustworthiness of the analysis process. Using causal mapping 9 of the original 10 identified in the first stage of analysis were confirmed in this process with the exception of the two themes known as ‘relationships/personalisation’ and ‘core values’’. The initial causal mapping therefore identified 9 key themes,

1. Cop type
2. Purpose & Boundaries
3. People/Experience
4. Benefit
5. Social
6. Relationships/Personalisation
7. Behaviours
8. Role of the leader
9. Good CoP bad CoP

In cross-referencing two data analysis techniques to surface and confirm the themes, the study benefited from the cross referencing of the original thematic analysis with the causal mapping to confirm the findings. In applying these techniques, it was possible to consider personal biases which may have had the potential to impact the study. The iterative analyses of the data that provided the data sets and the maps was found to be a way of considering the implications and the evidence as opposed to subconsciously discounting what the evidence was highlighting.

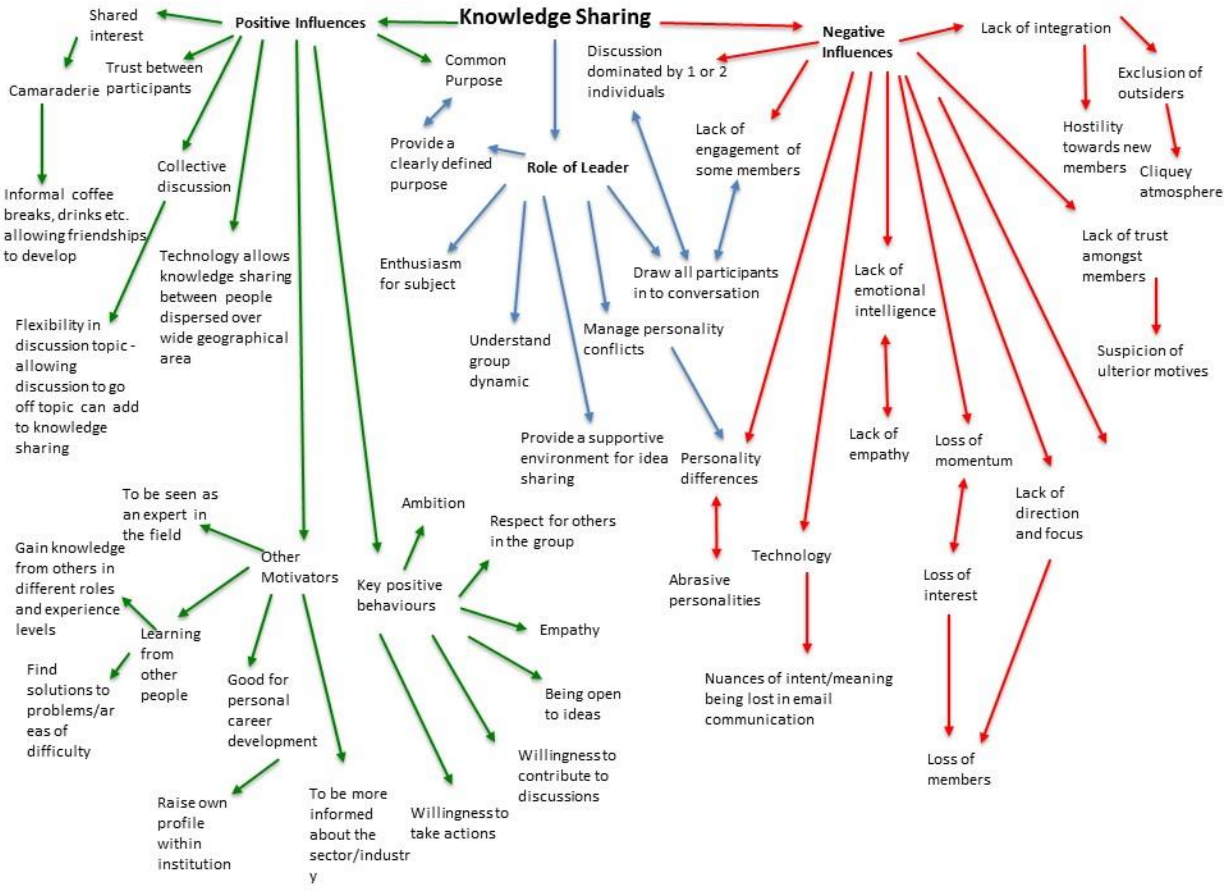

Figure 3: Causal Map- Indicating the complexity of the positive and negative influences on tacit knowledge sharing

3.8 Criteria for Evaluating Qualitative Research

Within qualitative studies trustworthiness can be established through terms such as: credibility, transferability, dependability and confirmability (Bryman & Bell, 2015). Credibility, they argue, mirrors internal validity in quantitative studies and as such is concerned with ensuring that the researcher has understood the participant`s social world. In this study credibility was achieved through the validation of transcripts by participants. In addition the causal mapping process added to this by confirming the themes were informed by the participants accounts. Paralleling external validity 'transferability' is concerned with the extent to which findings provide 'thick descriptions' of the details of a culture (Geertz, 1973). This study, with its outputs and conclusions based on a range of actors operating across similar organisational units (CoPs), can more appropriately be aligned to 'transferability' rather than generalisability (Stiles, 1993).

The third construct identified by Bryman & Bell (2015) is dependability which mirrors reliability in quantitative studies. Dependability then concerns a clear audit trail that pertains to all stages of data collection, analysis and reporting. Within the study research protocols were established to ensure that decisions around selection of sample, analysis of interview transcripts, research field notes and the use of causal mapping were all transparent, recorded and in line with research governance principles.

Confirmability reflects objectivity in qualitative studies and while this work does not make any claims regarding objectivity it has been conducted in 'good faith` and the impact of values has been considered through the acknowledgement of personal axiological position through the lived experience of the participants. This has been presented as a lens through which to view the work and so values have become an integral and considered part of the research process. The axiological stance, it could be argued, is even more important in practice based research where outcomes may have an impact on the business and management of the research phenomena (Ponterotto, 2005).

3.9 Conclusion

This chapter following Grix's (2010) framework presented the philosophical underpinning of the study and, via a process of appraisal of the methodologies that informed the chosen methods, provided a framework through which the study was conducted. In summary, the study adopted a qualitative phenomenological design using semi- structured interviews with 9 participants to elicit the lived experience of CoPs functioning and the tacit knowledge sharing practice. The data analysis was initially conducted using thematic analysis as a means of sense checking and causal mapping was employed to visualize the data. The three key themes emerging from the data are discussed in the next chapter.

4. Chapter 4: Findings

4.1 Introduction

In this chapter, the findings arising from the analysis and interpretation of the data provided by the participants are presented. The interviews were conducted with a cross-sector, cross-institutional group of participants who were purposively selected from a collection of the CoPs. This group support several CoPs that are interdisciplinary in nature. Many of these CoPs have been operating successfully for several years in the perception of the members. Other CoPs however have fallen by the wayside and to date there has been no research to consider possible reasons why. The membership of these CoPs has a wealth of experience of differing CoPs and related perceived successes and failures.

At the beginning of the interviews, it was important to put the participants at ease and explore with them their view of CoPs, their understanding of them and their reasons for participating in them. This was a precursor to exploring with them the stories and lived experiences of their involvement in CoPs and provides an important backdrop to their recounted experiences (Hyden 1997).

4.2 Introducing the participants

4.2.1 Participant 1

This participant is a senior manager within IT at a large University and has been a member of this CoP for three years before assuming the role of Vice Chair. The participant described his role as that of supporting the chair in encouraging participation within the Cop with the additional responsibility of leading and coordinating the group conference and seminar programme. The participant described the CoP and the benefits of being involved before going on to describe how the CoP functioned.

Exploring the CoP and areas of interest;

'I suppose the main one is the XXXXXX in SPO. I am involved in other ones in the round I suppose are various forums and teams in the university. The university would probably call them meetings but Communities of Practice is a good name for them. They, like SPO XXXXX, are about a group of people getting together and sharing their expertise and helping and assisting each other more informally than the more formal committee structure. I suppose that's what SPO is like – it is quite informal but is structured formally. And populated by volunteers which is probably the important bit.'

'The XXXXX CoP runs really in the broad area of business applications but it does bring up an interesting point that there are other groups and there are overlaps and it's really the people who are in the community of practice. The CoP has been formed around the business systems side and the wider aspects of the community and the sector, including outside of the university like the suppliers and the vendors but whenever you take a step back the people involved in the COP have much wider remits and we would tend to discuss and have much wider conversations than the CoP formally would report through and would deal with issues. It's really around the whole business systems interface and the suppliers and the various government bodies like CISA, UK Borders Agency, Student Loans Company and people like that.'

Benefits of participation in the CoP;

'I suppose there are a range of them. One of them is being more informed at the sector level as to what's happening at a national level, the various initiatives around the CISA, UCAS, that sort of thing. Then also the people in it and their shared expertise – the people on the Corporate Information Systems Group have a vast amount of experience. They have all been in the sector for quite a while and have a lot of experience in a lot of different roles dealing with different issues and a lot of that networking and being able to share and ask what others are doing and sharing good practice, that collective knowledge and the sharing. The CISG is a very good example that people are very happy to share in and help and assist, it's very collaborative.'

4.2.2 Participant 2

Participant 2 is a senior academic within a digital education setting. She has been involved in several practice based communities of practice.

Exploring the CoP and areas of interest;

'I belong to a digital education community of practice but I think I'm probably a part of a teaching practice community and also part of a

practice-practice community, in that I cover a clinical area. So I'm actually out in the clinical area, I'm part of that as well. But I'm also probably part of a family community, which I think is where I fit in as well. So, I think maybe I am currently involved in four CoPs minimum, maybe more but certainly four. The external one though is the SPO one and that's where we have all got an interest in digital learning and how we can leverage innovation in this area. It's a big theme now in our Universities and we work with a large group of learning technologists as we grapple with new thinking and practice.'

'I think though, probably because my role is academic management, my role within my Community of Practice is slightly different to somebody who is a part of that CoP. So, I'm a subject group leader and my Community of Practice involvement is to understand what can work well for the community and that through sharing between us all we will build our knowledge. My relationship is as a manager but also as a colleague. So, I'm not there to tell people what to do, I'm there to work with them and to get the best from them, most of the time. It doesn't always work. But that's what I would try to do, that's what I see my role as.'

Benefits of participation in the CoP;

'I think for me, the CoP keeps me in touch with the real world, with the world that I actually teach about. So, it allows me to remember what it's like to actually stand in that environment and what the real fears are for someone going in there, versus what are the things they actually have to know. You know, how you can prepare them both emotionally and mentally for what it is that they're going in to be a part of.'

'Because what we see and what we experience as educators can be emotively very, very challenging in some respects, particularly if we experience something different from the manual which is the 'how we have to behave in this scenario' you have to be able to explain what you actually do…you have to be like this when in practice and much of that understanding is shared in CoPs and is one of the key benefits for me of being involved. The CoP serves a benefit to the membership because they can use me as a vehicle to gain my sense of what is important in my practice and then by sharing each other's experience and knowledge so that we can learn from each other. It helps us to understand what these blessed books we learn from are about and what has to be ticked in practice, and what has to be learned from experience as well. When you put us together and we are sharing these experiences and talking about how we are using technology then some surprising ideas form and off we go and try them out. Some work some don't but sharing our experiences and trying new things helps me and our community innovate'

4.2.3 Participant 3

Participant 3 described them self as a new senior IT manager and practitioner who was relatively new to CoPs.

Exploring the CoP and areas of interest;

'In my role I have joined a number of CoPs both internal to my University and external. One of the main Communities of Practice I'm involved with, probably the main one, is the external one – there's a group called xxxx and that's a Communities of Practice really across the education sector, with members from a number of universities, it's quite unique because it's really only one person from each university. Sometimes it can be a couple but it's the range of universities across the UK that makes it really interesting. The CoP is probably more technically focused covering applications, VLE's and in that way brings in Learning Technologists and the technical development teams and other people who need to be involved because of their expertise or interest in application development.'

Benefits of participation in the CoP;

'I am realising many benefits of being involved with CoPs. With internal CoPs, I'm more likely to be the senior person, or there is at least a senior person there and so this tends to make the University CoPs work like committees or teams. With the external CoP, we are pretty much all on a par, so you are meeting with your peers and the benefit is really understanding what other people's problems are in their day to day work and how you can resolve any of these problems and use it in your own work because actually, what you would normally find with lots of the application development we are involved in, is you have the same issues in development or implementation. That's kind of the first benefit of – here's what it is and what's gone wrong. Obviously the other one is from your own self, if you have your own problem you can get feedback from that group of likeminded people to say 'actually we've had this problem and this is how we've resolved it', or 'we've had a similar thing and this is how we would tackle it'. It's not just a technical thing, it's a people thing and a management thing as well, certainly the people that are involved in the xxxxx are not all senior managers although many have gone on to be assistant director and directors. So what you get going on is different levels of experience being shared by those who have done it before and those who are the cutting edge of new developments.'

'On the face of it being in this CoP seems to be good for your career. I've been involved with it for a couple of years now and there is certainly a turnover and the turnover sometimes is really about people who have just moved jobs but actually it's the evolution of their job themselves is really what happens. So, I am thinking now that all this sharing benefits not just my University and but also me.'

4.2.4 Participant 4

Participant 4 was a senior leader within a University with responsibility for IT as part of their wider role. Currently chairing a CoP he has been a member and then Vice Chair before taking on the role of Chair. Participant 4 therefore has considerable experience of his CoP having now participated and contributed for four years.

Exploring the CoP and areas of interest;

'I'm involved in a number of sector CoPs the main ones are SPO xxxxx, and HEIDS (Higher Education Information Directors) and a few other specialist groups that form around a topic area of some kind. Generally, and certainly with SPO and HEIDS volunteers are the main feature. They can be described as intentionally formed as they have a more formal structure, or they can just simply be a coming together of people who are interested in a sector problem. SPO usually then helps them as a special interest group who can then go on to a more formal CoP adopting their now recognised support structure. In the main this centers on some key roles of chair and vice chair and with admin support for conferences and seminars for disseminating information and conducting surveys to gather information.'

'My interest in being involved is normally around a topic. The FE ones I am involved in are very much the structure of the educational provision in Scotland for instance, or the governance. So, they are formed specifically for that. Whereas SPO are more open in terms of general topic areas, so if you are interested in corporate information systems it's just about being a member of SPO rather than what sector you are from. So, my main areas of interest are around sector issues and liaison with and influencing sector bodies such as UCAS and HESA and also the relationship to business information systems and how they are impacted by regulation and external data demands.'

Benefits of participation in the CoP;

'I think there are about three things – a few things come to mind. One is that it benefits your organisation as they are generally there to either be an interface for some regulatory body or for sectoral issues and your institution gets a benefit from that because you are participating in it and can either influence the outcome to the benefit of your institution, or you have prior knowledge and awareness of the issues. The other thing your institution benefits from is that you are looking over the parapet and seeing what's outside of the institution so they are bringing fresh ideas in and you can also say – well it's not just us that are suffering those issues, or we're not as bad as everybody else! I think you personally get a benefit from it as well by networking, meeting individuals from other organisations. There

is a bit of side work that goes on outside of community practices through the people you meet and the relationships you build up and I think it helps with other opportunities and so on.'

4.2.5 Participant 5

Participant 5 described them self as a senior IT manager with lengthy experience of working as part of a CoPs. He has been a member, Vice chair and Chair of a CoP and has been involved in the early beginnings of special interest groups that are much more loosely formed, at least initially.

Exploring the CoP and areas of interest;

'The enterprise architecture CoP I am involved in is pretty unintentional, it was formed out of people with an interest in that and so I have got experience of intentionally formed CoPs and those that have just formed because it's interesting and important. Picking any of them, EA or SPO xxxxx, I would say a lot of it is around a common interest and that's the key because there's the potential to generate that value and synergy from bringing together people who have a common interest. Connecting them and bringing them together. It's Absolutely my view that quite often you might find that there may be people who can bring supplementary value - they still bring value but it's not directly relevant to an area of expertise, so it might be something like someone helping to facilitate within a Communities of practice - let's say it's the enterprise architecture Communities of practice, they may not have a particular expertise in enterprise architecture but perhaps they have an interest and that interest means that they are motivated to bring something in order to contribute to that Communities of practice.'

'I suppose there needs to be an agreement amongst the community of what the scope is and I think that can be quite tricky at times. It's not necessarily a problem because as long as the majority of the community still see value in being part of it and still hold an interest, then if it moves in a slightly different direction – a good example is actually within the enterprise architecture Communities of practice there has been some discussion recently about just calling it 'architecture' don't call it 'enterprise architecture' let's open it up as far as other architecture realms such as technical architecture and data architecture. So I think I can see the scope could change and it could cause a problem but it doesn't necessarily have to. Perhaps it needs to be managed quite carefully because Communities of practice is a very loosely banded organisation and it's very easy for people to lose interest and then it starts to fall apart.'

Benefits of participation in the CoP;

'I think it really is just a case of being able to learn from other people's experience and get that synergy from being able to work with other people. There is the potential for there to be some more significant outcomes but

as I said, it's quite difficult to achieve because people all have day jobs. I know that ITANA the American IT architecture network have some of the same issues about trying to get people to take things forward. Sometimes you're lucky and you get someone who is a real star and will lead on something and it's possible to get a few of those going I think it would be possible to generate a bit of momentum and that was one of things I struggled with, and why I was very pleased when I managed to encourage xxxxx to take over at EA Community of Practice. I felt that I'd been putting what time I could towards it and trying to generate a bit of momentum but I just think the rate of activity wasn't enough to really get that momentum going.'

4.2.6 Participant 6

This participant described himself as a senior developer and a practitioner. He is participating in CoPs as someone with considerable experience in their field of technical expertise. He is a member of a CoP with no special responsibilities other than to participate and share.

Exploring the CoP and areas of interest;

'I belong to a technical CoP, I would describe It as a group of like-minded people coming together for mutual advantage in terms of, in our field, looking at the various technical solutions and how they have been implemented. You are also going to pick up the various frameworks that are there and seeing how they can be best used across multiple disciplines. If you look at the one I was involved in at xxxxx it was the BA CoP and it was actually very informative because it brought to the fore very quickly what was happening in other institutions and it really showed the benefit of what we were doing wasn't in isolation and we were able to learn from it very quickly in terms of the tools, the implementation and the problems that were encountered right across the sectors. So being able to pick up like that is more or less what it means and the main advantage of it.'

Benefits of participation in the CoP;

'It's really around that knowledge transfer thing and sharing that makes it useful, the showing of the good and the bad. I think one of the main benefits for me is actually the dissemination of information, it's kind of knowing that whether you're looking at something that's related to software or hardware practice, processes, or even adopting various frameworks it doesn't really matter what the area is, it's the idea that you are able to learn effectively from someone else. It's putting out the activities you are doing and in some ways people don't always like saying what they are doing. Being able to do that in a free and open environment where you can say - oh we did that and it didn't work, or we did that and

yes if you take it to that level or do it that way – then that sharing of knowledge is invaluable. It also offers good return to the sector as well because the more we can learn from our own experience the better.'

4.2.7 Participant 7

Participant 7 was a senior executive with a considerable experience of CoPs at all levels. He has held a number roles both within and across CoPs with lengthy experience of the sector, the IT discipline and its practices.

Exploring the CoP and areas of interest;

'I have been involved with a number of CoPs over the years and my view is that even the special interest groups such as xxxx are actually CoPs, they weren't intentionally formed CoPs but they are nonetheless CoPs. They are populated by volunteers and often have tasks that are developed by themselves but primarily one of their functions is to share knowledge with their membership etc. I would say probably I pick up all the groups I am involved in, I suppose the community itself, alright it's a big Communities of Practice but the whole SPO community is nonetheless a community. That is the fact of the matter. I think within that you have got some that are obviously very active and some that, for whatever reason, view other communities as more important. I am though looking really to try and establish a new CoP and share best practice and address common issues in research data management, a particular CoP that would just focus on a given topic and then come up with a number of things and did a bit of voting on trying to establish which were the most important aspects in this area. What hasn't happened though is that we've identified a number of areas to consider but we are struggling a bit with this one, I guess it's primarily because xxxxxx and I are just too busy to sustain it on our own. Whereas I think with the Enterprise architecture one xxxxxx who leads that from xxxxx is enthusiastic, he is using a lot of things that come out of it in his work and so is able to continue to stimulate conversation and interaction with others. They ran an event a couple of weeks ago which was well attended.'

Benefits of participation in the CoP;

'I don't see the getting something out of it as just being restricted to solving problems etc. some of the getting something out of it for a true community is being seen as a contributor and an expert. Not that a lot of experts have done particularly well recently but that's the thing. When I became chair of XXXXXX, donkey's years ago, it was very much aligned with the universities in terms of promoting the university and putting the university in places of influence. I was talking to xxxxxx, who was then Chief Exec of UCAS and xxxxxx was Chief Exec of HESA and that was not something that anyone form IT services at xxxxx had ever done before. So the reward

then was sort of me being seen I suppose as an expert and I was able to promote that role internally as much as would in the community the XXXXXX committee itself. The CoP gave me an opportunity to demonstrate my knowledge and with it comes confidence, if you live in your own bubble you don't think that maybe what you do is applicable elsewhere and has value elsewhere. At times at xxxx University I was struggling to think I added value internally and being involved in a CoP helped me understand how I could contribute and my level of expertise.'

4.2.8 Participant 8

This participant described herself as a Senior Customer executive operating in the frontline services of her University. Not a technical person but a support professional, a key role in any IT service. Although showing limited experience of CoPs she has quickly become a Chairperson from initially joining as a community member three years prior to taking on this role.

Exploring the CoP and areas of interest;

'I've heard the phrase, Community of Practice, but I'm not really sure what it refers to. I guess for me it's something like the SPO community, or maybe I was thinking about SCI as well and all the things they do and how involved I am with them around service desk, but that's quite a formal organisation so I'm not sure whether you would class that as a Communities of Practice. I suppose the support services is quite a broad remit that's much broader than it was a few years ago. At one point, it was very focused around service desk and I think that may have been because of the make-up of the group at the time. Now we have got a broad membership group that covers all the different areas and it really is about sharing best practice and sharing knowledge, sharing information, sharing contacts and I have to say it's one of the things I love most about HE and I just don't think you would see it outside. A small anecdote here – I was doing some work with the CSI a couple of years ago and they set up some special interest groups with a view to having one special interest group event per year. The only one that is still going is the HE one. All the others have dropped off and that's because within HE there is that willingness to share. They tried to do a Law one, for example, so all service desks in law companies - and also banking – but they are all so unwilling to share information.'

Benefits of participation in the CoP;

'For me I'll talk about personal benefits in the first instance, it's just the sense of community. I've made life-long friends, I've made contacts, I've got to do things outside of my day job that I maybe wouldn't have got the opportunity to do, things like getting involved with the events. I would never have got to organise conferences if it wasn't for the group. In terms of

personal development, I got to do a whole range of things and meet a whole range of people outside of my own organisation and that for me has been absolutely invaluable. I guess that crosses into professional as well, because I've really broadened my knowledge of the sector, so understanding what is good and what is bad, if you don't have that view then it's hard when you are looking at your own job and your own role. So I think that wider sector view and the professional contacts, which are always really useful, so nine times out of ten now it gives me enormous satisfaction that we might have something at work and somebody says – oh where's doing that really well, or do we know somebody who's doing that and I'll say oh I know someone at so-and-so, or I've got a contact at Huddersfield, or I went up to Aberdeen, or I've been to Edgehill, and that is actually really, really useful. In other terms I've been able to raise the profile of both the University of xxxxx and xxxxxxx University within the SPO community, so professionally that's been a positive. They're quite selfish I guess – is that the right word – they are all about me really. In terms of the benefits for the organisation, my enhanced learning and knowledge gets shared and there has been that opportunity to raise the profile of my own institutions and get them more involved and things as well.'

4.2.9 Participant 9

Participant nine was a senior customer services executive operating in the business support, business analysis and programme & project management practice. She has recently joined a CoP in the last two years and contributes as a member with no special role.

Exploring the CoP and areas of interest;

'I am a member of the SPO project and change management committee. Its project management and change management. There are various mixed capabilities on the committee so there are some there that are leaning more towards 'lean' environment and continuous improvement. There are more people that are involved in project management rather than change management on the committee and whereas I'm probably a bit of a mixture of all three I'm probably the only one that is in that position. It started from a SPO conference at xxxxxx about 3 years ago and there was a meeting in the bar with about 10-15 people who were really interested and they took it from there after speaking to SPO and we were then a year I think in the wilderness of SPO before it was a fully formed committee. The main aim was to disseminate information and knowledge and the systems more than anything else.'

Benefits of participation in the CoP;

'It's networking, it's the information on what other universities are currently doing and whether it validates what we are doing back here in xxxxx University. That's the main benefit. We all benefit from the shared best practice, not the fact we are Prince 2 or APM or lean but how these methodologies are put into practice in our Universities and we have found works and also what doesn't. When we make information available to the sector we get lots of feedback that helps us learn more, there are times when we come up with or have shared novel approaches but we are still new and still trying to get the basics of what's important to our expertise.'

4.3 Flow of tacit knowledge sharing

CoPs are well documented as structures for managing knowledge within organisations. The CoPs currently being investigated were not representative of one key organisation but rather from people across the sector. While some of the membership had a long relationship there was also new members joining and adding to the dynamic of the CoP.

I was interested in gaining an in-depth account from the participants about the types of knowledge sharing in the CoPs and the impact this had for them personally. More specifically in analysing the data I was interested in identifying instances of tacit knowledge sharing whereby practice knowledge (explicit knowledge) is brought to the group and discussed as a shared experience (tacit knowledge) which in turn has the potential to become explicit knowledge again when applied and articulated to personal practice. This lead initially to examining in detail the rich array of experience evident in the CoP, participants were asked about the value of being able to tap into that experience and apply the collective knowledge to their own area of practice. The quote below demonstrates the richness of experience of CoP members and the collaborative nature of the tacit knowledge sharing which comes from the accounts of practice of experts of the CoP.

> "*The people on the Corporate Information Systems Group have a vast amount of experience. They have all been in the sector for quite a while and have a lot of experience in a lot of different roles dealing with different issues and a lot of that networking and being able to share and ask what others are doing and sharing good practice, that collective knowledge and the sharing. This group is a very good example that people are very happy to share in and help and assist, it's very collaborative" (Participant 1)*

An interesting point is made above in that it is the collective knowledge and experience that is valued by the participant. The participant is reporting that it is not just the value of sharing but that there is a collective contribution to the sharing indicative of a significant level of tacit knowledge sharing taking place. Participant 3 below expands on the benefit of this collaboration in which knowledge and learning can be gained from the experiences of others, however, this does depend on their ability to communicate effectively.

> *'I've got a problem and I don't know how to solve it and I don't know if I've got people to do it – and they get that from the network and it happens at these events as long as they have the skills to try and get that out of people, and that's probably the hard thing sometimes. We work in IT and for some of our communications and people it's difficult for that to happen. Some people are good at it, some people are not so good'(Participant 3).*

The quote from the participant below describes in more detail how the process of tacit knowledge sharing occurs. Participants have a working understanding of the types of problems encountered in practice and a potential number of solutions that might be implemented. Below is an example of how knowledge sharing within the CoP has the potential to move from explicit to tacit knowledge and back to explicit knowledge. This occurs in the sharing of stories within the CoP that not only help to combine best practice (explicit knowledge – explicit knowledge) but also how developing a shared understanding (tacit to tacit knowledge) of the problem can lead to a new practice solution that when articulated appropriately becomes tacit to explicit knowledge.

'We are in this CoP to discuss our interest in technologies and It's a little bit of the technology in there that sets the CoP boundaries and what the group discusses, and it's kind of an issue with lots of technologies, they are merging in some ways and growing and evolving and so trying to keep that boundary and that group apart from the other technology CoPs is quite difficult at times. The xxxx one is all about business services and web services and that's actually grown further when the membership has changed. I think originally when I was involved in that it was probably a little bit more focused on business services where actually most of the people who are involved now have broadened the group interests and has really expanded the discussions that a little bit more.'

'New people in the CoPs are bringing new knowledge and bringing new experiences to our CoP. I think part of that as well is the roles they have in their workplace where universities and other companies are getting more out of people and they are getting them to take on more roles or take on new technologies rather than it being a little bit focused. If you go and work in a private company you are focused on one area of interest where actually in education that's not the case and you can't really do that so as groups like xxxx become better at what they do, what happens is that by default the people get more things to do and progress on that side of it as well. I think that's really been how it's evolved over the past 2 – 3 years.'

"so you are meeting with your peers and the benefit is really understanding what other people's problems are in their day to day work and how you can resolve any of these problems and use it in your own work because actually that's kind of the first benefit of being a member of a CoP – Here's what it is and what's gone wrong. Obviously the other one is from your own self, if you have your own problem you can get feedback from that group of likeminded people to say actually we've had this problem and this is how we've resolved it" (Participant 3).

'The discussions at the meeting often highlight we've had a similar thing going on and this is how we would tackle it. It's not just a technical thing, it's a people thing and a management thing as well and what we are getting from each other is our experiences of how we tackled the problem. I was discussing recently an 'app' development and how getting the data from our admin teams seemed a bigger problem than doing the development itself. It was good to know others were having the same problem and I loved the tactics they used to get what they wanted. It was really helpful hear this, it's not s step by step process like coding its relationships and working out how to get things you need. I have learned so much from these people, more than just how to fix code.'

Above we have seen how the less explicit elements of knowledge (tacit knowledge) are seen as a benefit to CoP members and how the CoP socialisation supports both explicit and tacit knowledge sharing. Below is a more concrete example of how participants not only learn from peoples' knowledge (explicit) but also from their experience of implementing that knowledge in practice the quote also highlights the value of tacit knowledge and how it might be shared within the group.

> *'I think it really is just a case of being able to learn from other people's knowledge and get that synergy from being able to work with other people's knowledge of that experience' (Participant 5).*

> *'If you want to contribute and not be actively involved in the discussion but there is a valid point that you could be involved in a community of practice just to learn. Maybe if you have a lot less experience and you want to learn and build up knowledge and in that case maybe a back seat may be attractive, it just depends on the individual' (Participant 1).*

The idea that knowledge is socially constructed was shared by all participants and demonstrated in the first statement below. In the second quote the participants are describing the activities associated with knowledge creation, sharing and the capture of ideas in order to find new solutions. The motivation for this is the introduction of this new knowledge into their own practice area which has the potential to offer new learning.

> *'I think that sort of the benefit is that the committees are almost working as small action learning sets, and they don't go through the formal procedure but that chat at the coffee break or whatever you suddenly realise you all have exactly the same problems as me. It's a reassurance in a way that the problem is not necessarily you personally and that working together you can find a solution or try a new approach'*

> *'…You then might get a bright idea from York or from somebody else joining the conversation saying – actually we solved it by doing this, it should be a sort of virtuous circle in that you take those ideas back, feeding them back into your own institution. The fact that you've come up with a solution or a way of addressing the problem then gives you a further benefit and raises your profile internally before then going on. You can then take something else back or give that other person credit by saying you got this from xxxxxx . (Participant 7).*

Learning is a primary driver in these CoPs, specifically learning from each other which suggests it is not the coded knowledge (procedural knowledge) that is explicit but the more challenging aspects of tacit knowledge that are difficult to codify but add meaning and context to the learning. Sharing in this environment is key highlighting the need for everyone's contribution. The CoPs were performing two functions: the first, updating continuously the knowledge of the members (quote 1 below) and; the second, the recognition of the sharing of tacit knowledge (quote 2) which requires interaction and informal learning.

> *'They are about a group of people getting together and sharing their expertise and helping and assisting each other more informally than the universities' (Participant 1).*

> *'So what you're trying to pass on to them is that it's not just about what we know, it's about what you see, it's about what you take in. So it is about the tacit knowledge' (Participant 2).*

The participants in the above statements are highlighting that through informally sharing their expertise and knowledge they are delivering the full understanding of how to *'do the job. And do it well' (Participant 2)*. The sharing of expertise is not the blind application of knowledge from a manual, it is the consideration of a number of factors such as the environment, the supporting technology and the tools to hand. It is the understanding of the additional components and the environment in which the individual is operating in that allows any decision to be responsive to any evolving situation.

> *'I am involved in the practice CoP xxxxx and it is about knowledge, it is about sharing information, It's a number of things around the sharing of information that make it work for me and I think that's where maybe it's quite difficult to describe. It's about sharing knowledge and information with practice, but it's also, to a certain extent, that intuition is part of what we do when we work with xxxxx because you have to be able to pick up things from people sometimes without even speaking to them. So it's about really, you know, you have to have quite honed observation skills. So if I'm working with an xxxxxt, I need to be tuned into the group of people that we're working with at that time in order to make sense of what's going on. So it's not just knowledge, it's more and it extends beyond that and certainly more tacit.*

'So it's the difference between what it says in the manual and the full understanding that you require in order to do that, in order to be able to really do the job and to do it well. It's the difference being that you're dealing with somebody's life when you're doing it, so it can be quite serious so the CoP serves a benefit for me, it certainly serves a benefit for me, for me to *be more realistic in my teaching. So xxxx technology has moved on in leaps and bounds from when I was a student. So for me, keeping my hand in means I am more aware of the reality of the stresses of that for them. I think what is important about my CoP is that there's a complex layer of information moving around here that is both explicit but also surrounded by lots of snippets of how we all experienced using some of these new technologies…the discussion and the sharing is very much two way. It's not just you outputting, it's you collecting and gathering, and it's reflecting back in the same way that I'm kind of doing here a little bit. It's all of those things that are going on. It's the real world. It's real application of theory to practice, if that makes sense, in that you're actually having to do it and you're having to think on your feet about what you've been taught and how that applies. And my job is to help students to do that. So, I'm like an intermediary, if that makes sense, between two very different worlds, yet one is supposed to be teaching the students about the practice, the theory and the use of technologies. My community though grows my experience and knowledge so that I can bring the 'real world' into teaching practice. (Participant 2).*

What is also evident from these statements above is that there is an understanding of the different expressions of knowledge and how they are shared. This fuller awareness represents all the complexity, understanding gained through experience, evolving responses to context and situations that are inherent in the 'human act of knowing' that the literature refers to as a 'living repository' (McDermott & Richard, 1956; Nonaka, 1994). These CoP members are embodying this concept and understand all that can be done or even expressed cannot be written down but can be shared though the stories and conversations and the adoption of the right attitudes that take place internal to the CoP and on its periphery (French *et al.*, 2008).

'oh we did that and it didn't work, or we did that and yes if you take it to that level or do it that way – then that sharing of knowledge is invaluable' (Participant 6).

'Yes, just asking what our lessons learned were. I found out that here we are actually doing a lot of what people are now starting to look at doing (Participant 9).

Fundamentally important to all the participants is the expansion of their knowledge about their sector. Primarily they discussed how the CoP membership helped 'broaden' their knowledge and importantly the understanding that came with it. Rooted in tacit knowledge sharing much of this learning is never documented but shared within the CoP membership and evolves and grows as new understanding develops.

As shown in the quotes below this can often occur simply because something has happened or that a new idea has been brought into the CoP from those who have experience beyond the CoP boundaries. Alternatively this may be as a consequence of the development of a 'toolkit' and case studies that are later presented at seminars, events and conferences. Sharing with the wider community is also part of CoP function and comes into play here as networking occurs at the various events that these CoPs are involved in. Thereby creating new tacit sharing opportunities through networking with colleagues.

> *'Because [of CoPs] I've really broadened my knowledge of the sector, so understanding what is good and what is bad, if you don't have that view then it's hard when you are looking at your own job and your own role' (Participant 8).*
>
> *'I'd really like the tool-kits, I'd really like to see some toolkits coming out but I only want us to commit to them if we can commit to it 100%. It's like the service desk benchmarking paper, that to me was really important, so I've kind of done that on my own because it was so important and I did think it would add value to the community' (Participant 8).*

What we are seeing emerging from the research is the movement and possible transference of tacit to explicit knowledge. This is demonstrated by the CoP in a range of activities. The toolkit example above is one instance of the CoP taking existing knowledge and expanding on it through conversation, storytelling and sharing of attitudes and feelings that enhance the knowledge. The toolkits become the explicit knowledge developed from the shared expertise from existing known information. However, it does not stop there as the participant below discusses the benefits of being a CoP member.

‘*Benefits of being a CoP member? I think it is actually the dissemination, it's kind of knowing that whether you’re looking at something that’s related to software or hardware practice, processes, or even adopting various frameworks it doesn’t really matter what the area is, it's the idea that you are able to learn effectively from someone else’*.

‘As I said some of the CoPs that I've been involved with being in Northern Ireland meant I was going to a lot of the meetings, that hasn’t actually proved that successful. So it's been one of the situations where it’s been emails, it's been email lists, it's been communications, it's picking up on things at the conferences but it's also a range of dedicated meetings. The meetings themselves - some of them actually died away a bit after the initial ones and things were picked up by email mailing lists and so on but the main communication mechanisms to me probably have to be more face-to-face, especially in the early days of being involved in a CoP so we can actually get people round a table workshopping ideas, trying to pick up on – OK what is the aspect and scope coming from this institution or that institution. Why have you gone that way? Trying to bring those nuances of information out via email or even via Skype at times, is not necessarily the best way to do it. A number of face-to-face interactions, especially in the early days of it has to be the best way forward. The face to face meetings are the ones that are harder to get to given where I live and work but for me the effort is worth it. And then it’s about the dissemination like I said earlier. It's being brave and putting out there the activities you are doing and in some ways people don’t always like saying what it is you are doing. Being able to do that in a free and open environment where you can say - oh we did that and it didn’t work, or we did that and yes if you take it to that level or do it that way – then that sharing of knowledge is invaluable. It also offers good return to the sector as well, the last conference we did was amazing. We had a fully booked event and the workshops where the CoP shared its best practice on development methodologies, security and xxxxx software implementation were really well received. What was really good was the ‘lightening strikes’ and end of session discussions. I will admit to spending a lot of time in the bar…laughter… but to be honest I learned more their than anywhere else. Don’t quote me on that ….laughter. What you found out was more things you had to consider and later on we got some new members who attended the conference and who wanted to bring their experience to the CoP and sometimes we invited people who attended the conference to come and talk with us as they had more information to add. It was a brilliant experience, it always is really and one of the most enjoyable aspects of being involved. Because the more we can learn from our own experience the better.’ (Participant 6).

Further, the research findings suggest that another source of new knowledge is created externally when the CoPs plan and deliver conferences and seminars to disseminate the newly formed explicit knowledge.

'At the conferences I think it's more skewed towards the informal, because you are there largely being talked at and it's only then when you explore those ideas with other people that other things then come out and you can expand on what's being delivered' (Participant 7).

'I think that's why actually the lightning strikes work quite well. I don't assume they work in every environment and they need something stimulating to take that on, but that start to enforce that discussion that would then flow onto the sort of informal coffee break type chat. The other thing in the conferences is actually making that engagement easy. Now you and I if we saw somebody tweet something, then we would tweet back and I know from other events I would arrange to meet people during a break that haven't been in the same session, or have been in the same session but were sat over the other side of the hall, and that's more the nature of you and I would be much the same at doing that. Others would need other mechanisms and are the shyer ones among us would need a different way of doing that. The social aspects of the conference really help here, so although there are the usual ice breakers and 'lightning strike' type discussions a lot of discussion of the topics happens at the dinner or in the bar afterwards. The difficulty can be in capturing what was discussed and this is where I think the core CoP members have to be alert to useful conversations.

It's not always easy fitting into these more social elements of the conference. I suppose it's always easier to interact with those that you know. But then it's making sure that you do things like sit on different tables. At the Support Services conference and in fact every conference, I try and move around if there's round tables I'll try and make sure I sit on a different table at least every day, if not every session. I'm doing that twofold. One is for me to be seen, which is obviously part of my role everybody might recognise my face but they don't know me and don't necessarily know what I do. But also, I'm doing that so that I can hear what other people's challenges are and try to help understand their issues as much as those form the people I do know. That way the chances are that people form the larger universities I'll know, but then someone from a smaller university I won't. They'll have maybe different issues, or new people to the sector I won't know.

I think that's part of the things CoP members should be doing more of. You can offer a solution but you have to think about whether it will work or not. And sometimes even offer a solution and someone will say – well that won't work here, I'm not sure, that will be harder to implement because….. and that will then expand your understanding of things – saying right OK that's not something that I had thought of and that may then lead you to work in a different way going forward because thinking about the devolved structure of our institutions, you could find that actually the person from the Royal College of Agriculture, or the Rural University as they are now

known, that person has probably got some things that might be very good when you are dealing with your vet school but clearly wouldn't apply to Social Sciences for example. So, it's being open is the key thing, to being open to ideas so that in the utopian model, everybody will be giving and taking both at the same rate.' (Participant 7).

In the quotes above we can also see the reporting of how much networking goes on at these events. Interestingly much of the networking at these conferences is done in informal social settings. Personal experience of such includes participation in lively informal sessions discussing 'hot topics' and potential solutions. This enhanced knowledge is then brought back into the CoP and forms the basis of discussions to accrue new explicit knowledge.

4.3.1 The CoP internal and external tacit knowledge flow and Integration

The second theme that emerged from the data was related to how internal and external tacit knowledge flows and integrates within the CoP. If we accept the assumption of Nonaka & Takeuchi (1995) that knowledge is created through the mix and interaction of tacit and explicit knowledge then this theme was concerned with how this occurred within the CoP environments. CoPs are described in the literature as having boundaries that extend from the core to the periphery. The literature however focuses on the degrees of participation rather than the flow of tacit or explicit knowledge from the core to the periphery and back and why this might be happening. Participant 6

"It's actually very difficult to understand the boundaries of where the knowledge and experience that you take to the CoP starts and stops. It's really hard to define the boundary between the CoP and what I do every day at my work. Some of the things, even just working in the university here, the scope of the activities, they cross-over very, very quickly and the problem that we've found is trying to keep it in scope and we have actually seen quite a number of issues where we are maybe looking at say – where does the underlying enterprise architecture start and end within the university" (Participant 6).

The above quote highlights the difficulty in attempting to expand on what the boundaries a particular CoP were. In effect participants recognised the speed of change going on in their own institutions and how that was impacting and evolving their role. This ultimately had an effect on the CoP through expansion of the topics they wished the CoP to consider.

However, having explored in the previous section the extension of CoP activity beyond the CoP boundaries the research drew attention to another emerging theme that of the boundaries of the CoP function. Specifically, a number of members referred to working within the core of the CoP described as the more formal aspects of its function, but also on the periphery (external). It was interesting to note the ways in which activities were taking place within the CoPs. Whilst there is a view that most of the general activity takes place in the core, there was a great deal of evidence (as demonstrated in the quotes below) reported by the participants which suggested otherwise. Activity it appears, can occur within or on the periphery and stay there, or be brought back into the CoP by specific members, it can be a one-way or a two-way process and may result in a negative or positive impact on the CoP.

> *'I think the group when it meets doesn't get the full benefit at that time, I think the benefit to the members is what happens outside the group. Even at the meetings at the coffee and lunch breaks or before or after the meeting if you are staying over a lot more work gets done in the bar rather than at the CoP meeting'*

> *'How the communication is working outside the meeting can be a simple discussion like - my boss is trying to tell me to do this, have any you guys done this before? I'm talking about getting that experience from them on a technical level but what also works for me is getting their input about people and bigger university strategy type stuff as well. The support mechanism there is probably another one on that side of it as well and is quite important for a CoP like ours to deal with what is not necessarily part of the group's remit, not part of their terms of reference but as a part of the group in a sense but actually in this sector we have lost a lot of people over the last couple of years and actually how people have managed that is actually that a group like this has been really important and that's not on that technical level obviously, that's down to the management level. It's been really important in how people manage that change of work in the sense as well. I think that's a key benefit of the support of a group like this, it's indirect I suppose. It holds onto lots of stuff about what we do so people*

change but we keep learning.

Yes 'indirect' that's a good word for it. I think what I am saying is that there is a level where a more formal interaction around the meetings is taking place and then an informal interaction outside. We always talk about these things, that the informal ones are sometimes where the business is done. It's a bit like doing the business on the golf course it is probably part of that stuff where the formal stuff is stuff that the groups have to do – let's do it, let's formalise it but we have to justify ourselves as a group because we do get funded by one of the higher groups, on that side of it as well, so you need to do the formal things but actually the business end of it is sometimes is done before and after the groups so it's not just after it, it's over a longer term. (Participant 3).

'*Social engagement is probably more on the day itself. There will be side conversations going on. Sometimes I do have some emails backwards and forwards but they are not too much email-wise it's more of a conversation on that day. Often we'll pick this back up in the CoP, but sometimes not' (Participant 9).*

'I think much of the important discussion and learning often goes on in the informal meetings such as lunchtime or when we get together in the pub after the day to reflect on what issues the CoP has raised' (Participant 8).

'We often talk about a number of things informally and often this is where business is done. Some of the best things come from topics that are maybe not on the agenda but topics we discuss at the coffee break.' (Participant 1).

The following quotes highlight the formal CoP function, effectively operating with a 'committee like' structure which is necessary in order to bring the membership together. This is because of their diversity of location and as volunteers they have no formal organisational or working link between them. Their link or that which binds them is their discipline, sector and interest.

'There's the formal activity with the various meetings and activities with the likes of the annual conference and the organising committee where it has an agenda where we have certain things we want to discuss' (Participant 1).

'There is an informality but there's a very formal component to it, if necessary. So we can move from informal to formal if we need to, and back into informal again. And that's the flexibility that I think is required within these working groups as well, is a recognition of when it's fun and a recognition of when it's serious' (Participant 2).

It would now appear that within the CoPs there is a sense that tacit knowledge sharing can be a part of both the formal and informal environment. However, it is essential to have both the formal and informal elements in balance to ensure the valuable time given by the volunteers achieves progress with their agendas. Yet, as suggested earlier there is significant evidence of working on the periphery of the CoP by those who attend the formal meeting. The following quotes add further support to the view that activity around knowledge sharing is occurring outwith the meeting.

'I would describe our CoP as balancing a formal agenda with a more relaxed approach. There's the formal with the various meetings and activities with the likes of the annual conference and the organising committee where it has an agenda where we have certain things we want to discuss. It is quite controlled. Then there is a whole kind of softer social side of it outside of it where we probably end up talking too much about IT but I suppose it's because we are all interested in that. It's the conversations around that and the networking and the relationships built up around that which helps individually, I suppose which help the community of practice but also helps the more formal side because everybody has a personal relationship with each other rather than a formal business one and I think that's quite important that you know each other personally and it makes the business side a lot easier. I think any community of practice like that performs better if the people get on. It's not seen as arriving at the meeting, you do your business and then you disappear off and never communicate. That informal communication lets you understand where people are coming from, it lets you understand the challenges and struggles they have and helps when you are having more formal discussions or debates that you can see where people are coming from and understand maybe a bit of the background – like he says that because he is having a problem with such and such – that helps. I would say there is a lot more informal discussion taking place even outside of the meeting. I think personally I get a lot more out of that community of practice from the informal discussions and sessions and interactions than the formal. It doesn't mean the formal aren't important, they are, but at a personal level you get a lot more out of the informal. Sometimes you'll find out a lot more of the detail of why things are going on informally because people just don't like talking in a formal setting sometimes, they don't find it comfortable.' (Participant 1).

> *'Some of the side discussions end up as being the most important rather than the formal ones. I think because it's safer and, as an example, in our practice we weren't afraid to talk about the bereavement side of it, as well as the practice side of it, and to allow this type of discussion to take place where the person story I am telling felt safe. Outside of the main meeting. And to cry because that was necessary. You know although this happened outside the meeting, it allowed her to make sense of what had happened but also to realise that she had a place where she could make a difference. So it was an opportunity to turn something that was really quite negative into something that could be quite positive, and helped her to see that she maybe wasn't able to save that person and that she was probably going to face that with other people in the future in her role, but there was lots of people that she was able to work with, that she was able to make their lives better, so she could impact on them. And that made a difference. But I think a lot of that was about talking that through and actually allowing her to a certain extent come to her own conclusions. So, it's facilitation rather than sort of telling her what do you think is, what do you think that's about, you know. This sort of thing needs to happen a bit more off line or you won't get to what happened so that we can learn from it. Afterwards, feeling more confident and less likely to cry we could share the story with more of the group' (Participant 2).*

The participants are engaging in side conversations that occur at varying times and when opportunities arise. Here we are beginning to see how important it is to participants to share their stories and sometimes the need to do this outside of the main meeting. Some are doing it for reassurance that the problems they are facing in their practice are similar to everyone else's.

> *'Coffee break or whatever you suddenly realise - actually you all have exactly the same problem as me. So you then get reassurance that you are not alone. You then might get a bright idea from….' (Participant 7).*

Participants appear to be suggesting that '*outside of the more formal format business is being done'* (participant 3) and in later sections we will start to explore the reasons and possible causes for this happening. We can see from the statements that participants are discussing issues and doing business outwith the CoP formal format and then bringing it back in. At first glance, this could be conceived as building alliances or sense checking thinking away from the earshot of the overall group. However, of critical importance are statements such as '*you won't believe what happened to me'* or '*I can't believe I'm having to deal with this*' (participant 8)indicate that tacit knowledge exchange is

happening on these occasions on the periphery. It could be suggested that participants are testing their thinking with a smaller group before re-entering the CoP and sharing more widely.

> *'We always talk about these things that the informal ones is sometimes where the business is done'….But actually the business end of it is sometimes done before and after the groups so it's not just after it, it's over a longer term' (Participant 3).*

> *'outside of that group and while it's not a formal part of the group, the first half hour of any meeting will be – you won't believe what happened to me, or I can't believe I'm having to deal with this person, or I'm having to deal with this, or we've got a new IT director and he's bloody awful. Those kind of things' (Participant 8).*

> *'The trust has to be very high to share some of the more sensitive information. The trust within the xxxxx doesn't happen at a technical level, it doesn't happen at a software level, or an institutional level – it happens at a personal level so unless you actually make those personal engagements with people and you say – well here's what's happening you do actually gauge the person. That's why I said earlier on about the Communities of Practice and the people round the table, what they say in an email comment is not what they will actually tell you and a lot of times you judge from their body language, their openness, or the areas they have introduced to your conversation what they are prepared to talk about. Sometimes you won't discuss it will all of the group because you don't want to expose yourself or your institution. That level of exposure and the trust that builds up across the various areas is invaluable. It has to be handled sensitively with those you trust as well otherwise that type of information will not come out and if that type of information doesn't come out you don't get the lessons and you end up maybe exposing your institution to risks that maybe you shouldn't have.'*

> *'You also know then as well that you have a well that you can go back to, so that you can actually go in and say – OK here's what we're doing, here's where we are, we know you had similar issues and problems, how was that sorted? Or even if it's getting pointed in the right direction, it may be simply – we got these consultants in and they did it. That might be the bottom line. But knowing that rather than you spending an extra 2 months working with your teams here in your institution trying to figure out a problem that is none of your making and can't be solution that you can find on your own. They would go back and say here's where we are, or here's what we've done and that process works both ways. You also know then that you have a well that you can go back to, so that you can actually go in (back into the formal meeting) and say – OK here's what we're doing, here's where we are, we know you had similar issues and problems' (Participant 6).*

The final quote above indicates that the periphery working is influencing the main meeting and demonstrates that peripheral dialogue once grounded is brought back into the larger group for discussion with some confidence having been 'tested' or discussed prior to raising it with the larger group. This naturally occurring phenomenon appears to be integral to the knowledge sharing activity. It suggests that some ideas need to be tested with an individual or smaller group before participants have the confidence to share it more widely. The participants possibly feel safer or more relaxed raising challenging issues they may be facing and are unsure about in this less formal setting. It could also be suggested that new or creative ideas are forming because of the relaxed discussion over food or coffee where there is less scrutiny on the discussion. An idea which at first may not have been considered is explored and found to have merit therefore suggesting the wider group should discuss it further and widen the contribution to grow the idea.

> *'Even at the meetings and the coffee breaks and the lunch breaks and before or after if you are having to stay over a lot more work gets done in the bar maybe than in the formal business and this is good for ideas which sometimes we can pick up in the formal meeting'*
>
> *Outside of the meetings as well I get quite a lot of emails or calls from people on groups that I'm involved in or I'm contacting people asking for information or help on who's using this and who's using that so I think there's quite a bit outside of the meeting going on. I think for it to feel productive and for people to feel safe to contribute, the CoP has to feel like a team almost and people have to know and trust the individuals on them. So, I think the interactions and the networking outside the meeting help that as well. You are more likely to invest in the CoP – there's the pure what can I get something out of this or my institution gets something out of this- but I think you are more likely to invest a bit more in it if you get on with the people on the COP and you trust them and so on. (Participant 4).*

The findings suggest that it is important to allow space for off topic conversation and to not to hold rigidly to any agenda that does not allow for the content of informal discussions to be brought back into the formal arena as eluded to in the quote below;

> *'You have to manage the balance of on and off topic discussion in our CoP. You certainly have to manage it in the meetings when people try to*

dominate, or this person in particular, gets very frustrated when things go off topic, or don't run to plan, or schedule, but actually that's what the group do we are all quite creative and it does go off topic at times and sometimes there is value in that but some can be quite inflexible. Some like an agenda and a timetable and a schedule. But you need the freedom sometimes or you can damage the creativity of the group. Some of the best things come from the topics that are maybe not on the agenda. Some of the best ideas are the kind of things we discuss at coffee break' So, I think an agenda and a structure is a good thing but there should always be a little bit of freedom. I guess I don't make it happen, it's about giving a space for it to happen. I guess it's about creating an environment where people can suggest whatever comes into their mind. They don't get made to feel silly. We would still let them express that but we might say how realistic is it or have we got the space and the money to do these kind of things. But it's about giving people space and the freedom to be able to say those things. Sometimes the freedom might be just giving them the extra 5 minutes at the end if they've gone off topic or whatever and then having to bring it back in but is wouldn't say I make the creativity, it's just giving it a platform. I guess it happens in the Exec meetings as well to some extent and it's why they don't always finish on time or they overrun or we don't get through everything. It would be such a shame if it was so rigid. I don't like rigidity. There are times that people talk too much and you think – oh pipe down, but that's a balance, you wouldn't want to shut that person up for them to never speak again. I think it's good to have freedom and to know you can go slightly off topic – within reason. It's where the creativity is. It's got to stay relevant though to the community and that's both the UCISA Exec in terms of alignment with other groups so we don't just end up duplicating what other groups are doing, but also to the actual community, to what they want. It's having ambition and that willingness to drive it forward.
(Participant 8).

As I progressed with the analysis of the interviews some key areas were becoming apparent. The section below from my reflective diary demonstrates how the idea of tacit knowledge sharing on the periphery of the CoP was beginning to emerge in the data and also that certain aspects of the informal components were highly valued by the participants.

It was interesting to note that when the participants were discussing 'off topic subjects' on the periphery of the CoP they were 'more energised' as they felt challenging and exciting things were occurring. In the past few interviews I have noticed how the participants enthused about the side conversations that led to new ideas and also the social aspects which allowed for the testing of concerns an individual might have in order to discover if they were making a mistake or expressing a problem

Reflective Diary data

What was beginning to emerge and will be highlighted in later sections was the need for 'safer environments' despite most agreed a CoP is a safe environment. The suggestion is that the periphery allows for risky exploration or for discussion where an individual may lack confidence in their thinking as explained below

It's definitely the whole informal aspect and being able to approach anybody in the community of practice and ask their advice and guidance and likewise being able to give guidance to others' (Participant 1).

'There is a bit of side work that goes on outside of community practices through the people you meet and the relationships you build up and I think it helps with other opportunities and so on' (Participant 4).

'I think one of the things - certainly if you take xxxxx, then there is real value in being part of the committee as it means during the meetings if they are face to face you have an opportunity to network and that network can lead to some informal stuff that is outside the main agenda for the meetings. In fact, I remember going back a long time ago we once had a meeting where the main meeting was in Bangor and unsurprisingly there were a lot of people who weren't terribly keen on travelling up to Bangor, so we used a conference facility at Exeter and there were about 5 or 6 of us who took part from Exeter by video conferencing and it had a benefit that the meeting was very orderly because we all had to allow for the contributions of the Exeter contingent and the Bangor contingent. So we got to the agenda but it didn't allow for the general 'off topic' items to be covered. I think the same was true of the xxxxx Skype calls. So, the Skype calls are very good just too basically keep matters progressing though you completely miss the opportunity for the informal stuff. So get-togethers that could be say at xxxxx could be the committee meetings but obviously there are seminars and conferences but the key thing is that face to face is really important'.

'I think because if you want to build up a rapport with someone and that's part of the preparation for finding out a bit more about them and seeing if there's the opportunity for the 2 people to benefit from each other's skills or expertise or knowledge. It's quite difficult to do that outside of having built up that rapport so it would be quite possible to create a directory of expertise be that for xxxxx or for xxxxx but I certainly feel that it's more difficult to approach someone 'cold call' when you don't really know them, whereas if you had an opportunity to face to face network and build a bit of rapport and then go – oh yes I know so and so and I can call upon them. So, the rapport is important, as is the social support and the social aspects of it that are quite important to the success of the COP or the group of people who have got that common interest. I suspect it is to do with when you have had that face to face discussion how well you have built up that rapport and maybe your respect as well for someone else and what they can bring you. So we haven't always got time to take the risk of trying to interact with people who, when we have met them, perhaps we have felt they might not be easy to work with. A lot of the rapport is built up in the meetings themselves but trust built from speaking with people outside the meetings helps a lot. I think that is something you try to take a bit of a view on and there is danger that you misread the situation. I remember one time I was abroad, in Singapore, when I've been travelling I've often felt nervous of people trying to be overly friendly and not being quite sure why. There was someone who got chatting to me and I was being very 'British' and not keen on that because all the time I was thinking about what was his real intention - is he going to try and sell me something or whatever. But actually he was just trying to be nice and it think your own personality can affect that and both ways there are advantages and disadvantages. If you are completely open and will welcome anyone with open arms there is potential within anyone to get benefit for both sides. That is all very well but you can spend a lot of time and not get very far and if you are very discerning about who you try and interact with you can miss some real opportunities. So it's something that over time you just have to find a good balance in between those two extremes.' (Participant 5).

In summary these CoPs are functioning from the formal core all the way out to a very social and informal periphery and key to 'super CoP' functioning is the ability for tacit knowledge and knowledge creating opportunities to traverse from the core to the periphery and back. Yet, the statements above may suggest that aspects of the tacit knowledge flow may be dependent on relationships and how they might support or hinder the free movement of tacit knowledge from core to periphery. Later we look at features of CoPs that may enhance or deter this ability.

4.4 Influences on tacit knowledge sharing

A key emerging theme from the research is the assertion that behavior has an impact on knowledge sharing in CoP environments. Many participants expressed from the outset their commitment to their area of interest as their primary motivation for joining. The research findings are suggesting that there are key fundamentals to their continued engagement and support of the view that knowledge sharing and learning from each other is important. The research findings so far have also highlighted that knowledge and indeed experience of sharing associated with tacit knowledge can occur both at the core of the CoP and on its periphery. We now move on to look in more detail at the relationship between knowledge sharing in the core and at the periphery.

4.4.1 Role of the leader: Facilitating tacit knowledge sharing

In the later parts of the interviews I was interested in exploring in more depth the specific behaviors aligned to the perceived leadership role in CoPs. An interesting component of the majority of the interviews was the participant's perceptions of actual leadership behaviours as opposed to leadership role within a CoP. Critically the participants were linking specific leader behaviours to the CoP's ability to facilitate contribution and the sharing of knowledge.

> *"If we look at that we can say OK we know these people over there they may be the leaders of the group but they are the leaders of the group because they have been told to be here – so that's not the people you would be interested in" (Participant 6).*

The participants, some of whom had been group leaders, had a number of views around the purpose and role of a group leader. Indeed, it became apparent as the analysis was developed that this role is considered extremely important in terms of sustaining the CoP. The quotation below highlights how the incumbent in the role may be an experienced leader in their own right. Yet it may be seen as an example of the need to manage those who would 'dominate' the conversation. Critically leadership may be required to link the topics successfully while allowing the 'creativeness' of the group to flourish. We can see the potential here for the leader to have multiple roles within these CoPs.

'You certainly have to manage it in the meetings when people try to dominate, or this person, in particular, gets very frustrated when things go off topic, or don't run to plan, or schedule, but actually that's what the groups do we are all quite creative and it does go off topic at times and sometimes there is value in that but this leader is quite inflexible' (Participant 8).

Participant 8 was quite emotional discussing their CoP's leadership. This supported my early thinking of just how important it is to have a leader who has an awareness of their impact on others in the group.

Reflective Diary data

Within the literature review and from some of the entries in my reflective diary (as demonstrated above) there was evidence of the importance of the leadership role. Leadership can be very difficult to define but it is clear that in CoP literature and from the evidence of this research that leadership plays a vital role in facilitating and coordinating the CoP. Critically, their role is to get the very best out of CoP and it membership.

It was interesting to note that group leaders recognised that there could be more than one group leader in a CoP and that they all had the role of moving the CoP forward. The quotation below highlights this.

'It may be the leader is not one individual, it's several. I know it's about bringing the community along and encouraging the weaker elements of the community to contribute and participate but it definitely does need a strong lead. Obviously the community of practice is not there for the sake of it – ours is a good example where it has a role and it has to meet that role and move forward so it does need leadership to make sure that ultimately happens and to nurture the community to move forward with that' (Participant 1).

This perception that leadership is not a single persons responsibility was widely reported by the participants with the above providing a good summary of the key arguments around the importance of encouraging contribution and managing the more dominant members who may inadvertently block the contribution of others. It is a key reflection that, where experts populate the CoP, leadership may be distributed this due as much to personalities as desire. The above participant went on to describe the desire for a more inclusive CoP dynamic suggesting that

any perceived weakness is not the individual's ability to think creatively or add valuable contribution rather it is their natural proclivity or newness that inhibits contribution. This is particularly evident when in the company of more confident members.

> '…*you encourage the weak ones to contribute and making sure that the strong ones don't dominate too much, there are pros and cons with both and it's important to get people to contribute their thoughts rather than the end result' (Participant 1).*

> *'The Communities of Practice need to have strong leadership so if you find that people contributing are getting fewer and fewer and fewer, then the value gets lower and lower and lower" So what you then get is it almost becomes a mouthpiece for a number of individuals to spout off and what you may then get at that stage is conflicting views as to what's good practice. As a result, when you get to fewer and fewer people, then majority of the community are then thinking this isn't giving me any benefit because they are not listening to what my problem is. It's almost as if the relationships become polarised and they start to break down because they are not being listened to, they are not getting the value form the sharing and the contributing and so they're beginning to fall out of the community because it's not what they're there for. I think I know better but they're not listening to me and everyone is taking that view and it just implodes. It's a blocker, anybody coming in with new ideas as I guess I was, gets rebuffed. I had come to the conclusion that the group were largely self-serving and weren't interested in wider collaboration. So it was more a case of saving myself time. Why am I going to go to a meeting and just come out with a sore forehead?'*
> *(Participant 7).*

The above statements express the view that contribution is a vital element in the operation of these CoPs. Encouraging contribution is clearly a concern for those leading the group. Any leader has to find the balance of holding the CoP to its topic while not damaging contribution and creativity and to be cognisant of the need to explore areas that allow for new ideas or knowledge to emerge. It was clear that it was important to manage contributions as this had the potential to impact positively on identity and act as a motivation for enhanced participation. The above was exemplified by Participant 7 in describing the Chair role as recognising the need.

'to not quite dampen the enthusiasm but channel the enthusiasm of the extroverts and then draw out the introverts into making more of a contribution' (Participant 7).

Where there was evidence of the Chair not incorporating these enabling behaviours it was often the case that the group then self-managed by allowing natural leaders to emerge

'if the vice chair became the chair and they didn't have those abilities that you mentioned earlier to manage themselves and the group could the group manage some of the people who are displaying some of the characteristics that you think are unhelpful?' (Participant 3).

This statement is an indicator of the CoP thinking as one about its leadership needs and is an exemplar of the expressed view of the nature of the role of the Chair and its importance in supporting contribution. It suggests the CoP will act as a self-managing network when there is a perception that leadership is absent or deemed weak or unacceptable. The tone of the response and the reflective nature of the participant in discussing this support the notion that a number of members of this particular CoP would not support the progression of the vice chair to chair if there was not a real desire on the part of the participant to take on the role. This is reflective of early definitions of leadership where individual desire is seen as a key requirement in the ascension to leader. The strength of group dynamics is also seen through the "management" of the roles within the CoP and impacting what may seem natural succession planning.

'Also succession planning. Looking at who's in the group. When she was in a Vice Chair there was a couple of people interested but for me it was about choosing a Vice Chair that had the same kind of passion and drive for the group and the same commitment. It's about looking at who you bring in as well – new blood is really important' (Participant 8).

However, leadership in the CoP can also reflect a more traditional leadership theory role as highlighted below where an individual talks about the vision and drive required by a leader in a CoP.

> *"I think you've got to have vision. You have to know where you want to take the group and what you want to see. I'll be honest, I want it to be the best group. I want to be more integrated – I think that's going to be the big change for us in the next 12 months, to your career" (Participant 8).*

In this more traditional role the leader therefore has to manage both the vision and the mission of the CoP, its link to the topic and provide the enthusiasm and drive to enhance sustainability. The statement that b e s t describes the wider view of the leadership role as a single entity is the need for CoPs to *'…..have a clearly defined purpose and that has come, partly, from leadership' (Participant 7).*

Repeatedly participants returned to the theme of the leader acting as a facilitator and co-ordinator particularly with what may be perceived as individual dominant, destructive contributions

> *'…..fond of the sound of his own voice and we just need to use a technique to shut him up occasionally. And equally they need to know that [name redacted] she's a bit reticent to contribute so we need to work out a way to try and involve her in the conversation' (Participant 7).*

Echoing the management of contribution by the CoP leader this participant goes on to make a link to behaviours and those required skills in emotional intelligence that help identify the impact some people are making and how to manage them. The following statement suggests those less likely to force their way into the conversation or debate may choose to leave and this demonstrates the failure of the CoP on two levels. The first is the damage to contribution caused by the lack of encouragement limiting tacit knowledge sharing. Secondly, if the member is discouraged and therefore 'exits', engagement with the CoP has failed and the participant and their possible vital contribution are lost.

> *'Communities of Practice then, because you don't know what you're getting into, could be a bit intimidating and some people might be shyer than others. So, the shyer ones will probably just sit, reflect, listen and if there is something they feel particularly strong or confident about then they might make it quietly known. The more reflective thinkers will be countered by those that are more extrovert and will want to talk from the word off and want to get involved in everything, so as far as the committee work goes I think the role of the chair is to not quite dampen the enthusiasm but*

channel the enthusiasm of the extroverts and then draw out the introverts into making more of a contribution. That's the peculiar thing in the CoP environment because there's probably not more than 20 people there. With the wider community of practice where maybe you've got 50 people, I think a lot of it is it goes into a sort of microcosm I suppose, in a way. If you've got 5 round tables of 10 then whoever is taking the discussion on that table needs to do exactly the same and draw those people out and shut them up and then you've got the ability to feed back so the fact that thinking back to the research one, there were the 5 round tables of 10, there were times set out for discussion on particular points and where there weren't facilitators people stepped into that role because they were thinking community not self, or they'll think well actually if we just sit here and scratch out backsides for 20 minutes we'll achieve nothing. It's easy to think – we're all busy people and we all go there with our laptops or iPads or whatever and as soon as there comes a break what do we do - we'll email! So I think you have the same skills whether it's a committee or whatever so with a Community of Practice you provided the person that maybe is reporting back on the discussions includes all the major points and checks. I think you then have got that inclusiveness and people have that sense of belonging whether your area shrinking violet whatever.'

'- Personally, I'm always one for a quick quip but I'm actually managing that because sometimes it can be seen as trivialising someone's point, or it can be seen as trivialising yourself, as in your not taking this seriously. So I don't get it right 100% of the time, there are loads of time when I make a quip and think why did I do that? – you just shot your own argument sort of thing. So it's knowing that but I suppose for a community to succeed you don't need everybody to have that level of emotional intelligence but you need people within it that understand those differences and understand that other people won't have that same level. So that's why the chair or facilitator, whoever, needs to understand that, you know, xxxx is fond of the sound of his own voice and we just need to use a technique to shut him up occasionally. And equally they need to know that xxxx she's a bit reticent to contribute so we need to work out a way to try and involve her in the conversation. Joking aside I've picked out 2 examples from our committee but that's because I know you. In a Community of Practice, you can be thrown in say the Research or the Enterprise Architecture one and you're thrown in with complete strangers and to get the best out of that discussion somebody has to gauge who the extroverts are, and who the introverts are pretty quickly and draw that out. Now it could be somebody with let's say a high level of emotional intelligence, they could be extrovert or introverted. I don't think it matters either way actually, you need to get that intervention. So you don't have some of the true introverts going away from the table thinking – I didn't get anything out of that, they weren't interested in what I was saying. So someone has to take that role on and you and I can both do it and in different environments. Seeing xxxxx operate, she can do it. But they are all different people, some of it is familiarisation or comfort in the environment. Some of it is understanding yourself and understanding others. You could chair Exec, I could chair Exec, I think any of the officers and elected members could chair Exec but

others couldn't because they haven't got that confidence that goes with the emotional intelligence that they have.' (Participant 7).'

The discussion in today's interview is adding to my hunch that leadership is an all-encompassing role and that a weak leader may not have the skills to control powerful members or the insight to encourage those that are sitting on the periphery.

Reflective Diary data

When discussing the role of the group leader in the interviews below are some suggestions as to why some CoPs may be more successful than others.

'leader but definitely in a community of practice, to be able to understand those dynamics and exploit them and encourage good and promote good behaviours, whereas bad behaviours maybe try and convert them to something different' (Participant 1.)

This section helps us understand the role of the leader in the CoP environment. It is clearly less focused on the elements of vision, motivation and direction of travel although it is acknowledged they have a role to play here. However, there is significant evidence of the leadership role being required to manage behaviours in order to ensure contribution is made by all *'it's when you're chairing a meeting it's important to draw everyone in' (Participant 7)*. The role needs enthusiasm for the subject,

'…..who leads that from [institution redacted] is enthusiastic, he is using a lot of things that come out of it in his work and so is able to continue to stimulate conversation and interaction with others' (Participant 6).

The above participant is suggesting that contribution is not only vital to knowledge sharing and the creation of new ideas but to the continued engagement of the membership.

'the chair has to make sure it's in control of that group, because of just one individual, there are a number of individuals that could overpower the group in some way and everyone then wouldn't get that voice and if they don't get the voice there is a little bit of why would you want to be involved in that group' (Participant 3).

The loss of membership, the life blood of the community, is critical to its sustainability. The leadership clearly has a vital role to play in managing those behaviours that are seen as damaging to the key factors motivating members to stay engaged, those of 'contribution' and the value gained from all sharing knowledge and experience.

4.4.2 Impact of behaviours on tacit knowledge sharing

One of the key emerging themes from the research findings is the view that behaviours have an impact on knowledge sharing in CoP environments. Participants expressed from the outset their commitment to the area of interest as their primary motivation for joining a CoP. The research findings are suggesting that there are key contributors to their continued engagement including collaboration in support of knowledge sharing and learning from each other. Having examined the impact of leadership facilitating the traversing of tacit knowledge from core to periphery we now move on to explore the behaviours that might impact tacit knowledge sharing.

4.4.3 Disruptive behaviours

What might in the first instance appear obvious are that CoPs are made up of people and as such they are susceptible to all the vagaries that human nature brings. It became clear that there was evidence that a major factor in the success of knowledge sharing and in particular getting to the valuable 'tacitness' of the experiences of those involved and making it 'stick' may be associated with the behaviours of those people.

'That's the sort of thing that builds people up. The community of practice is only as good as the people in it – if one or two individuals dominate it, it doesn't really work (Participant 1).

'I think it's the knowledge and the relationships that keeps me going and currently our CoP is going through a change of members and to me it's unstable at the moment and the people I had a relationship with are gone. So I'm waiting for others to come on board' (Participant 9).

The evidence in support of the need for relationships built on trust is considerable from the participants. The behaviours of individuals though affect the functioning of the CoP and are dependant either on careful management by the leader or by the majority of actors within the core or on the periphery of the CoP.

'I suppose if you are involved in a community of practice and you're not getting the opportunity to learn, or you feel that there are individuals dominating it you may not contribute as much and find it a worthwhile experience as much' (Participant 1).

'I would describe it as a group of people that will attempt to exclude outsiders, I think this particular group had traits in that there was an element of boosting your own self-importance' (Participant 7).

It is explicit in the statements above that the participant's experience of these CoPs was not a wholly good one. The overriding factor was the behaviour of individuals dominating others and therefore adversely affecting the knowledge sharing. The lack of knowledge sharing was making participant 1 question the value of CoP membership. In the case of Participant 7, the experience was one of exclusion brought about by individuals using unofficial power (not role related) to elevate their position into a controlling role. This militates against participation and knowledge sharing.

The act of exclusion limits the CoP's ability to formulate new ideas and stifles creativity. The quote below provides a good description of the uncomfortable experiences that may arise with deviant CoP working.

'They were just listening and not sharing, I sat through the whole meeting before being savaged after lunch. As a result, it has spent more time questioning its own purpose than is does doing the stuff. So it was more a case of saving myself time. Why am I going to go to a meeting and just come out with a sore forehead? So the reason for that committee then no longer exists' (Participant 7).

This participant spoke with sadness and frustration about the experience they had. Examples like this make me think of the possible detrimental effects that CoPs can have on individuals if they are not working properly. CoPs are not always a good thing!

Reflective Diary data

The statement from Participant 7 was delivered with heightened emotion. Disappointment at the failure of this CoP that had started with such good purpose had been crushing for the individual. Looking carefully at the wording used about being 'savaged' and being left vulnerable indicated the power of CoPs when not managed carefully. Later in the interview the participant explained that this CoP finally imploded. The experience however was not lost for this individual who is now cautious of creeping drift towards like behaviours and hopes that intervention would happen should this occur in their current CoP.

'...it [disruptive behaviour] can be stopped if there are enough strong characters to challenge it' (Participant 7).

The domination of some individuals is also seen as having a detrimental effect, a few vocal people can actually be damaging because their actions block others' participation. However, if not managed the actions of individuals may grow to the actions of a dominant sub group. Below are examples of both individual and group disruptive behaviours which may become destructive.

'There are one or two members that are quite egotistical that think they are right on everything and I don't really like those people but I'm still obviously very polite etc. but I wouldn't necessarily strike up a conversation with them. They are quite forceful with their ideas. They are not aware of the impact they are having on others. So, the people that I speak to are probably more amenable like myself, they are more open to discussion and they don't put down your opinion where I sometimes find that there are one or two people there that actually do put down your opinion. I think one of them is very opinionated and it's his opinion and he scoffs at anyone else's opinion. When I think about it I realise that they are out for themselves and I think that's what I don't like about them. I get the feeling that they would use you in order to put themselves forward. I do think there

is a willingness to share from them a lot of their expertise but they think that they are the experts in it and that you should be sitting listening to what they have to say to you, and what you then say is dismissed. Does that make sense? They are very willing to share their expertise. But it certainly feels one way and that's not good. I suppose that's not sharing, that's just telling you something isn't it. Which is not the same as sharing because you might have some valuable contribution to make but if they are dismissing it then the CoP could only be as good or as bad as those that are that vociferous.

I can give you at least on example where one person in particular dominates our meetings and I think there is something in that which should change and we have offered some suggestions for change but they have not been taken up. The topic that it's in I find quite interesting because I think it's an important area for us as a university to get right. The experience that's in that CoP is useful for us as well. Its people that do the project management, its people that run the projects that we want to run. That's what makes it important and I also quite like the people that are on their so I quite enjoy going to meet them as well. Unfortunately, we have had several members of the committee leave recently. Some of the nice ones that I really liked and who share and you didn't feel like you owed them something or that they were only wanting you to hear their voice and not yours. So, that makes a bit of a difference and we still get to incorporate more members on so we are down a reasonable chunk but they haven't even sent out he invite for more members to come on board. So all the time this person is unaware of the impact they are having on me and the others and sometimes I feel like leaving. However, if I put my business head on and not think about it with my heart then I shouldn't disengage with the CoP because as I said earlier its important. I think again there is also the part of me that thinks I should be there to try and sort that out and maybe try and take the committee away from the direction that we have been going in. so there is that part of me as well that I shouldn't walk away from it just because of that person. (Participant 9).

'Few vocal people who naturally have a lot to say for themselves can actually be damaging because it's not encouraging other people to take part and it can have a negative effect. You can end up with Communities of Practice that have half a dozen outspoken people and other people then start to lose interest because if they don't agree with everything that those few people are putting forward then they lose interest and just disengage' (Participant 5).

The domination and lack of awareness of the disruptive individuals involved is clearly having an emotional impact on members and a negative impact on knowledge sharing. A possible outcome is highlighted above where there may be disengagement either temporarily or permanently. Importantly, as highlighted by Participant 5, disruptive behaviour is not solely the domain of those in non-

leadership positions. If and where this happens the impact of disruptive behaviours is compounded through leaders becoming complicit. Ultimately, this behaviour may damages the foundations of trust and the ability of the CoP to share valuable tacit knowledge experiences. This is consistent with the observation from another participant below, where not only is the sharing damaged but the learning is also negatively affected.

> *'So what you then get is it almost becomes a mouthpiece for a number of individuals to spout off and what you may then get at that stage is conflicting views as to what's good practice. I had come to the conclusion that the group were largely self-serving and weren't interested in wider collaboration' (Participant 7).*

Bad behaviour is not limited to a group of individuals.

> *'Individual who is disruptive or in a meeting is bad mannered – hogs the conversation, maybe is intimidating to other members and so on. I think that type of thing will fracture a group and make it less likely for other people to continue' (Participant 4).*

> *'I want the CoP to feel inclusive really and not cliquey, which I never thought it was because I'm just me and I feel I am really approachable but I know that if I wanted to speak to somebody because they had done a great presentation or whatever, I would just go up and speak to them. But it's understanding that not everyone is like that. People might have a burning question at a conference but they would be too scared to put their hand up, so for me it's about understanding that people are different and there have to be other ways for people to engage and that's why Twitter is quite important because people can be braver to ask a question on Twitter rather than put their hand up but I think we need to work on that a little bit as well. It's also why we do the orientation sessions for new members.*

> *I think we have to be mindful that we are representing our community. The group is not the community, the community is everybody that's potentially got a stake holding and that we have to be representative of that community. That's hard to do with CoP membership because we do have a certain remit in terms of putting on events and things like that so it's very difficult to have somebody that's very quiet and shy on the group, maybe they are not as outgoing but still have a lot to offer and that might be something I certainly should take back to the group to consider – how do we engage with those people that are shy and have a lot to say and a lot to offer but don't push themselves to the front.*

> *I see others in the CoP helping to engage everyone, reminding me that not everybody's as confident, or as willing to put themselves out there so I definitely do see the need for us to bring everyone into the conversation,*

that there are others that are not as willing. We did have a bit of an issue I can tell you about, we have had some tension between a couple of members of the CoP and the xxxxx that's been quite difficult to manage. That's through a bit of a lack of emotional intelligence on both sides. I had to referee that a little bit. For me there was a lack of emotional intelligence shown on both sides. The person in the leadership role .was very fixated with the rules and the person on the other side was getting very frustrated because they were bringing lots of good things forward but they were seeing that as getting thwarted'

It had been going on for several years – a member of the group doesn't get on with another member and going back a couple of years they had quite a big row and the outcome of the row was a person complained xxxxx and the person on the group was no longer allowed to be involved. The challenge was that nobody went back to this person and told him that he wasn't allowed to be involved, so he couldn't be on the CoP and couldn't be a Chair because it was seen that he wasn't able to work with the team. My struggle with that was that this person offered quite a lot in terms of the conferences. He was good at finding us speakers and really it was for them both to move on, it was just different ways of doing things and sometimes the things that the group wants, they do conflict with the others but we need to find a way help members work together.'
(Participant 8).

The examples above bring to light the need for the CoP leader to actively manage behaviours within the CoP in order to allow new thinking to flourish. Should this not be the case then the CoP is held hostage through disruptive behaviours. However, it is interesting that Participant 8 draws attention to the unknowing nature of human behaviour. It is possible that not all disruptive individuals can acknowledge their actions as destructive. Given the voluntary nature of CoPs Participant 8 is suggesting a lack of emotional intelligence then can become a major issue for the continued functioning of the CoP and indeed there may be an inherent vulnerability in CoPs because of their voluntary nature.

Things are making me think about my own experiences where I have had to reluctantly intervene with particularly difficult situations caused by difficult people. Given I had no line responsibility or organisational power over these people I appreciate what is being described and the personal difficulties involved in challenging such individuals. It makes you think as much about yourself as it does about the other.

Reflective Diary data

However, it has been expressed that if the individual displaying these negative behaviours happens to be someone with considerable experience or external authority it can heighten the anxieties of the situation as demonstrated below.

> *'I think there is a willingness to share a lot of their expertise but if they think they are the experts in it and that you should be sitting listening to what they have to say to you and what you then say is dismissed then that's hard to manage. How do you tell important people to shut up?' (Participant 3).*

It also worth noting that intimidation can be inadvertent as described below, where those dominating the discourse simply intimidate and potentially exclude others.

> *'I think one of them is very opinionated and it's his opinion and he scoffs at anyone else's opinion' (Participant 9).*

> *'He is not really open or collaborative so we don't know what he is thinking' (Participant 8).*

> *'Everyone has to contribute or be given the opportunity to contribute. If you have one or two people taking a more active role the others might feel intimidated' (Participant 1).*

4.4.4 Relationships and the need for trust

> *'I think maybe whenever you become involved in a community of practice at the start it is maybe a bit less social because, obviously, it's building up the relationships with people and then the group relationships, which take time to build up. The longer you have known someone or you are involved with a community of practice it becomes a lot more personal than business related. It's not so much the formal it's complicated but when you have a personal relationship with somebody it's a lot easier to have a professional conversation' (Participant 1).*

During all of the interviews, many statements and stories were told regarding the importance of trust between individuals and the wider CoP membership. The findings suggest trust in these environments takes time to build and is focused both on the individual relationships and the working of the group.

'So that building of the trust and the strength of those relationships allows the knowledge to be shared more effectively and for you to have confidence in it' (Participant 6).

'Definitely, it goes back to this whole trust and you'll happily ask somebody for advice or guidance and maybe not feel embarrassed. A lot of it is those personal relationships that allow it to function at a higher level' (Participant 1).

'Then either by playing it back and saying – oh yes I can see how that's useful and you could probably do that somewhere else that person feels valued, and as a result they think - oh that person respects what I do, so 'trust' and 'respect' are probably two traits' (Participant 7).

The participants widely agreed the need for trust for knowledge sharing purposes and strengthening the relationships within the CoP membership. The growing of trust between the memberships brings confidence in the stories being told and the values behind the sharing. The sense of sharing altruistically with no personal agenda or need for personal gain is held to be highly important by the participants. Often citing trust as the reason they have the confidence to share their experiences openly and not leaving valuable detail out that limits the knowledge shared because of embarrassment or concern for self.

'…you also build up the trust and knowledge that if somebody says something you know to trust them because you know through your personal relationships that they are trustworthy and they wouldn't just be saying that for the sake of it, that they have had that experience and that trust builds up and I think it's important' (Participant 1).

'It's probably a two-way thing like any kind of personal relationships it's a two-way trust and in a wider group it's just a more dynamic version of the same thing' (Participant 1).

'There's a warmth about the group of people. There's a respect but there's a warmth in the way in which people work together, I mean I would trust them implicitly'. (Participant 2).

'That goes back to the personal relationships and trust because you want people around' (*Participant 1*).

Trust as outlined in the above statements suggests that personal relationships are important to sharing. A relationship that builds over time can allow for deeper experiences to come out and be shared with 'trusted' colleagues. The evidence suggests that although trust is often seen as part of a 'personal relationship' within the group setting trust can be more expansive with the potential outcome of a richer sharing experience that is important in tacit knowledge sharing. Participant 1 above helpfully described this as a 'dynamic version' of the two-way relationship.

> *'This comes back to who you trust and who you want to engage with – you start to have smaller groups outwith that group and they are the people that you are most likely to have the informal discussions with and react to their advice because it's actually usually about advice sometimes' (Participant 3).*

Participant 3 is highlighting above that it is trust that carries some conversations to the periphery of the CoP. In exploring this it was found that this did not necessarily suggest there was no trust in the core CoP but that sensitivities around some experiences were best shared with an individual or smaller group of confidants where individuals felt less exposed.

> *'In order to remain professional I spoke to the individual outside the meeting in order to get my point across in the hope of getting time for the discussion to happen….it had little effect…I just let it drop' (Participant 9).*

> *'I felt anxious about asking a question in the group and, to some extent, my vulnerability sounds like it's a weakness, it's something that's wrong, but actually what it's doing is driving your professionalism to an extent.' (Participant 2).*

In delivering the above statement, participant 9 was visibly more emotional citing the conflict between her professionalism and the feeling of vulnerability. Her solution was to speak first with an individual, driven by her need to be professional and admit to the concern, on the periphery of the CoP. The detail she discussed allowed it to be shared with less personal exposure. There was no sense from the individual that this in any way impacted negatively on the CoP rather it was seen as another benefit. One that could be flexed when dealing with knowledge sharing that may in some way be seen as 'weakness' or lack of ability.

The trust is built firstly with the individuals and later with others when the issue or problem is listened to or dealt with respectfully. Part of trust is about listening and being seen to listen and is not just about a one way interaction.

> *'The word that comes to mind is 'trust'. I don't necessarily mean trust in terms of giving someone your wallet. I mean more of - your opinion will be respected sort of trust. It is building up, the fact that you are there and you listen and you are seen to listen. You do that through questioning' (Participant 7)*

4.4.5 Listening and Facilitating Trust and Engagement

A widespread response from participants was the value associated with listening. Listening was attributed to respect and having a 'good experience' of an individual. The need for listening was expressed as something that needed to happen both at the core and on the periphery of the CoP. Listening was often associated with understanding or at least an attempt to understand a problem or issue that was causing the participant a level of concern. Being listened to was perceived as highly important to the participants who generally agreed its value in support of trust.

> *'Clearly if you've had a good experience, or you've met someone who could listen and understand your issues, then you are more likely to follow that up' (Participant 7).*

> *'That's why you have to make a conscious effort to, say, pick up that lost sheep or to talk to somebody you don't know. I think it's important to listen to people so they become more confident in speaking. So one thing I do when I go to my CoP meetings-yes I could just spend the whole 2 days talking to people I know personally - that would be easy. But I don't I try and talk to people I haven't had a conversation with before - now they will come and talk to me' (Participant 7).*

> *'Taking the technical bit in context, I want to speak with people who are talking about systems development or working towards the development of new applications. In our CoP the focus is always on discussion around how we get the best value from the applications and services we deliver. However, in the amongst the people there is probably a need for a bit of social skills and a bit of emotional intelligence, some of the people who are at the groups don't know when to not say things – that's part of it as well. There's a bit of you know – watching the dance and people say these things of where it's happening for them and a few of the people talk too much and don't do any action and that's the bits that I would say that I*

wouldn't interact with those people as much. They are not progressing in what they are doing, so if they're not progressing how can they potentially give you advice to do stuff if they are not progressing themselves. That's maybe a bit of a hard line to take and it's not to say they don't have any input on certain things but it's difficult when they don't listen. In other words they don't know when to stop. So they are not understanding that they are having a detrimental impact on the group. The other one in their I think is they are not progressing so not only are they not understanding what they're saying has a detrimental impact but they are not therefore listening either. It's coming back to emotions because it can get quite heated, the discussions around how things should be done, as well so not managing their own emotions and not listening is certainly part of it. I think that can come back to how they have been trained and what they are doing in the role they are in and that's part of the development skills and I think in some of the other institutions they don't have the same levels of training and awareness of what they need to do at certain times and how to behave.' (Participant 7)

It's interesting to note that the above participant, in his new group, was the one who had a really bad experience in his previous CoP. He seems to be cognisant of the need not to leave people exposed and reaches out to others, possibly new to the CoP, who have not the confidence or the stabilising factor of existing relationships. The need for this 'reaching out' is critical to encourage those who lack confidence or are more reticent than others. As highlighted earlier in the findings the role of leader has an important part to play here in order to bring the information sharing into the core of the CoP. However, a number of the participants believed it important for those longer term members to engage and encourage on the periphery as well as in the core.

'The ongoing conversations in the CoP– it does help that we are sharing information but therefore also listening to each other and understanding each other's situation. It's important to that kind of interaction. Sometimes it's a quid pro quo, so you show me yours and I'll show you mine sort of thing and you get a benefit out of that. Other ones, I'll maybe be approached just for my take on it and you'll just give that information or whatever on the basis that one day you will get it back in kind from another direction. It's just the way the machine works. If you were looking at the directors' list and all the many surveys and things if you were a really good citizen you would fill all of them out but I generally pick the ones that I've, selfishly, got and interest in because I want to get the group answer back. The Q&A will come along and then oh I get that bit of information back so that's interesting. I would call it a two-way-street thing – sometimes I do feel a bit altruistic about it and I add some stuff in but often it's because I'll get something back. I fill something in because I'm interested in what the

group might give me back from that. For me, if you listen carefully to the conversations and we spend time outside the formal meeting. You build trust and form strong alliances. Often it is going for dinner and the drinks or coffees with people, that helps bond the COP, and it does play a role in keeping it going. I think it helps build the unit. Personally, for me that's important but for some people that's not an important factor but I think if you look at all of the planning sessions, especially the overnights, even in the conferences the feedback you always get back from events and conferences is, was there enough networking time or not. The CoP does need to have a bit of - we are a team and we are better than any other team and we are the best group in the SPO, that sort of thing. Our events and conferences are better than anyone else's there's a bit of that as well.' (Participant 4)

'The trust that builds up across the various areas is invaluable. It has to be as well otherwise that type of information will not come out' (Participant 6).

4.4.6 Empathy as support for sharing

A number of participants welcomed the empathy that was offered to them when they were speaking or raising difficult concerns. Empathy was seen as an important factor influencing sharing while the absence of empathy was seen as detrimental to sharing within the group.

'So there was possibly a lack of empathy going on there because he didn't identify with people who were in trouble and, therefore, thought he could be bad to them. Lack of empathy. Lack of self-awareness because there wasn't a sense that he was going to get found out' (Participant 2).

'I have a mix of reasons for interacting. Some of it is down to having the same sort of role with the other CoP members and there are the social aspects as well, which is that we have families and common interests, and then there's the professional bit which is around doing our ITAL and professional standards development and that other people will be going through that experience as well and empathise with your struggle. I think then some colleagues they become trusted friends and I guess it is a safe environment so we do bring our woes and our work troubles and our bitches, whinges and moans I suppose. We talk through them and you know that's not going to be repeated outside of that group and while it's not a formal part of the group, the first half hour of any meeting will be – you won't believe what happened to me, or I can't believe I'm having to deal with this person, or I'm having to deal with this, or we've got a new IT director and he's bloody awful. Those kinds of things. It is quite a safe environment because actually it is quite a small pool so if you are wanting to have a whinge you need that safe environment because everybody knows everybody don't they, really' (Participant 8).

'Empathy is key to what you're about. You need to be able to feel for people but, at the same time, stand back' (Participant 2).

Empathy is being associated here with a safe environment, a place where sharing even quite challenging issues can happen. The empathy expressed is building the trust between the individuals as well as the core CoP. However, it is critical in the sharing process because it brings understanding of where the experiences are coming from and facilitates the sharing of perceptions of that experience.

'Crying over a pint? I think it's probably more everybody understanding where everyone is coming from. 'We're all going through the same pressures and challenges so we kind of know people who are struggling with budgets and the sectors and dramatic change. The whole EU moving forward is going to be challenging for our institutions. That whole, all being in the same sector, all understanding the same pressures, everybody with a common background, or environment they are working in. if we had a different community of practice and people were coming from a lot of different areas it would take a lot longer to work out maybe. I think that ability to empathise is really quite important. I think if it was a lot more formal or business-like I would be less interested in being involved. I get a lot more out of the personal relationships than I do the business side of it. Not to say the business isn't important but I definitely think the one to one and the group relationships that make it for me. It's the sense of togetherness, the network thing, the emotional support, the working together and the common interest thing that brought me there in the first place. I suppose the one interesting think about the community of practice is not so much the group itself but it's the resources or the things the community of practice provides to others – like the annual conference, which is much wider than the CISG grip. You are putting something on that a whole wider range of people can come and participate in which is quite different to a lot of other communities that I would be involved in. it does have a whole lot of deliverables to the sector which is wider than the community of practice. A lot of communities of practice, ones involved in the university are really just involving that community, that 10 – 12 people with a common interest rather than CISG there are 10 – 12 people but they are contributing a considerable lot more to all the institutions in the UK and hundreds of people. So, that's important, I don't know how you would phrase that. I suppose it's the scale of it. It motivates you to get involved in something that has that impact and that our Community of Practice has a positive impact on our community' (Participant 1).

The need for sharing at this level is critical to the CoP function and may be alluding to its ongoing success. A number of the participants saw great value and were fairly animated in their discussion around empathising with others. Interestingly

though objectivity and the ability through this tacit sharing to widen their experiences or contribute to growing trust are all contributing to the sharing of these more elusive experiences. Empathy itself is associated with developing others and sensing and bolstering their abilities and, in the case of these CoPs, the research is suggesting that it has a part to play in encouraging others to share those more sensitive experiences.

4.4.7 Respect: An outcome of listening and empathy

Almost universally across the research findings was the use of the word respect. The need for the explicit showing of consideration and regard for CoP participants was evident through all the conversations. It was expressed as a basic value and behaviour that allows sharing of knowledge.

> *'There's a warmth about the group of people. There's a respect but there's a warmth in the way in which people work together ...a place that doesn't allow people to feel respected or to feel valued, or to feel a part of what's going on for them, then you lose an awful lot of that, that kind of relationships with people because it becomes very informal or forced or pushed' (Participant 2).*

> *'when you have had that face to face discussion how well you have built up that rapport and maybe your respect as well for someone else and what they can bring you' (Participant 5).*

> *'Your opinion will be respected' (Participant 7).*

> *'It is working very well at the moment because of the respect the members have for the people who have volunteered' (Participant 4).*

We could consider this obvious in terms of people interacting with each other. The need for respect and the sense of being valued positively impacts engagement with others in deep conversations. The participants often use the language associated with 'safety' and a place where people are respected and alluded to the cultural expectations for those engaged with the CoP. So when people's self-esteem is impacted the desire to share is impacted.

4.4.8 A Commitment to openness - A willingness to share

The value of openness was also mentioned frequently and demonstrated an understanding of the participant's awareness of others as well as themselves. This was supported by comments associated with their own self-awareness but importantly that a lack of openness affected their willingness to share. Participant 3 who was recounting a story of a difficult relationship they had with the chair gives a good example of how this can impact the openness of conversations.

> *'With the original Chair I didn't have that relationship with him. I think he was a different type of character of how the group is made up now and I'm not sure if some of those conversations were ongoing then where now they are a bit more open and that is obviously to do with the people who do get involved' (Participant 3).*

The following quote points to a number of aspects of behaviour. Firstly, the culture of openness required to enable discussion and secondly how the lack of openness impacts how far members are prepared to share. A lack of openness would suggest that information, that leads to learning, limits the deeper meaning associated with that learning. A risk brought about by a lack of openness is that participants only gain partial understanding of the topic being discussed.

> *'At times you judge from their body language, their openness, or the areas they have introduced to your conversation what they are prepared to talk about. That level of exposure and the trust that builds up across the various areas is invaluable. It has to be as well otherwise that type of information will not come out and if that type of information doesn't come out you don't get the lessons and you end up maybe exposing your institution to risks that maybe you shouldn't have' (Participant 6).*

Participant 6 made this point with some strength and, considering the detail which he reluctantly expressed due to the sensitivities involved, shared the view that the CoP could detect that a particular member of the group was holding back really valuable information to the detriment of the membership. The participant was reluctant to share why this might have been the case but suggested a less than generous reason centered on the individual's "need to feel important". Openness is therefore seen as a sign of commitment normally associated as a motivating factor: a commitment to their subject area;

commitment to each other. Commitment is an individual act that in the function of these CoPs would seem vital to the success. A lack of openness could be described as a lack of commitment and whether to the subject, CoP or individual it is seen as a significant limiting factor in knowledge sharing.

The below statements suggest this openness is required to support innovation and a willingness to accept new ideas. A key feature is the sharing described below as “giving” and “taking”. Unusual words to use for sharing but the qualification being “at the same rate” suggests a democratic approach to data sharing: a “giving as good as you get” scenario which links back to the earlier value associated with contribution. It can’t be just about listening it’s about participation and contribution and the willingness to explore the experiences and knowledge and to potentially create new knowledge from the open sharing of ideas and experiences.

> *‘They’ve also got things they want to tackle and they’ve maybe got open minds and are willing to try things’ (Participant 7).*

> *‘So it's being open is the key thing, to being open to ideas so that, in the utopian model, everybody will be giving and taking both at the same rate’ (Participant 7).*

> *‘It’s detrimental to the operation of the CoP because you are not getting the flow of information required to make a proper decision, or to arrive at a proper solution. So about engagement and all the rest but if you’re sitting in a particular environment and you have the trust levels there, you have people with the right communication skills and so on, their willingness to actually give you information and the willingness to explore then that type of thing should actually work quite well. Any CoP that doesn’t have that isn’t really a Community of Practice’ (Participant 6).*

Conversely, the above contribution from participant 6 leads us to consider those behaviours that are the antithesis of those that support knowledge sharing with all its deep and complex experiences that bring real understanding. This participant is suggesting that a CoP cannot function without a range of skills and commitments to both the subject and the individual, often described as being reflected by openness and willingness to share, without which contributions are limited and the potential for learning, knowledge sharing and the creation of new ideas is adversely impacted.

'To be honest for me it is critical to the success of the CoP that we share effectively. The sustainability of the CoP can be affected, if you actually get a group of people who are simply looking at - did my server work? – then those COPs will fail. You have to be looking at the real implications for implementing solutions within an institution, look across the full myriad of people. What does it mean for the learners, what does it mean for the researchers, what does it mean for the academics, what does it mean for the support staff? Unless you're looking right the way across the whole institution – we are all at a situation now where we have experience of all those areas in our careers and if we can't bring that experience to bear and make the connections right across and also take that to an environment and share it and communicate and arrive at solutions or ways forward, adequately interacting with people and sharing with people and being confident enough to share in a trusted environment, then we are going to find ourselves very quickly end up with CoPs that didn't work, here was the manual, yes we got our server up and running and the service is there. If we are not talking about real life services and real life implementations and the impact it has on people, then they are not going to go anywhere because you get that from a supplier or you get it from the person sitting with a CD and pressing the next button.

I think I would have leave if the sharing was not working. Simply because your institution wouldn't be seeing the benefit of it. We are all under pressure as regards budgets and travel and the time we have to commit to things, if you don't see a benefit from it and your institution isn't seeing anything working from it then you are not going to be supported in it anyway. So, you are going to come under more pressure to say – OK what are we getting out of this, why we are doing this, and so on. I think that's where the role of the chair of or vice chair – their training or facilitator role comes in and they should have more of a formal approach to say – OK here's what we need to be looking at, here's what we need to do. It is actually at a certain level sharing the experience because it's the only by sharing openly and willingly our experience that we can get benefit. If we don't share, then we end up more kind of anodyne environments in those meetings I mean. Then why would you go to it because as I said you can get it from your Midland supplier, your student records people or whoever it is, you'll get that kind of – it's great, server's working, everything is jolly and nice and that's not the real word and you need a certain amount of practicality about these environments whether it's the SPO or EA or whatever else.' (Participant 6).

4.4 Impact of tacit knowledge sharing

Out of the provisional good cop bad cop discussion the theme of impact of tacit knowledge sharing emerged because it directly addressed the issue of sustainability which, in its own right, impacts on a CoP's capacity to be a vehicle

for tacit knowledge sharing. At the end of the interviews participants were asked to identify what they thought sustained a CoP and the components which they felt were most important to them. This was considered important because without sustainability CoPs cannot be the prime vehicle for tacit knowledge sharing. Not surprisingly, the participants related those features of the CoP likely to affect their involvement and therefore there are a number of sub themes evident here that have been discussed earlier. However, here we are exploring their link to sustainability.

One of the benefits of the sample size and indeed the strength of choosing from a range of CoPs and members from differing institutions meant that there was a considerable experience of different CoP environments within the group. This became valuable as their insight led to the identification of behaviours, described earlier, that may have outcomes that are working against the success or indeed the sustainability of a CoP.

When reporting on a good CoP experience participants referred to the CoPs in which they were involved. There was a sense that these participants across a range of CoPs felt they were part of something useful, successful and important both to them as an individual and to their institutions. Uniquely, there was a feeling of contributing positively to the sector as a whole and the altruism associated with these activities enhanced the commitment and motivation to continue.

> *'I have picked up on the impact of the knowledge and the success of embedding the information and the sharing of information as these features have an impact of the sustainability of the CoP.' (Participant 6).*
>
> *'Because I have really broadened my knowledge of the sector what is good and what is bad. If you don't have that view then it is hard when you are looking at your own job and your own role.' (Participant 4).*
>
> *'You can see then the workings it (CoP) has on the sector and so there is a whole range of different things of what you get out of it. A key benefit for me was that my organisation gets insight to regulatory bodies and that we can influence them for the benefit of our institution' (Participant 6).*

However, when asked the more direct question of what the participants considered affected the sustainability of a CoP in a negative way they identified five key areas, which they felt could cause the CoP to malfunction. These included: poor leadership; dominating characters; form of ongoing benefit; relevance; willingness to share.

4.4.1 Poor leadership

Respondents felt that where leaders of a CoP view that CoP's success as being wholly dependent on them this actually contradicts CoP rationale. The perception of a leader making suggestions such as 'it is successful because I run it' suggested that this lack of self-awareness would ultimately control and limit the core knowledge sharing activities. And the CoP itself would certainly be '*not innovative'*.

> *'In that community of practice I think what you got from the leader was "it is successful because I run it" and the community thought that the CoP got more inward looking and as a result the value of the community for them declined' (Participant 7).*

4.4.2 Dominating characters

In relation to culture respondents felt that if the CoP culture carriers were not strong enough to manage those who would seek to 'hog the limelight' or 'force their opinions on everyone else' then many people were likely to disengage. The examples below hints at limited CoP life through the dominating behaviours impacting adversely the fundamentals of the milieu of the CoP.

> '*I was a bit shocked when I joined that CoP as it was so unprofessional and people were behaving so badly, imposing their views on us, it had the potential to just wither away' (Participant 8).*

> *'The community had gone from being a community to being a clique with absolutely no sharing, this group basically imploded' (Participant 7).*

4.4.3 Form of ongoing benefit

This sub-theme was important because of the voluntary nature of CoP attendance. Clearly, it was important for the participants to experience some benefit because of the investment of time and effort made by them and their institutions. The resultant lack of reciprocity when CoPs no longer deliver the benefits means that the motivation for participation is diminished.

> *'The benefit has to outweigh the effort and what other members have to get out of it has to continue and it has to evolve or risk stopping and it becoming something else' (Participant 3).*

> *'It's about the learning, and if it becomes disorganised because of the way they are behaving then I'm not interested' (Participant 1).*

4.4.4 Relevance

Sustainability depends on relevance of the topic area to all participants however the dynamic nature of the CoP means that boundaries are fluid and relevance may be time bound for the individual. It could of course be the situation where technology or the function simply changes in the sector. However the option is for the CoP 'to move with the times' or should it lose its relevance then the CoP is clearly at risk.

> *'It's got to stay relevant, have ambition and strive to move forward or for me it becomes obsolete' (Participant 8).*

> *'For me it's got to be issue based, if it's not and we are not learning how to overcome these issues then the reason for it no longer exists' (Participant 7).*

4.4.5 Willingness to share

Previously we have eluded to the central tenet of the CoP as a vehicle for tacit knowledge sharing. However, willingness to share goes beyond simply sharing tacit knowledge and was identified as contributing to confidence in the group, confidence in self and confidence in the information shared, all of which are key to the sustainability of the CoP.

'It's the willingness to share that's important for me, if they are so unwilling to share I don't see the point' (Participant 2).

Willingness to actually give you information and the willingness to explore then that type of thing should actually work quite well. Any CoP that does not have that is not a CoP (Participant 6).

'You will always get peaks and troughs it is just the way it is. The next person that comes in might change it in some way and if it becomes less effective I think it wouldn't stay together, the CoP would just split up' (Participant 4).

4.5 Conclusion

This chapter concludes with the view that there are a number of factors that impact on the efficient functioning of a CoP as a tacit knowledge sharing vehicle. Analysis of the data generated three key themes: the flow of tacit knowledge sharing; the influences on tacit knowledge sharing and the impact of tacit knowledge sharing for sustainability of the CoP. The next chapter provides a discussion of these themes in relation to the extant literature and concludes with a conceptual model presented as a contribution to practice.

5. Chapter 5: Discussion

5.1 Introduction

This chapter aims to build on the findings of the primary data collection process presented in the previous chapter. This chapter provides a more detailed discussion identifying the key themes that underpin the success of the HE IT CoPs. Initially the chapter will outline the purpose of the research and its findings in relation to the current literature to gain a fuller understanding of the outcomes. The literature review has been an iterative process with new texts and evidence based studies identified as the study progressed. This will be followed by an assessment of what has been achieved by the study and how it impacts on knowledge and practice and will conclude with suggestions and recommendations for further study and final thoughts and personal learning from the study undertaken.

5.2 Purpose of the research

The aim of the research was to explore the dimensions of tacit knowledge sharing in Communities of Practice working within the Higher Education Information Technology Sector.

5.3 Flow of tacit knowledge sharing

It was evident from the experiences of CoP members that the sharing of experiences, and the gaining of insight from the experience of others, was a motivating factor for being involved in a CoP. One participant in the study referred to their CoP as having people in it that had ‘a vast amount of experience’ and went on to describe the importance of being able to share and ‘to ask what others are doing’. Lave & Wenger (1991) in developing their theory of situated learning highlighted how learning from others through the interaction with colleagues was a significant factor in CoP function. This study found that the subject or topic of the CoP, the potential for engagement and learning from others and those factors associated with identity that enhanced their reputation or status as an expert, motivated the participating CoP members.

5.3.1 Tacit knowledge sharing

The respondents in this study recognised that knowledge was socially constructed and that learning took place due to the synergy occurring when working with others. Participants were motivated to bring back knowledge to their institution gleaned from those deeper experiences of their colleagues recognising that they were working together both at the core of the CoP but often on the periphery in coffee breaks or outside of the main formal meeting. Much of the learning is taking place here not from explicit task orientated descriptions but from what the CoP members 'see' and what they, as individuals, have 'taken in'. Bandura (1977) described this learning as a cognitive process and what is occurring here is learning in a social context. This is not learning from a manual, this is the full understanding that is required in order to be able to implement practice. It is the tacit knowledge gained from the experience of sharing and fully understanding how to solve a problem or issue and to effectively learn from someone else.

The CoP members are learning from each other, not through the formal learning route but from the conversations and stories they are telling each other, this is consistent with Bredillet (2004) who referred to participation which involved CoP members practising their jobs through interactions with each other. Fundamentally important to many participants was the subject area or common interest in the topic for which the CoP was created.

What was then expressed by Participant 2 is that during these 'learning' conversations new ideas or innovative thinking is emergent and a virtuous circle is formed that shares the experience and the thinking within the CoP, which in turn returns to the individual's institution and has the potential to enhance their profile. This allows them to feel a practical benefit from being involved in a CoP and the subsequent improved status within their institution acts as a motivating factor for them returning to the CoP and encourages their contribution and willingness to share.

Almost all the participants referred to ‘new’ solutions or different ways to tackle problems borne out of discussion and sharing. What was occurring through conversation was the sharing of ‘how’ things were done that would then give rise to novel solutions and new thinking around practice. Added to this was the concept of the external influences on the CoP that helped creative thinking.

All of the CoPs had a common objective that was to use members to liaise with other sectors, organisations or government bodies. Initially, the concept was to influence those who may have some level of impact on the IT field either directly to their institutions or from a cross sector perspective such as government legislation on Freedom of Information or Data Protection. However, the participants also saw considerable value in the expansion of their knowledge. This had the added value of introducing new ideas and the sharing of these ideas, both within the CoP and at the events, where wider community engagement took place. The networking and resultant tacit sharing promoted the creation of new ideas and thinking. This is consistent with literature that describes canonical practice as prescribing how an employee should act and work as opposed to the non-canonical practice of communities reaching beyond their sphere of influence to learn new knowledge or skills and bring that learning back to their CoP and then their institutional communities (Brown & Duguid, 1991).

The views expressed by Participant 7 in the sharing of learning which was difficult to codify are in line with components of Bandura’s Social Learning Theory (SLT) of meaning, practice, community and identity. Learning is taking place within these CoPs through engagement and contribution strongly coupled with context and participant 6 links this to dissemination as a critical factor in learning from others. This supports Lave & Wenger’s (1991) model of situated learning. Participant 7 describes this in action when he refers to ‘small action learning sets to solve problems and the need for everyone to contribute to the discussion. However, it is the dissemination of this knowledge that brought to light the notion of tacit to tacit sharing and then tacit to explicit that was seen as adding significant value to CoP membership.

In the earlier sections we have been discussing essentially the tacit to tacit knowledge sharing occurring with the CoPs. Nonaka & Takeuchi (1995) referred to this sharing of experiences as 'socialisation' or the tacit to tacit sharing of knowledge that brings a shared understanding through shared mindful models or frameworks that are derived from the interactions between the CoP members. A feature of the CoPs though is the extended dissemination of this tacit knowledge. This newly formed knowledge is still very much tacit in nature and it is the activities associated with dissemination that appear to convert it to explicit knowledge. The CoPs develop a range of seminars and events to disseminate this tacit knowledge and combine it with explicit knowledge to demonstrate the new thinking (Nonaka, Toyama & Konno, 2000). The CoPs use case studies, workshops and presentations to tell the story of what they have learned as a community. In effect, this is making explicit the tacit knowledge derived from the sharing of stories and experiences within the CoP and its combination with the explicit or known knowledge is consistent with Nonaka & Takeuchi (1995) view of Internalisation described as the transfer of tacit to explicit.

An unexpected outcome however may explain why these CoPs have longevity and relevance to their wider communities. At all of their events considerable emphasis is placed on the networking that takes place at the conference, events and seminars. What is taking place is the discussion of the topics being presented or shared between the CoP members in the form of media case studies, toolkits and presentations (Explicit) with their wider communities who attend these events. What results is the emergence of even more tacit sharing of experiences and often new thinking that is then returned to the CoP for consideration (Internalisation). Participant 7 referred to a virtuous circle (**Figure 4)** earlier where knowledge is brought into the CoP, shared, considered and evolved before returning it to the institution. What the study found occurring here is a powerful knowledge sharing virtuous circle operating between tacit and explicit knowledge sharing, moving out of the CoP and it being shared explicitly and discussed tacitly at these events before it is returned to the CoP for further evolution. The virtuous circle continues and the tacit to explicit evolution progresses ad infinitum.

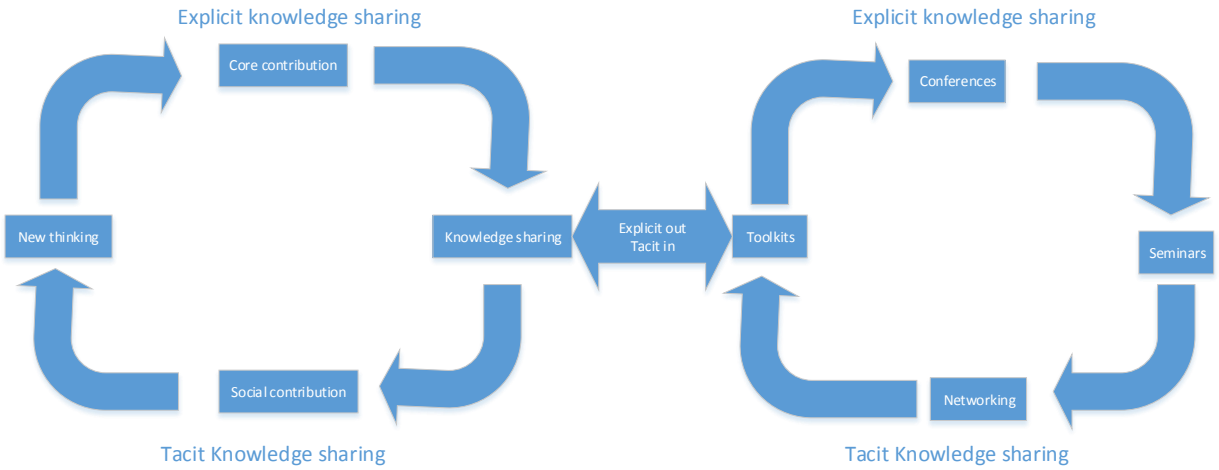

Figure 4: Study finding: The HE IT CoP tacit-explicit-tacit knowledge virtuous circles

What the findings are describing are the elements of the SECI model in terms of the knowledge flow, which sees knowledge, brought to the CoP in the form of practice, which is explicit (Combination), and their experience of implementing the practice, which is tacit knowledge (Socialisation). What then occurs is this new tacit knowledge is made explicit (Externalisation) through the CoP developing case studies, toolkits and presentations described earlier. This suggests the use of two divergent knowledge management theories operating therein. The first treats knowledge as an object that can be codified, stored and disseminated (Becerra *et al* 2008; Nonaka & Takeuchi, 1995). The second is that of community sharing and is the foundation of communities of practice thinking that treats knowledge as a 'dynamic phenomenon'. The CoP is where knowledge is shared and the tacit 'know how' born of experience and described by Polanyi (1966) as knowing more than we can tell is formed as shared understanding by what is said, intoned and formed between CoP members. This is achieved through establishing the shared mental frameworks from the stories and experiences the membership tell each other (Brown & Duguid, 1991; Tsuokas, 2003).

This integration of knowledge and knowing is surprising and appears to support McIver *et al*'s (2003) hypothesis that this is 'knowledge in practice' which bridges the gap between the two divergent knowledge theoretical divides, described as the coming together of learnability and 'tacitness' of information and the 'know how' involved in practice.

5.3.2 The places knowledge sharing occurs

Having explored the tacit to explicit knowledge journey the next logical step is to consider the tacit knowledge flow within the CoP itself. What is interesting is to understand how the integration of tacit and explicit knowledge occurs and if there is a link to the degree of community participation. Wenger, McDermott & Snyder (2002) described varying degrees of community participation as essential dynamism of CoP function. They considered those most active within the CoP as being close to its core and participating in discussions and wider community activities on behalf of the CoP. They go on to describe those on the periphery of the CoP as not necessarily actively engaged but who gain much from observing and listening and seeking their own value from those who are actively engaged. The findings from this study, however, may indicate a different perspective.

Participant 7 challenges this thinking by describing the need for all to participate and suggested the CoP and the CoP leader were required to encourage engagement and participation. It is seen as important to be engaged and to contribute for the CoP to be successful. It is also suggested that those who don't are more likely to drift away and should this gain momentum then the CoP itself is at risk.

The findings highlighted the issue of engagement occurring within and on the periphery of the CoP. The participants though did not think of this in terms of 'active' engagement although as described above the need for engagement was seen as critical to the ongoing success both for individual and the group. What many of the participants went on to suggest was that their view of engagement was one where tacit sharing was taking place not only at the core or more formal meeting of the CoP but that significant sharing was occurring on the periphery or

outside of the formal meetings. Often based around social interactions such as coffee breaks, lunch, dinners or breaks in discussion, considerable knowledge sharing was occurring. In fact Participant 3 suggested that conversations were going on outside the formal meeting and this was where a lot of the work gets done.

The literature supports this view of tacit knowledge sharing with Clarke (2010) suggesting it is linked to the Ba concept of 'place' where the tacit knowledge sharing occurs and the 'originating' which is the act of face to face interaction. Both of these concepts are rooted in the philosophical stance of Ba (Nishida 1958) and seen as two key areas that support the sharing of knowledge.

Participant 2 described the flexibility of the meeting itself that allowed for the CoP membership to move from informal to formal and back as required. Allowing the CoP to address practical and functional issues while supporting the experience sharing is considered important to its reason for being. It is important to realise this challenges Drucker's (1993) idea that knowledge sharing has to occur by example or demonstration. It is however supported by SLT and its application to CoPs, as here learning occurs due to the interactions between people (Wenger 1991; Bandura 1997; Lave *et al.* 2002). However, many participants described tacit knowledge sharing occurring on the periphery, **See figure 5**, and this was often what fired their enthusiasm with some of these side discussions being described as the most important ones. Critically, many of these really important discussions occurring outside of the core return to the core for wider discussion, influencing the topic or objectives of the CoP.

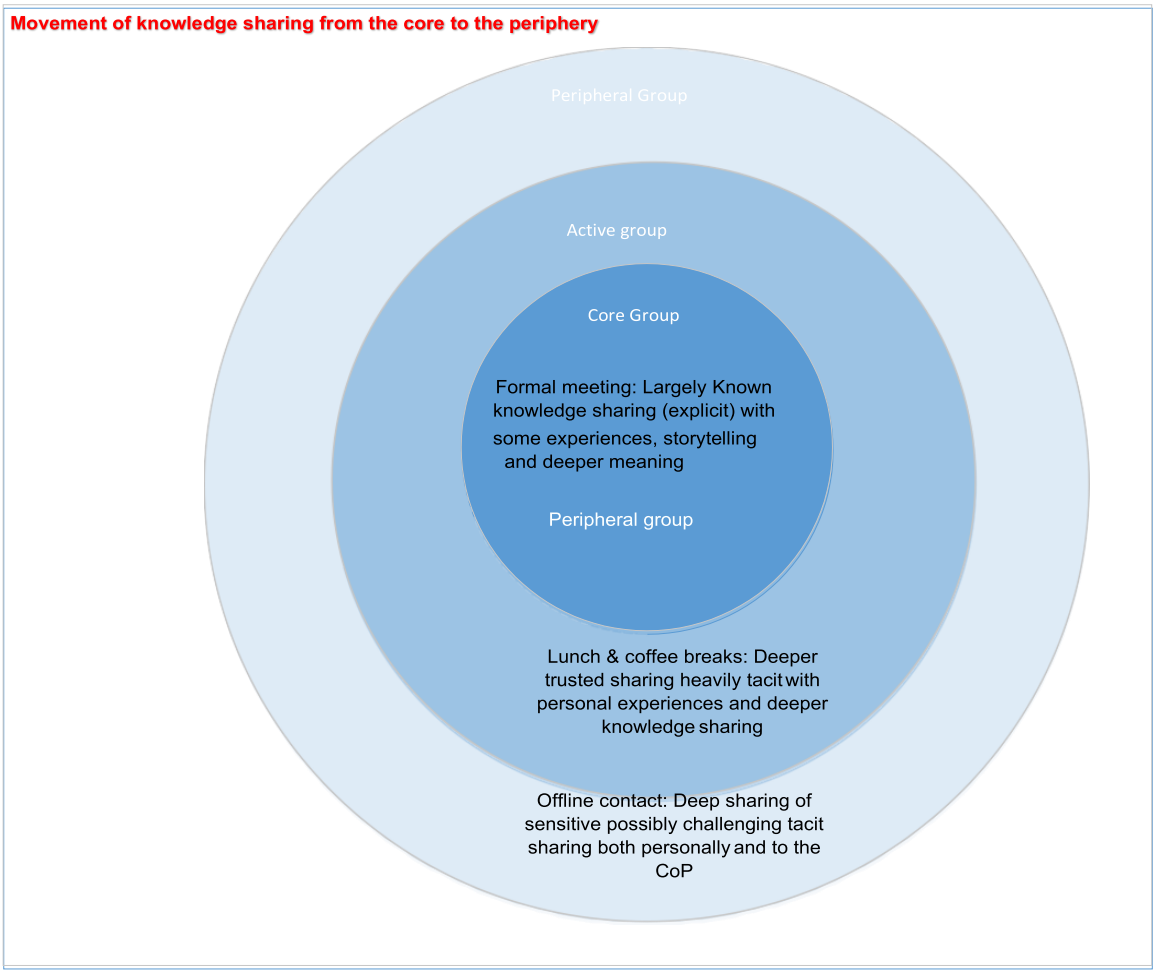

Figure 5: Tacit knowledge sharing from the core to the periphery and back

The nature of tacit knowledge sharing in these CoPs described above in **Figure 5** is also consistent with the literature particularly in relation to the socialisation or tacit to tacit sharing and its subsequent transfer to explicit using the methods described by the participants (Nonaka, Toyama & Konno 2000). What is being suggested is that despite Polanyi's declaration that tacit knowledge cannot be codified these findings suggest that these CoPs through their virtuous circles (**Figure 4**) are both storing and evolving knowledge and in doing so are engaging in a form of codification.

5.4 Influences on tacit knowledge sharing

Having ascertained that tacit knowledge sharing was active within the CoPs the outputs to the sector were a new product made up of the combination of the original practice knowledge and the new knowledge gained from the tacit

experiences they shared on how they implemented that knowledge. The findings went on to indicate that a number of factors were impacting both negatively and positively on tacit knowledge sharing. Further, these factors often contributed to the reasons for tacit knowledge sharing and critically impacted on the movement of tacit sharing from the core to the periphery and back.

5.4.1 The role of the leader

The study suggests that a primary role for the leader is to ensure the CoP alignment with the topic and CoP membership's key areas of interest as well as coordinating the meetings and opportunities to share (Wenger, McDermot & Snyder 2002). The CoP itself generates its leader through succession planning and a voting method and it can be that individuals with or without leadership development can occupy the role. This may be unique to sector based CoPs rather than organisational CoPs because of their membership not recognising organisational leadership. Further it democratically elects from the position of knowing the individuals and initially from those members who formed the CoP in the first instance. Recent CoP literature has suggested that these types of CoPs, ones that are made up of specialists with no prior history of each other, require the leader to adopt a co-ordination role and support the bringing together of the CoP and with the above alignment to the CoP interest (Smith & McKeen, 2004; Amin & Roberts 2007). This would appear to conform to the thinking proposed by Muller (2006) that the emergent leadership is due to greater activity and contribution in this type of CoP.

Participant 1 highlighted a key area of the study findings, that of the need to nurture the community and to encourage the weaker elements to contribute and participate (Fontaine, 2001). However, a significant point was made by a number of participants on the need for CoP leaders to manage those who might dominate the conversation as participation and contribution were highlighted earlier as key factors in ongoing CoP success. Critically the study found that the facilitation role is key and that the leader should encourage the participation of the weaker members. The view was that the leader needed to effectively channel the energy and enthusiasm of those more extrovert while bringing out the contribution from

the introverts. The more recent literature supports this view of 'win – win' leadership and the unsaid feature of diffusing potential conflicts (Garavan, Carberry & Murphy, 2007).

We can derive from the above that the leader in these CoPs has a complex role to play in co-ordination and facilitation. In doing so they also operate the more traditional leadership roles of creators and managers of the vision and the direction of travel. Emergent themes from these findings on CoP leadership, created from the number of references made to it by the participants, suggest that the group leader needs to manage dominant or destructive contributions. Further, the findings suggest the leader must be able to facilitate in the CoP to stop individuals overpowering the contribution of others and as suggested earlier support the win-win for every member. The leader is required to exploit the dynamics of the group and promote the good behaviours that support contribution while limiting the impact of those who for less than altruistic reasons seek to control the conversation (Yalom, 1983). To do this the leader requires an awareness of themselves and others that is closely linked to Goleman's (1995) concept of Emotional Intelligence. Goleman (1995) asserts the concept of the leader being sufficiently aware of themselves and others. In applying this thinking to CoPs the group leader then should be able to recognise and manage the behaviours that may impact adversely on the CoP. The group leader must also be able to welcome new concepts borne out of the discussions on the periphery ensuring those tacit conversations of value are brought back into the core.

The findings though bring to light the notion of the leadership role being occupied by several members of the CoP who should play an active role in this facilitation. Their role is also one of brokerage helping the CoP share ideas from a membership that are drawn from wide ranging geographically dispersed institutions who may have a common IT language but a different organisational voice (Fontaine, 2001). These 'brokers' may also be playing a role in bringing the peripheral sharing back into the core having formed alliances around a new or innovative idea. This is a particularly interesting finding in that it suggests a number of the more active participants have a role to play in managing the culture of the CoP. In one

particular CoP, seen as one of the most successful, the culture is maintained through the changing leadership by key active members being retained or at the very least transitioning out and being replaced by 'new blood' at a careful pace. This culture was being sustained by the CoP and acted as a self-managing network in controlling the leadership to ensure the culture is maintained.

5.4.2 Behaviours that Impact knowledge sharing

A key theme to emerge from the study was that behaviour could have both a positive and adverse impact on tacit knowledge sharing. It was noted how important this was to the participants through the emotion and energy with which some of the stories and conversations were delivered. It became evident that behaviour was affecting the CoPs on a number of different levels. Fundamentally, the CoPs were acting as a vehicle to facilitate knowledge exchange. The tacit knowledge resides in people and it is the CoP acting as a facilitator of tacit knowledge sharing that assists people to learn from each other, share knowledge and evolve new thinking (Hildreth & Kimble, 2002). Garavan *et al.,* (2014) as part of their 7 C's Framework suggested that competencies of employees would need to demonstrate the behaviour and psychological characteristics conducive to the sharing and seeking of knowledge in organisations. However, this study is not concerned with a single organisation and the findings bring to light those characteristics deemed important in a loosely bound voluntary CoP that nevertheless has to deliver significant value to its HE IT membership and those organisations they represent.

It was evident from the findings that should an individual or group of individuals impact adversely on the contribution of others then the 'CoP doesn't really work'. If this individual or group of individuals are allowed to dominate then the experience for other members of the CoP is one of not being able to contribute. This has a double impact of not only disengaging the CoP membership, who are not able to contribute, but also limiting the sharing and knowledge creation that can occur. The participants clearly identified these dominant people behaviour as a characteristic that affected their own contribution and that reduced the value of CoP membership for them. Participant 7 went on to express the view that these

people were ‘boosting their self-importance’ at the expense of the other members. This monologistic behaviour is at the heart of ignoring the contribution of others and is driven by the need of some to feel powerful or to dominate the group. These traits are often expressed by those who find social recognition a challenge and strive beyond the norm to be the centre of the attention. This attention seeking often covers up a range of underlying issues with social or peer recognition (Linell, 2009; Philips 2011).

This returns us to the role of the leader described in the previous section and the need for them to manage the group and control those who would seek to dominate. However, if the leader lacks the ability or skills to manage the situation then it is likely to have significant consequences for the CoP. It is not just the limiting of the contribution that can be affected, the need to dominate can drive individuals to intimidate other CoP members and ‘thwart’ and frustrate those attempting to bring new ideas and thinking to the conversation.

Conversely, dialogicality as described by Linell (2014) is the sense making that occurs from the face to face conversations, storytelling and sharing that happens when CoP members share openly. It was important to ensure that some group members, because of their knowledge or expertise were not allowed to dominate or intimidate others during discussions. It supports the learning from tacit knowledge sharing from a membership given the space to contribute and the opportunities for relationships to build based on the normal tensions that are incumbent in any tacit knowledge sharing and are formed from the differences, misunderstanding, ambiguities and individual interpretations of all those involved. There are only a few studies that have considered group characteristics that influence knowledge sharing and they tend to focus on the relationships at play rather than the individuals (Wang & Noe, 2010). What this study unearths is the impact of individuals on knowledge sharing amongst HE IT CoPs and what was surprising was the depth of feeling both for the passion and commitment of those experiencing high levels of knowledge sharing and for those individuals who displayed those behaviours that adversely affected it. The ultimate outcome of behaviours that damage engagement, that are monologistic in nature and

manifest themselves in a ‘clique’ and the exclusion of others and critically the limiting of knowledge sharing, may cause the CoP to deconstruct.

Participants were almost unanimous in their use of the word ‘trust’ when discussing who they would share with and what they would share. Trust was described as what established ‘confidence’ in what was being shared and critically whether they as individuals would consider sharing or seeking advice. It was considered this was an aspect of vulnerability being expressed within the CoP. The participant’s willingness to seek advice and therefore display a vulnerability by ‘needing help’ or the suggestion they are not as knowledgeable as others was linked strongly with trust and the sense that in expressing their vulnerability this would not be exploited by those they sought advice or guidance (Abrams *et al.,* 2003). Participant 2 expressed this vulnerability as sounding ‘like weakness’ and that it was in conflict with their professionalism which is their need to gain knowledge. Participants related trust to who they wanted to ‘engage’ with and cited trust was required in order to seek or indeed react to advice. Importantly, this was caveated with the need for trust so that the individual would not have anything other than altruistic reasons for sharing.

Trust evoked emotional responses from the participants’ particularly interpersonal trust where they felt vulnerable in seeking knowledge. They also expressed a second dimension of trust that was dependent on their perception of those they are sharing with as having expertise and knowledge that was deemed ‘trustworthy’. These two dimensions of trust in promoting knowledge sharing of vulnerability and competence featured heavily in the participants’ reasons for sharing, with Participant 6 describing both dimensions as important for ‘knowledge sharing to be effective’. Abrams *et al.,* (2003) posited that trust is a multifaceted and elusive concept, that knowledge sharing is given a platform to occur when individuals showed either an interest or value in another’s goals and when there was perceived confidence and competence from those sharing their knowledge.

It is postulated here that multidimensional trust plays a complex role in the success of knowledge sharing in CoPs. It is particularly associated with tacit sharing of experience and expertise, contextualised (often with emotion) that will be critical to the ability of CoP members to build the shared mental models described by Nonaka & Takeuchi (1995) that facilitates tacit to tacit knowledge sharing.

Great store was placed on 'listening' and this behaviour was seen as an important feature in building trust and confidence in the relationships within the CoP membership. Listening is a fundamental component of collaboration and establishes the two way flow of tacit knowledge. Not allowing space for this to occur may result in malformed thinking or incomplete descriptions. Shared listening allows ideas to form or to be contributed to by others allowing them to form or to be contributed to by others therefore establishing the collaboration required to evolve an idea or as discussed earlier form a shared mental model. This exchange relationship was associated with a good experience of sharing, equally bad experience was associated with those who did not listen, described by Participant 3 as those not managing their own emotions and participant 9 as impacting the 'willingness to share'.

Pyrko *et al.,* (2016) suggested mutual engagement was critical to CoP success and expanded Wenger *et al's* (2002) 'learning together' concept. Pyrko *et al.,* suggested 'thinking together' was a trans-personal knowing process that they synthesised from the available literature. I would propose however that thinking together is a novel way of looking at what Polanyi suggested were clues that constructed understanding from indwelling (knowing). Yet, if shared it could support tacit knowledge exchange, then this could be described as listening together while thinking out loud. Pyrko *et al's* (2016) empirical study was helpful in suggesting thinking together was important but surprisingly did not observe what the trans-personal characteristics were. Polanyi (1966) agreed 'indwelling' could be shared through the insights and 'very' personal experiences of the individuals. It is therefore suggested that the participants in this study believe that sharing is dependent on listening not simply for trust reasons but because the two way process associated with sharing and listening does indeed return us to

the foundations of social learning theory and its application to CoPs by Lave and Wenger (1991). These very personal experiences are prone to the influence of behaviours and complexities of trust, empathy, listening and the self-awareness associated with 'seeing' your impact on others.

Participants in this study felt that empathy had an important role to play in the behaviours of individuals within the CoPs. Empathy was linked to 'everybody understanding where everyone was coming from'. The findings suggest this is a critical component of tacit knowledge sharing. The knowing could be connected to the indwelling, the internalising of understanding of the people you are sharing with, that's outward expression is in body language, encouraging noises and demonstrable awareness of others. Empathy and one's ability to use it positively for knowledge exchange, was associated with self-awareness. Additionally, social awareness was discussed by participant 6 as *"you can't spend the time eliciting information because they don't have the social awareness to actually turn round and say, here's what I need to do to engage".* Participant 6 goes on to describe the need to limit the effort or energy in engaging with these people, "Those type of people you just have to cut your losses with them to a certain extent". This is an astonishing example of limiting knowledge sharing due to the personal characteristics of an individual without the skills to engage successfully.

Empathy, social awareness and self-awareness are features of Goleman's (1995) Emotional Intelligence (EI) model and little is written on this subject in CoP or knowledge management literature. It is suggested here that EI components of self-awareness, social awareness and empathy are playing a key role not only in trust relationships but also in the self- management of individuals and the management of the group by the CoP leadership. Abrams *et al.,* (2003) in their extensive study on the role of trust in knowledge sharing bring considerable insight into the behaviours associated with trust. They do not however mention the behaviours associated with empathy and self-awareness that this study finds in support of trust and indeed tacit knowledge sharing.

Wang & Noe (2010) more recently conducted an extensive literature review on knowledge sharing and recognised the lack of research on the interpersonal characteristics associated with knowledge sharing. They do, however, report the value associated with self-monitoring as a behavioural aspect worthy of further research. It is therefore suggested that this study is highlighting through the personal views and stories of its participants the role that aspects of emotional intelligence are playing in these CoPs and that knowledge sharing is both positively and adversely impacted by empathy, self-awareness and social awareness. It is recommended that further research is considered in this area.

Over half of the participants cited respect as a key expressible value described as 'warmth' and the feelings associated with feeling valued by another individual or by the community. Respect is seen as behaviours that involved listening, responding empathetically and 'playing back' what has been heard. Respect was also associated with the perception of the value of a contribution that gained an individual's respect and linked with the confidence in the delivery. 'Safety' and 'place' were also related to respect, participants citing the respect for others that supported the workings of a safe environment. In the descriptions by the participants, they seem to suggest the 'need' for respect which returns us to the link to values suggested earlier. Bandura (1971) links the 'playing back' as an important reinforcement of the learning taking place. He goes on to explain that this reinforcement in the form of the attentiveness of others supports the notion of a reward associated with feeling valued. Further the 'anticipated reinforcement', the act of actively listening and responding with reinforcing contributions from others, strengthens the retention of knowledge and therefore respect is playing an important role in the tacit knowledge sharing between individuals and the learning within the community.

It became clear from the study findings that personal commitment to contributing featured highly in the opinions and statements of the participants. The willingness to share and the openness associated with it was cited highly by all with participant 6 clearly stating that its lack was 'detrimental to the CoP' due to the inhibiting of knowledge sharing. Participant 3 told the story of the leader not being

open and this too affecting the types of conversation and sharing taking place. Openness and wiliness to share were linked to being judged on body language and 'what they were prepared to talk about'. Bandura (1971) described this as 'vicarious conditioning' and suggested human learning occurred through the tone of voice used, body language including facial expressions. This can be related to Nonaka & Takeuchi's (1995) assertion that humans can transfer knowledge without using language. Polanyi (1966) referred to physiognomy, which conveys meaning through the physical manifestation of mood. Further it is suggested that from the participants responses CoP membership was judged by an individual's willingness to share, what they say, what they know from which they are deriving a level of 'meaning'.

Across the themes explored in this section on behaviour (listening, respect, contributing, sharing and the complexity of emotional responses associated with trust, empathy, self-awareness, openness and social awareness) the interactions involved with tacit sharing can be considered extremely complex (Polanyi, 1966; Bandura, 1971; Lave & Wenger 1991; Brown *et al.,* 1989; Nonaka & Takeuchi 1995). The participants are describing emotional responses, physical attributes and behaviours consistent with the literature that is impacting their learning and sharing. Bandura (1971) suggested treating these behaviours and emotions separately is to ignore the causal processes taking place. Building on Bandura's (1971) illustrations of behaviour responding to the environment, that includes the responses of others, then it is argued that positive and negative behaviours can be influenced by those emotionally aware enough to intervene. This self-awareness and awareness of others requires high levels of emotional intelligence in order for individuals or the CoP leadership to intervene positively (Goleman 1995). Nevertheless, Social Learning Theory does seem to support this controlling of behaviour whilst acknowledging it is not the only determinant. External Situational factors affecting an individual's current state of mind may have a negative impact on the CoP community. Further, an individual's personal experiences may inadvertently influence the CoP practice sharing through interjecting personal experiences that may be difficult to separate and therefore distinguish from the actual practice experience. The literature suggests that these

situational or non-related behaviours may be reciprocated again inadvertently causing the CoP to miss a sharing opportunity (Bandura, 1971; Lave & Wenger, 1991).

McIver *et al.,* (2012) propose a framework for Knowledge in Practice that focuses on those involved in knowledge sharing. McIver *et al.,* suggest tacit knowledge is a dynamic phenomenon that can be stored and shared through situated participation and practices. Their hypothesis states this is 'knowledge in practice' which bridges the gap between the two knowledge theoretical divides, described as the coming together of learnability and 'tacitness' of information and the 'know how' involved in practice. It is suggested here that in order to support the bridging of the gap, as suggested earlier, these CoPs are in fact achieving this through the complex interaction of behaviours and emotions. They are either positive and therefore supporting this bridge or negative and therefore not allowing the bridge to be spanned, damaging not only tacit knowledge but any opportunities to move the spectrum from less tacit to more explicit as described by McIver *et al.,* (2012).

5.5 The impact of tacit knowledge sharing

In the final theme, the concept of sustainability of the CoP was explored. The participants understood the voluntary nature of the CoPs they were involved in and it is interesting to observe their responses to what they considered affected sustainability. There is little current research into sustainability of professional CoPs however; Wenger *et al*. (2002) suggested that those constructed voluntarily around knowledge sharing were considered more stable. The paucity of research into CoP sustainability means there is little to draw on from the literature (Stoll *et al*., 2006). However, Bryk *et al*. (1999) indicated that CoPs that are knowledge sharing successfully, and where the internal processes are supporting learning effectively, will attract new members and hold sufficient interest for current members. They go on to suggest that this renewal cycle of the CoP promotes sustainability.

Wenger *et al*. (2002) suggested that if the passion for the subject were still strong among the membership the energy this exudes would sustain the CoP. They went on to suggest that regular reflection of CoP performance and investing in its development contributed to CoP longevity. The participant's insight into what, for them, impacted sustainability informs our understanding of what is not only adversely affecting the tacit knowledge sharing, but damaging the life cycle and sustainability of the CoP.

5.5.1 The leadership

Participant 7 brought to our attention that poor leadership has a negative impact on the membership of the CoP. The leader who dominates the discussion and does not nurture knowledge sharing amongst the membership risks them disengaging from the CoP and the CoP may fall into decline. The leader as described by Participant 7 through dominating the discussion forces the CoP to look inward and the tacit knowledge sharing is damaged. The leader is not nurturing the CoP when enacting this behaviour and the natural tacit sharing, when inhibited by them, stops the community engagement so vital to the sharing of experience (Pyrko *et al.,* 2016).

The study findings also suggest that the leader has a key role in promoting trust amongst the CoP membership. Should the leader's behaviour not encourage the rich story telling of experience and, further, does not lead by example in this sharing then trust is adversely affected (Abrams *et al*., 2003). Many participants cited trust as an important aspect in their willingness to share knowledge within the CoP. Therefore, should the leader behaviours damage trust and not promote trust amongst the membership, this may suggest why members disengage. The leader, if not challenged on their behaviour, may be described as breaking the primary intent of the community, that of not allowing and valuing the contribution of the membership when discussing their topic.

Earlier in this Chapter, the importance of the role of the leader in facilitating tacit knowledge sharing, growing practice and encouraging engagement were discussed. The study considered the leader occupied a vital role and this may indicate that when this role is not performed well the sustainability of the CoP is harmfully affected.

5.5.2 Dominating characters

It was not surprising that a number of participants quoted those who would seek to dominate the discussion as affecting sustainability negatively. Participant 8 expressed shock at the unprofessionalism of some individuals who would dominate through dismissive and intimidating behaviour. It is argued the management of this behaviour may be vital in order to allow the contribution of other members of the CoP to flourish. It can be seen that this management of behaviour is linked to the leader, who if performing poorly (see above); compounds the negativity. However, the wider leadership or culture carriers within the CoP membership have a responsibility in controlling those negative dominating behaviours, without which Participant 8 suggests the CoP will simply wither and die.

Participant 7 describes the scenario that occurs when these dominant behaviours stifle knowledge sharing. The formation of cliques around those who see themselves as more important than others is suggested as one of the reasons behind the absence of CoP sharing. The impact here is that tacit sharing of experiences is not occurring and as a consequence what is left is mere posturing from a group of individuals telling their practice stories. Findings suggest that trust is impacted negatively by these behaviours and the view of the wider membership of the clique's contribution is seen as untrustworthy. Participant 7 recounts the story of this CoP imploding clearly linking these behaviours not only to damaging the potential for any tacit knowledge sharing but also the outcome is the demise of the CoP itself.

5.5.3 Form of ongoing benefit

This sub theme illustrated the need for the CoP to continually engage their membership. A voluntary CoP, such as those described in this study, requires there to be a continuing realisable benefit for its membership. In effect a payback for the individual and the institution that is supporting their attendance and contribution. Participants suggested that the CoP must keep pace with the change occurring in the sector, thereby keeping abreast of the challenges the membership face.

Participant 1 suggested learning was their primary motive for attending and contributing to the CoP. The continual cycle of sharing of experience and the seeking of new knowledge is therefore deemed vital to their continuing engagement. Further, addressing new challenges in their area of interest brings more reward for CoP members, particularly those who see the value in the CoP as a source of innovation and provider of solutions to their practice problems. If the CoP is not energised by new challenges and continually providing opportunities for new learning through the sharing of experience then practice members are likely to disengage. Critically, this will also impact the CoP's ability to recruit new members that normally would be attracted to the vibrancy of discussion and the innovation and problem solving associated with an 'alive' CoP (Wenger *et al*., 2002).

5.5.4 Relevance

Participant 7 described the concept of relevance as the CoP's ability to stay current and focused on the issues occurring in their practice area. The dynamism of knowledge and its value to organisations suggests the need for CoPs to not only be relevant to their membership but to the perceived value of the CoP contribution to organisational Knowledge Management. (Polanyi, 1966)

Participant 8 suggested for the CoP to stay relevant it must be ambitious and drive forward the area of interest for the membership. The CoP it is suggested, not only needs to continue to address the current issues and challenges facing

the members but also needs to have a predictive capacity. This involves anticipating future issues and advancing the thinking and potential new solutions that may inform their practice and ultimately deliver benefit to the individuals' institutions.

5.5.5 Willingness to share

The willingness to share featured prominently in the participants' descriptions of what was required for successful tacit knowledge sharing. The findings suggest the willingness to share was multi-faceted in its impact on the CoP. Participant 6 goes as far as to suggest that a CoP membership that lacks a willingness to share is not a CoP. Throughout the interviews willingness to share was associated with underpinning confidence in the group. The confidence grows trust from the willingness to share through close engagement and better understanding between the CoP members (Abrams *et al.,* 2003).

The findings also suggest trust proliferates through the group because of the willingness to share. As group trust grows, deeper experiences are shared and this rich experience leads to learning for the members. These activities assist in encouraging participation from those less confident. When the group are sharing willingly and freely then the confidence grows in individuals to participate. The positive effect of the willingness to share should not be underestimated, and this is supported from the participants in the data.

5.6 Developing future successful CoPs: A conceptual framework

5.6.1 Introduction

The above discussion has led us to a position where we may now be able to suggest a conceptual framework to inform practice, the contribution required of a DBA. This framework is graphically represented in **Fig 6** below.

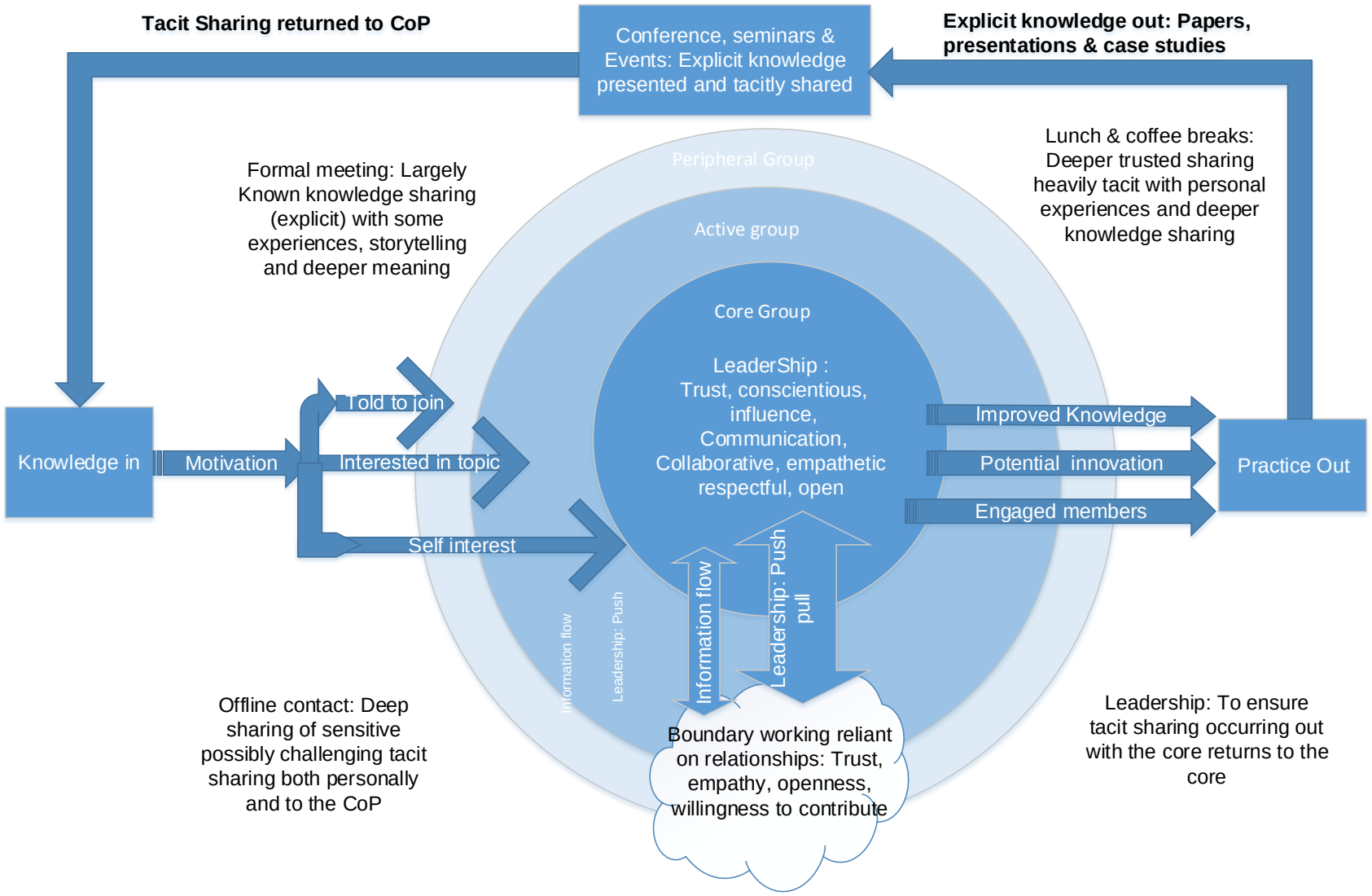

Figure 6: Boundary Working- Push Pull Effect of CoP Members on Tacit Knowledge Flow and the Role of Leadership

From the study findings, we can combine the knowledge flow diagrams with the characteristic behaviours affecting tacit knowledge sharing into a conceptual model. This can be used to explain the sharing taking place, characteristics that affect sharing, where it takes place and therefore may inform the processes of tacit knowledge sharing in CoP practice. Importantly, we may then be able to describe and minimise the impact of those characteristics detrimental to CoP function and while doling so potentially design future CoPs that are sustainable and effective.

5.6.2 The conceptual framework

The virtuous circle of tacit to explicit knowledge sharing within the CoP, highlighted in Figure 4 (earlier in this chapter), presented two virtuous circles, the first, the tacit to explicit flow within the CoP and the second, that which occurred at the conferences events and seminars. Here, the first virtuous circle is absorbed into the conceptual framework removing the secondary circle that describes the knowledge flow beyond the CoP boundaries.

The conceptual framework Figure 6 brings together graphically the knowledge flow entering, traversing and exiting the CoP. The CoP boundary consists of three concentric circles. They represent the core group working, an active group working outside of the core and a peripheral group working at the edge of the CoP.

Working from left to right, we start with the actors bringing their practice knowledge (explicit) and their lived experience (tacit) to the CoP represented on the diagram by the ‘Knowledge in’. The arrow that leads from this square into the peripheral, active and core boundary zones depicts the key motivations for joining the CoP: told to join; interested in the topic and self-interest. The concentric circles therefore are notionally at this point representing Wenger *et al*’s. (2002) CoP Engagement Model (Figure 1). However, this framework overlays the CoP Engagement Model with tacit knowledge sharing flow (depicted by the two way arrow on the bottom left) that shows the flow from the core to the periphery and back. Further, the framework depicts the core (inner most circle) as the place the formal CoP meetings are occurring. This usually follows an agenda but it is suggested that space should be left for tacit knowledge sharing discussion.

The active zone (middle circle) often operates through coffee, lunch or social breaks around the formal meeting. Active zone CoP participants are seeking and sharing knowledge outside of the formal meeting. This can be on a one-to-one or group basis. It is suggested that this is the business hub in terms of building alliances between CoP members.

The periphery (outermost circle) indicates where one-to-one discussions take place often due to the perceived sensitivities of the subject or the anxiety of those seeking advice, caused by concerns about demonstrating their lack of knowledge or understanding to the wider community.

The second arrow (on the bottom right) described as ‘Leadership: Push Pull’ indicates the need for the leader and indeed the wider leadership to purposely harvest active or peripheral zone tacit knowledge sharing and return it to the core. In so doing, the wider membership may benefit from this returned sharing which is then added to by the wider membership experiences, enhancing further the CoP knowledge. It is suggested that this should become a cyclic process.

The three arrows exiting the CoP on the right indicate that successfully shared tacit knowledge may then leave the CoP though members taking back their individually enhanced knowledge to their institutions. The tacit knowledge which is then made explicit also leaves the CoP in the form of media such as case studies, toolkits and presentations. The ‘Practice Out’ box is then given new life through this media being used at conferences, seminars and practice based events. This relates to the second virtuous circle depicted in **Figure 4** where CoP members networking with conference attendees discuss the explicit knowledge shared at the event. This is a further example of tacit sharing, the conference attendees adding their experiences as they discuss the case studies, presentations and toolkits. The CoP membership can then bring this new set of experiences back into the CoP and the virtuous circle begins again.

The CoPs, it is argued, are demonstrating a level of explicit to explicit combination as the 'knowledge in' entering the CoP is practice based known, often documented information. Tacit to tacit knowledge sharing (socialisation) then occurs through the sharing of experiences and know how within the concentric circles as described in the findings. Socialisation of the knowledge, the tacit to explicit knowledge sharing (externalisation), occurs through the preparation by the CoP of the media case studies, toolkits and presentations. The CoP would appear to be following the SECI model proposed by Nonaka & Takeuchi (1995) that may support the suggestion that CoPs are not only tacit knowledge sharing vehicles but can in fact be tacit knowledge converters.

The events and seminars themselves are a critical feature of 'bridging the gap' between the tacitness of information and the learnability or 'stickiness' of explicit 'know how' (McIver *et al.,* 2012; Garavan, O'Brien & Murphy 2017). Although not all tacit sharing is captured and this type of tacit sharing occurs in other models of sharing, there would appear to be a uniqueness in the returning of this tacit sharing to the original CoP. Should this be the case it has the potential to add great value in that the CoP is extending the virtuous circle beyond its normal boundaries. Through their pivotal role in these events and activities the CoP membership are drawing on a 'wider tacit resource' before attempting to make it explicit within their CoP or CoPs.

Whilst not suggesting that Polanyi's (1996) declaration that tacit knowledge cannot be codified is wrong, it is suggested that the dynamism of tacit knowledge is being addressed through this extended virtuous circle. By extending the virtuous circle the CoP membership appear to be gaining not only high levels of tacit knowledge being circulated back into their core but that this knowledge sharing is energised by its very dynamism. The CoP membership therefore should behave like those 'society of explorers' as described by Polanyi (1966) drawing energy and reviewing their understanding of the explicit through garnering tacit information. Their absorption of tacit knowledge during these extended sharing events should be a recognised activity and particular attention paid to returning it to the CoP where it re-enters the circle.

6. Conclusions & recommendations

6.1 Introduction

The aim of the research was to explore the dimensions of tacit knowledge sharing in CoP working within the HE IT Sector. From the literature review conducted the value of CoPs as vehicles for knowledge management and tacit knowledge sharing was evident. However, in the still relatively nascent fields of research on CoPs and indeed tacit knowledge management, a gap was identified in what characteristics where important to tacit knowledge sharing in CoPs. This chapter will therefore consider to what extent the research achieved its aim and objectives. The limitations of the study will also be considered and provide some further conclusions and observations bringing it to a close.

6.2 Research aim and objectives

The research aim has been addressed through the following;

Research objective 1: To critically examine the literature on Communities of Practice and tacit knowledge sharing.

This objective was met by identifying the relevant literature on Social Learning Theory and tacit knowledge sharing in CoPs. This was achieved through critically reviewing the literature and acknowledging the complexity experienced in examining this underdeveloped concept of tacit knowledge sharing in CoPs. The literature review was an iterative process throughout the study. This review of literature was essential to understand the scope of the study and then to make sense of the findings.

Research objective 2: To capture through semi-structured interviews the views and perceptions of the CoP actors

Research objective 2 was met by the extensive in-depth interviews and conversations with the participants that provided the rich primary data set which was then transcribed and supported by the use of a researcher reflective diary. The method was described fully in Chapter 3 and included the decision to use both thematic analysis and causal mapping to assist the visualisation of the emergent themes and sense check the thematic analysis. Approximately 1100 statements were analysed and linked with the notes and this significant data set successfully informed the third research objective.

Research objective 3: To identify the characteristics impacting positively and negatively on the sharing of tacit knowledge through thematic analysis

Detailed analysis of the transcribed data set involved an iterative process of coding, grouping and identifying key emergent themes that involved listening to the original interviews a number of times to link not only the data captured but the richness associated with observations on tone and emotions. Causal mapping techniques were then deployed to consider the data set to help with the ideographic nature of the data. It is argued that this provided the rich findings, some of which reflected those in the literature and others that were not reflected that formed emergent themes.

Research objective 4: To produce a set of recommendations to inform knowledge and practice and enhance the development of future CoP tacit knowledge sharing processes.

The recommendations that follow were developed from the findings and informed from the creation of the conceptual model **(Figure 6)**. The recommendations followed the model in informing the practice of tacit knowledge sharing and the factors that if managed ensured it occurred successfully. The role of the leadership in managing behaviours and securing tacit knowledge flow within the CoP and the governance associated with good processes to manage the tacit to explicit virtuous circle and promote the benefits.

6.3 Recommendations

The following recommendations are suggested to support tacit knowledge sharing, enhance CoP leadership and to empower self-governance processes.

Tacit Knowledge sharing;

1. Those involved in the establishment and maintenance of a CoP should consider the opportunities to support tacit knowledge flow between the core and the periphery through consideration of the 'places' tacit knowledge sharing is most likely to occur.
2. Tacit knowledge should be developed into explicit knowledge for onward dissemination though the capture of tacit experiences and shared learning using presentations, seminars and workshops
3. CoP members should be encouraged to capture new tacit knowledge developed from the sharing of explicit knowledge beyond their established CoP boundaries.

Enhance CoP leadership;

4. CoP leaders should define responsibilities in the leadership practices employed in managing the sensitivities in re-centering tacit knowledge.
5. CoP leadership skills should be formalized in learning and development interventions that highlight the value of Emotional Intelligence and Trust in member's tacit knowledge sharing.
6. CoP leaders should be developed in managing difficult or disruptive behaviors in CoPs.

Empowering self-governance processes;

7. CoP members should be empowered to be actively engaged in the regular review of CoP benefits to enhance CoP development and sustainability.
8. Distributed leadership should be encouraged within CoPs to develop and enhance CoP self-governance
9. CoP member should collaboratively develop, take ownership of and regularly review an agreed code of behavior to enhance tacit knowledge sharing.

6.4 Contribution to knowledge and practice

Despite the evidence based literature on CoPs and tacit knowledge only emerging over the last few decades there is significant discourse around the value of both. The literature, though extensive on tacit knowledge sharing, focuses on it as an object presented as something tangible and yet not (Polanyi, 1966; Nonaka & Takeuchi, 1995; McIver *et al.*, 2012). CoP literature suggests value in sharing tacit knowledge and links them significantly with the value of knowledge management to organisations (Gourley, 2000; Fletcher & Harris 2012, Garavan *et al.*, 2017). The literature on CoPs focuses on them as vehicles for tacit knowledge sharing and promotes structural design and function to which they should adhere (Wenger, McDermott & Snyder, 2002). This study, however, has looked directly for those characteristics associated with tacit knowledge sharing within CoPs. It is argued therefore that this study makes a contribution to knowledge through its discovery of those characteristics affecting tacit knowledge sharing within these sector wide voluntary CoPs. Providing a better understanding of the flow of this tacit knowledge, its externalisation to explicit and those characteristics that inhibit or promote its emergence.

The contribution from the study to practice is the conceptual framework (Figure 6) for considering CoP design. This incorporates place, tacit knowledge flow, tacit to explicit conversation and skills that build on the existing literature and provide a foundation for successful CoPs. Importantly, this conceptual framework could be used by those forming a voluntary CoP or for organisations supporting intentionally formed CoPs. The conceptual framework might be used to inform CoP design through identification of those elements that can reasonably influence and impact CoP success. Addressing the information contained within the framework may enhance the tacit knowledge sharing, engagement and therefore impact positively on the sustainability and effectiveness of the CoP.

6.5 Limitations of the study

The previous section has considered the contribution to knowledge and practice and has suggested that the study has contributed to both via its findings and subsequent discussion on the nature of tacit sharing within CoPs and then the

development of a conceptual framework that may inform future CoP practice. It is recognised that the study will have limitations in its methodological approach and in the boundaries and focus of its study.

6.6 Limitations of the methodology

The methodology adopted for this study was described in Chapter 3. The use of an interpretivist, phenomenological approach was chosen in order to seek the rich and deep understanding of tacit knowledge sharing in CoPs and to aid the discovery of characteristics that may yet have been unidentified. As part of the researcher's development through the DBA and now reflected upon, the chosen methodology and the earlier stated philosophical stance informed the data collection and the analysis that would be undertaken. Both these considerations are open to challenge as the interpretivist approach has on occasion been maligned for insufficient scientific rigor in comparison to quantitative methods. Additionally, demonstrating that the researcher has reflected sufficiently the experiences of the respondents is challenging. However, it is argued that the rich data set and the addition of the causal mapping improved that analysis and confirmed the approach as worthy and the findings and discussion informed by them merits consideration.

The researcher would not suggest this study due to its location in the HE IT context is generalisable. However, given the approach taken in considering the number of CoPs and range of participants from them it suggests it is transferable. It is argued that the depth of knowledge elicited from the range and experience of the participants compensates for any limitation and the substantial data set and subsequent carefully considered analysis supports the study findings as applicable and replicable.

6.7 Limitations of the research focus

The study has highlighted and described in the previous section the contribution to knowledge and practice. The researcher has rigidly adhered to the focus of the study being located with the HE IT Sector and the focus of the research on the characteristics associated with tacit knowledge sharing. The research uncovered

sufficient evidence to suggest behaviour has a significant role to play in tacit knowledge sharing and that it also impacts on the flow of tacit knowledge and its conversion to explicit. The study findings would however suggest that further exploration of the behaviours and their relationship to Emotional Intelligence may extend the findings of this study and add further evidence in support of those characteristics that should be considered important to successful tacit sharing within CoPs. Deeper understanding of the motivations and the relationship to behaviours may also be considered as an area of research that may prove fruitful in informing the success and sustainability of CoPs. It is suggested that the research does indeed have limitations but that it has uncovered both emergent tacit knowledge sharing issues of value and that there are evidential suggestions for future research.

7. Concluding remarks

This thesis has been written and presented as partial fulfilment of the requirements of a Doctorate of Business Administration (DBA). It is considered important by the researcher that the outcomes to a contribution to knowledge and the contribution to practice in the form of the conceptual framework are disseminated widely, in particular, to those with the intent of using CoPs as vehicles to add value to their discipline or organisation. The researcher finds himself in the position of having been elected Chair of a professional CoP and has a unique opportunity to share the study's contribution across the sector. Furthermore, the development of a communications plan will ensure the research is made available and referenced in the publications and keynote presentations associated with his role both institutional and sectoral.

8. References

Abobakr, A. (2015) Communities of Practice as an Initiative for knowledge Sharing in Business Organisations: A Literature Review. *Journal of Knowledge Management*, 20 (4) pp. 731-748.

Abrams, L.C., Cross, R., Lesser, E. & Levin, D.Z., (2003). Nurturing Interpersonal Trust in Knowledge-Sharing Networks. *The Academy of Management Executive*, 17(4), pp.64-77.

Aljuwaiber, A. & Aljuwaiber, A., (2016) Communities of Practice as an Initiative for Knowledge Sharing in Business Organisations: A Literature Review. *Journal of Knowledge Management*, 20(4), pp.731-748.

Allee, V. (2000) Knowledge Networks and Communities of Practice. *The Journal of Organisation Network Development*, 32, (4), pp. 2-15.

Ambrosini, V. & Bowman, C., (2002). Mapping Successful Organizational Routines. *Mapping Strategic Knowledge*, Sage Knowledge pp.19-45.

Ardichvili, A. (2008) Learning and Knowledge Sharing in Virtual Communities of Practice: Motivators, Barriers, and Enablers. *Advances in Developing Human Resources,* 10 (4), pp.541-554.

Arthur, J. (Ed), (2012) *Research Methods and Methodologies in Education*. Sage publications limited.

Arthur, J., Waring, M., Coe, R. & Hedges, L. (2012) *Research Methods and*
Aydede, M., & Robbins, P. (Eds.). (2009) *The Cambridge Handbook of Situated Cognition*. New York, NY: Cambridge University Press.

Back, A. von Krogh, G. & Enkel, E. (2007) The CC Model as Organizational Design Striving to Combine Relevance and Rigor, *System Practice and Action Research,* 20, (1), pp. 91.

Bandura, A., (1971). Social Learning Theory. Morristown

Becerra, M., Lunnan, R. and Huemer, L., (2008). Trustworthiness, Risk, and the Transfer of Tacit and Explicit Knowledge Between Alliance Partners. *Journal of Management Studies*, 45 (4), pp.691-713.

Benton, T. & Craib, I. (2001) Philosophy of Social Science: Philosophical Issues in Social Thought (traditions in social theory). Palgrave: Macmillan.

Bettoni, M., Endress, G. A., & Schneider, R. S. (2002). Communities of Practice. Univ. of Fachhochschule Beider Basel. <http://www.fhbb.ch/weknow/macro/A2002/kmp>.

Blaikie, N., (2009) *Designing Social Research*. Cambridge: Polity Press

Boiral, O., (2002) Tacit knowledge and Environmental Management. *Long Range Planning*, 35 (3), pp.291-317.

Bosua, R. & Venkitachalam, K. (2013) Aligning Strategies and Processes in Knowledge Management: A Framework. *Journal of Knowledge Management*, 17(3), pp.331-346.

Bourhis A, & Dubé L. (2010), Structuring Spontaneity: Investigating the Impact of Management Practices on the Success of Virtual Communities of Practice*, Journal of Information Science,* 36, (2) pp.2-18.

Bourhis, A. & Dubé, L., (2010) 'Structuring Spontaneity': Investigating the Impact of Management Practices on the Success of Virtual Communities of Practice. *Journal of Information Science*, *36* (2), pp.175-193.

Boyatzis, R.E. (1998) *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks California: Sage.

Brattström, A. & Richtnér, A., (2014) Good Cop–Bad Cop: Trust, Control, and the Lure of Integration. *Journal of Product Innovation Management*, 31(3), pp.584-598.

Bredillet, C.N., (2008) Learning and Acting in Project Situations Through a Meta-Method (MAP) A Case Study: Contextual and Situational Approach for Project Management Governance in Management Education. *International Journal of Project Management*, 26, (3), pp.238-250.

Bridwell-Mitchell, E.N., (2016) Collaborative Institutional Agency: How Peer Learning in Communities of Practice Enables and Inhibits Micro-Institutional Change. *Organization Studies*, *37*(2), pp.161-192.

Brink, D.O., (1989) *Moral Realism and the Foundations of Ethics*. Cambridge: Cambridge University Press.

Britten, N. (1995) Qualitative Research: Qualitative interviews in Medical Research. *British Medical Journal*, 311, pp251-253.

Brown, J.S. & Duguid, P. (1991) Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation. *Organization Science,* 2, (1), pp.40-57.

Brown, J.S. and Duguid, P. (1998) Organizing Knowledge. *California Management Review*, 40, (3), pp.90-111.

Brown, J.S., Collins, A. & Duguid, P. (1989) Situated Cognition and the Culture of Learning. *Educational Researcher*, 18, (1), pp.32-42.

Brown, M.M. & Brudney, J.L., (2003) Learning Organizations in the Public Sector? A study of Police Agencies Employing Information and Technology to Advance Knowledge. *Public Administration Review*, 63, (1), pp.30-43.

Brown, S.A., Dennis, A.R. Burley, D. & Arling, P. (2013) Knowledge Sharing and Knowledge Management System Avoidance: The Role of Knowledge Type and the Social Network in Bypassing an Organizational Knowledge Management System. *Journal of the American Society for information Science and Technology*. 64, (10), pp.2013-2023.

Brown, S.A., Dennis, A.R., Burley, D.& Arling, P. (2013), "Knowledge Sharing and Knowledge Management System Avoidance: The Role of Knowledge Type and the Social Network in Bypassing an Organizational Knowledge Management System", *Journal of the American Society for Information Science and Technology*, 64 (10), pp. 2013-2023.

Bryk, A., Camburn, E. & Louis, K.S., (1999) Professional Community in Chicago Elementary Schools: Facilitating Factors and Organizational Consequences. *Educational Administration Quarterly* 35, pp. 751–781.

Bryman, A. & Bell, E., (2007). Business Research Strategies. *Business Research Methods*. Oxford: Oxford University Press.

Bryman, A. & Burgess, R.G. (1996). *Analysing Qualitative Data*. London: Routledge.

Bryman, A. (2001). *Social Research Methods.* Oxford: Oxford University Press.
Bryman, A., & Bell, E. (2015) Business Research Methods (Fourth edition.). Oxford: Oxford University Press.

Bryman, A., (2004). Qualitative Research on Leadership: A critical but Appreciative Review. *The Leadership Quarterly*, 15, (6), pp.729-769.
Bryman, A., (2011) Mission Accomplished? Research Methods in the first five years of Leadership. *Leadership*, *7,* (1), pp.73-83.

Bryson, J.M., Ackermann, F., Eden, C. & Finn, C.B. (2004). *Visible Thinking: Unlocking Causal Mapping for Practical Business Results*. Chichester: John Wiley & Sons.

Burns, N. and Grove, S.K., (1993). The Practice of Nursing Research. *Conduct, Critique & Utilization, London: W.B. Saunders.*

Cambridge, D., Kaplan, S. & Suter, V., (2005) *Community of Practice Design Guide: A Step-by-Step Guide for Designing & Cultivating Communities of Practice in Higher Education.* National Learning Infrastructure Initiative at EDUCAUSE, pp.2-8.

Cantor, N., Norem, J. K., Niedenthal, P. M., Langston, C. A., & Brower, A. M. (1987). Life Tasks, Self-Concept Ideals, and Cognitive Strategies in a Life Transition. *Journal of Personality and Social Psychology, 53,* (6), 1178-1191.

Castillo, J., (2002). A Note on the Concept of Tacit Knowledge. *Journal of Management Inquiry*, 11, (1), pp.46-57.

Chamberlayne, P., Bornat., J. & Wengraf, T. (2000). *Uncovering the General From Within the Particular. The Turn to Biographical Methods in Social Science: Comparative Issues and Examples.* London: Routledge

Chaminda, P. Dilanth G. & Richard, P. (2007). Tacit Knowledge and Organisational Performance: Construction Industry Perspective. *Journal of Knowledge Management*, 11, (1), pp.115.

Chisholm, C.U., Holifield, D.M. & Davis, M.S.G., (2005). The Development of a Model Based on Learning Development Agreements for the Professional Development of Engineers. In *Proc. 8th UICEE Annual Conf. on Engineering. Education Kingston, Jamaica.* Volume 37, p.40.

Chua, A.Y. (2009). The Dark Side of Successful Knowledge Management Initiatives. *Journal of Knowledge Management*, 13, (4), pp.32-40.

Chugh R. (2015). Do Australian Universities Encourage Tacit Knowledge Transfer? In Proceedings of the 7th International Joint Conference on Knowledge Discovery, *Knowledge Engineering and Knowledge Management*.

Clarke, L., (2017). Improving Principal Professional Practice Through Communities of Practice.

Clarke, T., Holifield, D. & Chisholm, C., (2004) Go ask the Old Timer. In *International Conference on Education and Information Systems: Technologies and Applications,* 21st-25th July, Orlando, USA.

Clifford, J., (1997). *Routes: Travel and Translation in the Late Twentieth Century*. Cambridge, Massachusetts: Harvard University Press

Collins, J.C., (2001). *Good to Great: Why Some Companies Make the Leap and Others Don't*. London: Random House.

Connaghan, K.M., (2005). Cultivating a Community of Practice among Itinerant Educators.
http://cadres.pepperdine.edu/ar/c7/Connaghan/Connaghan_FinalAR_.pdf. Accessed June 20th 2015.

Corgnet, B. (2010). Team Formation and Self-serving Biases *Journal of Economics & Management Strategy*, 19, (1) pp.117-135.

Corlett, S., Bryans, P. & Mavin, S., Encouraging Research Through Communities of Practice. IN Coakes, E. & Clark, S. (2005). Encyclopedia *of Communities of Practice in Information and Knowledge Management*. Hershey: Idea Group Reference.

Corso, M., Giacobbe, A. & Giacobbe, A. (2009). “Designing and Managing Business Communities of Practice”, *Journal of Knowledge Management*, 13, (3), pp. 73-89.

Corso, M., Giacobbe, A. & Martini, A. (2009). Designing and Managing Business Communities of Practice. *Journal of Knowledge Management*, 13 (3), pp.73-89.

Cortazzi, M., (2001). “Narrative analysis in ethnography”, in P. Atkinson, A. Coffey, S. Delamont, J. Lofland and L. Lofland (Eds), *Handbook of Ethnography*, Thousand Oaks, CA: Sage

Cossette, P., (2002). Analysing the Thinking of FW Taylor Using Cognitive Mapping. *Management Decision*, *40,* (2), pp.168-182.

Couros, A. (2003). Communities of Practice, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.125.5604&rep=rep1&type=pdf (Accessed Online 18 July 2010) *P2-13*

Cox, A., (2005). What are Communities of practice? *Journal of Information Science*, 31, (6), pp. 527-540.

Creswell, J.W. & Clark, V.L.P., (2007) Designing and Conducting Mixed Methods Research .Los Angeles: Wiley Online Library.

De Loo, I. (2002). "The Troublesome Relationship Between Action Learning and Organizational Growth", *Journal of Workplace Learning*, 14, (6), pp.245-255.

Denzin, N.K. & Lincoln, Y.S. (2011). *The Sage Handbook of Qualitative*

Department for Business Innovation and Skills (2011). “Students at the Heart of the System”. London: HMSO.

Dornbusch, F. & Brenner, T. (2013). *Universities as Local Knowledge Hubs under Different Technology Regimes. New Evidence from Academic Patenting*. Working Papers Firms and Region, No. R6/2013. Karlsruhe, Germany: Fraunhofer Institute for Systems and Innovation Research, ISI Competence Center “Policy andRegions”.http://www.isi.fhg.de/isi-media/docs/p/de/arbpap_unternehmen_region/ap_r6_2013.pdf.

Drucker, P.F. (1993). *Post-Capitalist Society*. New York: Harper Business.
Duguid, P. (2005). “The Art of Knowing”: Social and Tacit Dimensions of Knowledge and the Limits of the Community of Practice. *The Information Society*, 21, (2), pp.109-118.

Dulewicz, V. & Higgs, J. (1998a). ``*Emotional Intelligence: Managerial Fad or Valid Construct?*", Henley Working Paper 9813, http://www.henley.reading.ac.uk/management/research/mgmt-publications.aspx Accessed 22 July 2010.

Dulewicz, V. & Higgs, J. (1998b). ``Emotional Intelligence: Can it be measured reliably and validly using competency data?'', *Competency Journal*, 6, (1).

Dwyer, S.C. and Buckle, J.L., (2009). The space between: On being an insider-outsider in qualitative research. *International Journal of Qualitative Methods*, *8*(1), pp.54-63.

Eatough, V. & Smith, J., (2006). I was like a wild wild person: Understanding feelings of anger using interpretative phenomenological analysis. *British Journal of Psychology*, 97(4), pp.483-498.

Eden, C. & Ackermann, F., (1998). Analysing and Comparing Idiographic Causal Maps. *Managerial and Organizational Cognition: Theory, Methods and Research*. London: Sage.

Ely, M., (1991). *Doing Qualitative Research: Circles within Circles* (Vol. 3). Psychology Press. London: Routledge-Falmer.

Farnsworth, V., Kleanhouse, I. & Wenger-Trayner, E. (2017). Communities of Practice as a Social Theory of Learning: A Conversation with Etienne Wenger. *British Journal of Educational Studies*. 64 (2) pp. 139-160.

Fenwick, J. & McMillan, J. (2005). Organisational Learning and Public Sector Management: An Alternative View. *Public Policy and Administration*, *20,* (3), pp.42- 55.

Feteris, E.T. (1999). Habermas' Theory of Communicative Rationality. IN
Fisher, C.D. & To, M.L. (2012). Using Experience Sampling Methodology in Organizational Behavior. *Journal of Organizational Behavior*, *33,* (7), pp.865-877.

Fontaine, M. (2001). *Research Report and Toolkit: Understanding, Identifying and Selecting the Roles Needed to Staff and Support Communities of Practice*. Cambridge: MA USA: IBM Institute for Knowledge Management.

Fugate, B.S., Stank, T.P. & Mentzer, J.T., (2009). Linking Improved Knowledge Management to Operational and Organizational Performance. *Journal of Operations Management*, 27, (3), pp.247-264.

Fullwood, R., Rowley, J. & Delbridge, R., (2013). Knowledge Sharing Amongst Academics in UK Universities. *Journal of Knowledge Management*, 17, (1), pp.123- 136.

Fundamentals of Legal Argumentation (pp. 62-72). Netherlands: Springer.
Gadamer, H. G. (1996). *The Enigma of Health: The Art of Healing in a Scientific Age*. Stanford: University Press.

Gannon-Leary & Fontainha, (2007). Communities of Practice and Virtual Learning Communities: Benefits, Barriers and Success Factors, http://www.elearningeuropa.info/files/media/media13563.pdf Accessed 18 July 2010

Gao, F., Li, M. & Clarke, S. (2008). Knowledge, Management, and Knowledge Management in Business Operations. *Journal of knowledge Management*, 12, (2), pp.3-17.

Garavan, T., O'Brien, F., & Murphy, E. (2014). Knowledge management in small and medium-sized enterprises: Navigating informality and resource constraints. In A. Örtenblad (Ed.), *Handbook of Research on Knowledge Management: Adaptation and Context* (pp. 189-207). Cheltenham, UK: Edward Elgar Publishing.

Garavan, T.N., Carbery, R. & Murphy, E. (2007). Managing Intentionally Created Communities of Practice for Knowledge Sourcing Across Organisational Boundaries: Insights on the Role of the CoP Manager. *The Learning Organization*, 14, (1), pp.34-49.

Garud, R. & Rappa, M.A., (1994). A Socio-Cognitive Model of Technology Evolution: The Case of Cochlear Implants. *Organization Science*, *5* (3), pp.344-362

Geertz, C., (1973). Thick Description: Towards an Interpretative Theory of Culture. *The Interpretation of Cultures*. New York: Basic Books.

Gilley, A. & Kerno, S.J. (2010). Groups, Teams, and Communities of Practice: A Comparison. *Advances in Developing Human Resources*, 12, (1), pp.46-60.

Glaser, B.G. & Strauss, A. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. Aldine, New York.

Goffin, K. & Koners, U. (2011). "Tacit Knowledge, Lessons Learnt, and New Product Development". Journal of Product Innovation Management. 28, (2): 300–318.

Goleman, D. (1995). *Emotional Intelligence: Why Can It Matter More than IQ*, New York: Bantam Books

Gong, Y.J., Zhang, J. & Li, Y. (2014). From the Social Learning Theory to a Social Learning Algorithm for Global Optimization. In *Systems, Man and Cybernetics (SMC), 2014 IEEE International Conference on* (pp. 222-227). IEEE.

Gourlay, S. (2006). Conceptualizing Knowledge Creation: A Critique of Nonaka's Theory. *Journal of Management Studies*, 43, (7), pp.1415-1436.

Grbich, C. (2013). Integrated Methods in Health Research. In P. Liamputtong (Ed.), *Research Methods in Health: Foundations for Evidence-Based Practice* (2nd ed., pp. 312-322). Melbourne, Vic.: Oxford University Press.

Greeno, J. (1998). The Stativity of Knowing, Learning and Research, *American Psychologists* 53, pp.5-26.

Grix, J. (2004). The Foundations of Research. London: Palgrave Macmillan

Grusec, J.E. (1992). Social Learning Theory and Developmental Psychology: The Legacies of Robert Sears and Albert Bandura. *Developmental psychology*, 28, (5), p.776.

Gubrium, J.F. & Holstein, J.A. (2009). *Analyzing Narrative Reality*. Los Angeles: Sage.

Haldin-Herrgard, T. (2000). Difficulties in Diffusion of Tacit Knowledge in Organizations. *Journal of Intellectual Capital*, 1, (4), pp.357-365.

Hallam, G. Harper, W. Hauville, K. McAllister, L. & Shannon, B. (2009). AEP Final Report Communities of Practice: Literature Review http://www.eportfoliopractice.qut.edu.au/docs/AeP_Final_Report2/Chapter%202_Literature%20review.pdf Accessed July 2010.

Halling, S., (2008). Embodied Inquiry: Phenomenological Touchstones for Research, Psychotherapy and Spirituality. *Journal of Phenomenological Psychology*, 39, (2), pp.241-243

Hammersley, M. & Atkinson, P. (1995). Insider Accounts: Listening and Asking Questions. *Ethnography: Principles in Practice*. London: Routledge
Handy, C. (1996). *Beyond Certainty*, London: Arrow Business Books.
Hansen, M. Nohria, N. & Tierney, T. (1999). What's your Strategy for Managing Knowledge? *Harvard Business Review* 77, (2) pp.106.

Harvey, J.F., Cohendet, P., Simon, L. & Dubois, J.E. (2013). Another Cog in the Machine: Designing Communities of Practice in Professional Bureaucracies. *European Management Journal*, 31, pp. 27-40.

Hatch, M.J. & Cunliffe, A. (2006). *Organization Theory: Modern, Symbolic and Postmodern Perspectives.* Oxford: Oxford University Press.

Heidegger, M. (1962). *Being and Time*. Oxford: Blackwell.

Hellawell, D. (2006). Inside–out: Analysis of the Insider–Outsider Concept as a Heuristic Device to Develop Reflexivity in Students Doing Qualitative Research. *Teaching in Higher Education*, 11, (4), pp.483-494.

Hermans, H. & Hermans-Konopka, A. (2010). *Dialogical Self-Theory: Positioning and Counter-Positioning in a Globalizing Society*. Cambridge: University Press.

Hildreth, P. & Kimble, C. (2004). *Knowledge Networks: Innovation Through Communities of Practice,* Hershey: Idea Group Publishing.

Hildreth, P., Kimble, C. & Wright, P. (2000). 'Communities of Practice in the Distributed International Environment', *Journal of Knowledge Management*, 4, (1), pp. 27–38.

Holloway, I. (1997). *Basic Concepts for Qualitative Research*. London: Blackwell Science.
http://ktru-main.lancs.ac.uk/pub/ol3.nsf/c317180a11767f0785256499006b15a3/70c2aa95d46e8504802567670050683 3/$FILE/VINCE-jr.pdf (Accessed on 22 July 2010)
http://www.unh.edu/emotional_intelligence/EIAssets/EmotionalIntelligenceProper/EI1990%20Emotional%20Intelligence.pdf (Accessed online 22 July 2010)

Huang, F., Finkelstein, M. J., & Rostan, M. (Eds.). (2014). *The Internationalisation of the Academy*. Dordrecht: Springer.

Husserl, E., (2013). *Cartesian Meditations: An introduction to Phenomenology*. Springer Science & Business Media.

Jeon, S., Young-Gul, K., & Joon, K. (2011). An Integrative Model for Knowledge Sharing in Communities-of-Practice. *Journal of Knowledge Management*. 15, (2) pp.251-272.

Johnson, C.M. (2001). A Survey of Current Research on Online Communities of Practice. *The Internet and Higher Education*, 4, (1), pp.45-60.

Joia L.A., & Lemos, B. (2010). "Relevant Factors for Tacit Knowledge Transfer within Organisations", *Journal of Knowledge Management*, 14, (3), pp.410-427.

Jones, N. B., Herschel, R.T. & Douglas D. (2003). “Using “knowledge Champions” to Facilitate Knowledge Management." *Journal of Knowledge Management* 7, (1), pp.49-63.

Karkoulian, S., Harake N. A. & Messarra. L. C., (2010). Correlates of Organizational Commitment And Knowledge Sharing Via Emotional Intelligence: An Empirical Investigation. The Business Review, Cambridge Vol. 15, No. 1.

Kerno Jr, S.J., (2008). Limitations of Communities of Practice: a Consideration of Unresolved Issues and Difficulties in the Approach. *Journal of Leadership & Organizational Studies*, 15, (1), pp.69-78.

Kimball, L. & Ladd, A., (2004). *Facilitator Toolkit for Building and Sustaining Virtual Communities of Practice.* Hershey, PA: Idea Group Publishing.

Koch, T.,(1999). An Interpretive Research Process: Revisiting Phenomenological and Hermeneutical Approaches. *Nurse Researcher*, 6 (3), pp.20-34.

Kogut, B. & Metiu, A., (2001). Open-Source Software Development and Distributed Innovation. *Oxford Review of Economic Policy*, 17, (2), pp.248-264.

Kogut, B., (2000). The Network as Knowledge: Generative Rules and the Emergence of Structure. *Strategic Management Journal*, 21, (3) pp.405-425.

Koivunen, N., (2007). Collective Expertise: Ways of Organizing Expert Work in Collective Settings, *Journal of Management & Organization*, 15, (2), pp.258-276.

Kotter, J. P. (2015). The organization of the future: A new model for a faster-moving world. In Reinventing the Company in the Digital Age. New York: BBVA OpenMind. Accessed online https://www.bbvaopenmind.com/en/article/the-organization-of-the-future-a-new-model-for-a-faster-moving-world/?fullscreen=true

Kvale, S. & Brinkmann, S., (2009). *Interviews: Learning the Craft of Qualitative Research.* California, US: SAGE.

Laidlaw, M. (2010). The Democratising Potential of Dialogical Focus in an Action Enquiry, Educational Action Research, 2: 2, 223 — 241 2010 URL: http://dx.doi.org/10.1080/0965079940020207 Accessed 23 July 2010.

LaPella, A. Jameson, C. Beedrill, E. Hardy, M. Stanford A & Rowiński, T. Dialogical Self-Source. Accessed online at http://en.wikipedia.org/w/index.php?oldid=354111206 (Accessed online 27 July 2010).

Larson, C.E. & La Fasto, F.M., (1989). *Teamwork: What Must go Right/What Can go Wrong* (Communication Vol. 10). Thousand Oaks: Sage International.
Lave, J & Wenger, E., (1990). Situated Learning: Legitimate Peripheral Participation IRL Report 90-0013.

Lave, J. & Wenger, E., (1991). Situated Learning: Legitimate Peripheral Participation, Cambridge: Cambridge University Press.

Lave, J., (1988). *Cognition in Practice: Mind, Mathematics and Culture in Everyday Life*. Cambridge: Cambridge University Press.

Le Compte, M.D., (2000). Analyzing Qualitative Data. *Theory into Practice*, *39,* (3), pp.146-154.

LeCompte, M.D. Preissle, J., & Tesch, R. (1993). Ethnography and Qualitative Design in Educational Research. *Review of Educational Research*, 52, (31) pp.31-60.

Lee, p., Gillespie, N., Mann, L. & Wearing, A. (2010). Leadership and Trust: their Effect on Knowledge Sharing and Team Performance. *Management Learning*, 41, pp. 473-491.

Leedy, P.D. & Ormrod, J., E. (2010). Practical Research: Planning and Design. New Jersey: Pearson Merrill Prentice Hall.

Leininger, M.M. (Ed) (1985). *Qualitative Research Methods in Nursing*. Orlando: Grune and Stratton Inc.

Leonard, N. & Insch, G.S. (2005). Tacit knowledge in Academia: A proposed Model and Measurement Scale. *The Journal of psychology*, *139,* (6), pp.495-512.

Lewinsohn, P Mischel, W Chaplin, & W Barton, R (1980). "Social Competence and Depression: The Role of Illusory Self-perceptions," *Journal of Abnormal Psychology*, 89, (3) pp.203-212.

Lincoln, Y.S. & Guba, E.G., (1985). *Naturalistic inquiry* (Vol. 75). Thousand Oaks: Sage.

Linell, P. (2014). Interactivities, Inter subjectivities and Language: On Dialogism and Phenomenology. *Language and Dialogue*, 4, (2), pp.165-193.

Manen, M.V. (1990). *Researching Lived Experience*. New York: State University of New York Press.
Marco A, Rodríguez R, Understanding, http://www.funderstanding.com/content/communities-of-practice (Accessed on 21 July 2010).

Marton, F. & Booth, S.A., (1997). *Learning and Awareness*. Psychology Press.
Maslow, A., (1970). *Motivation and Personality*. New York: Harper Collins.

Mason, J. (2006). Mixing Methods in a Qualitatively Driven Way. *Qualitative Research*, 6, (1), pp.9-25.

May, A. (1998). Communities of Practice in Health and Social Care. London: Wiley- Blackwell.

McDonald, J., Star, C., Burch, T., Cox, M., Nagy, J., Margetts, F. & Collins, E., (2012). Identifying, Building and Sustaining Leadership Capacity for Communities of Practice in Higher Education http://www.isi.fhg.de/isi-media/docs/p/de/arbpap_unternehmen_region/ap_r6_2013.pdf.

McDonald, J., Star, C., Burch, T., Cox, M., Nagy, J., Margetts, F. & Collins, E., (2012). *Identifying, Building and Sustaining Leadership Capacity for Communities of Practice in Higher Education*. Canberra: Australian Government Office of Learning and Teaching.

McIver, D., Lengnick-Hall, C.A., Lengnick-Hall, M.L. & Ramachandran, I. (2012). Integrating Knowledge and Knowing: A Framework for Understanding Knowledge- in-Practice. *Human Resource Management Review*, 22, (2), pp.86-99.

Melcrum. R. (2000). "*Teams versus communities of practice*", available at: www.melcrum.com/know_articles/COPs_teams.htm
Methodologies in Education. London: Sage.

Millen, D.R. & Fontaine, M.A., (2003). Improving individual and organizational performance Through Communities of Practice. In *Proceedings of the 2003 international ACM SIGGROUP Conference on Supporting Group Work* (pp. 205-211). ACM.

Mishler, E.G., (1986). *The analysis of Interview-Narratives* (pp. 233-255). TR Sarbin (Ed.), Narrative psychology: The Storied Nature of Human Conduct. Westport, CT: Praeger/Greenwood.

Moon, G., Park, C., Yoo, D.K. & Choi, S. (2011). Effective Implementation of Communities of Practices (CoPs) in a Knowledge Habitat: A Case Study of Samsung Electronics. *International Journal of Services and Operations Management*, 8, (3), pp.335-346.

Moustakas, C., (1994). *Phenomenological Research Methods*. London: Sage
Muller, P., (2006). Reputation, Trust and the Dynamics of Leadership in Communities of Practice. *Journal of Management and Governance*, *10,* (4), pp.381-400.

Murphy, J. (2007). online at http://www.cioinsight.com/c/a/Case-Studies/5-Big-Companies-That-Got-Knowledge-Management-Right

Myers, M.D., (1997). Qualitative Research in Information Systems. *Management Information Systems Quarterly*, 21, (2), pp.241-242.

Ng, L.L. & Pemberton, J. (2013). Research-Based Communities of Practice in UK Higher Education. *Studies in Higher Education*, *38,* (10), pp.1522-1539.
Nishida, K., (1958). *Intelligibility and the Philosophy of Nothingness.* Honolulu: East-West Centre Press.

Nistor, N., Daxecker, I., Stanciu, D. & Diekamp, O. (2015). Sense of Community in Academic Communities of Practice: Predictors and effects. *Higher Education*, *69,* (2), pp.257-273.

Nonaka, I. & Konno, N. (1998). The concept of" ba": Building a Foundation for Knowledge Creation. *California Management Review*, 40, (3), pp.40-54.
Nonaka, I. & Takeuchi, H. (1995). *The knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford: Oxford University Press.

Nonaka, I., (1994). A dynamic theory of organizational knowledge creation.

Nonaka, I., Toyama, R. & Konno, N. (2000). SECI, Ba and leadership: A Unified Model of Dynamic Knowledge creation. *Long Range Planning*, *33,* (1), pp.5-34.

O'Donnell, D. Porter, G. McGuire, D. Garavan, T. Heffernan, M. & Cleary, P. (2003). Creating intellectual capital: A Habermasian Community of Practice (CoP) Introduction, *Journal of European Industrial Training*, 27, pp.2-19
Organization Science, *5,* (1), pp.14-37.

Orr, J. (1990). "Talking about Machines: An Ethnography of a Modern Job," Ph.D. Thesis, Cornell University. (1990), "Sharing Knowledge, Celebrating Identity: War Stories and Community Memory in a Service Culture," in D. S. Middleton and D. Edwards (Eds.), Collective Remembering: Memory in Society, Beverley Hills, CA: Sage Publications.

Oztok, M., Lee, K., & Brett, C. (2012). Towards Better Understanding of Self-Representation in Online Learning. IN T. Bastiaens & G. Marks (Eds.), *Proceedings of E-Learn 2012* (pp. 256–262). Presented at the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Montréal, QC.

Patton, M.Q. (1990). *Qualitative Evaluation and Research Methods*. Thousand Oaks: SAGE Publications, Inc.

Pemberton, J., Mavin, S. & Stalker, B. (2007). Scratching Beneath the Surface of Communities of (mal) Practice. *The Learning Organization*, 14, (1), pp.62-73.

Phillips, L. (2011). The *Promise of Dialogue: The Dialogic turn in the Production and Communication of Knowledge* (Vol. 12). Amsterdam: John Benjamins Publishing Company.

Polanyi, M., (1962). Tacit knowing: Its Bearing on Some Problems of Philosophy. *Reviews of Modern Physics*, *34,* (4), p.601.

Polanyi, M., (1966). The logic of Tacit Inference. *Philosophy*, *41,* (155), pp.1-18.

Polanyi, M., (1967). Sense-Giving and Sense-Reading. *Philosophy*, *42,* (162), pp.301-325.

Ponterotto, J.G. (2005). Qualitative Research in Counseling Psychology: A Primer on Research Paradigms and Philosophy of Science. *Journal of Counseling Psychology*, 52, (2), p.126.

Preece, J., (2004). Etiquette, Empathy and Trust in Communities of Practice: Stepping-Stones to Social Capital. *Journal of Computer Science,* 10, (3), pp.294-302.

Probst, B. Raub S.& Romhardt, K. (2000). *Managing Knowledge: Building Blocks for Success.* London*:* John Wiley & Sons.

Probst, G & Borzillo, S. (2008). Why Communities of Practice Succeed and why They Fail. *European Management Journal*. 26, (5) p. 335.

Pryor, J. (2010). Constructing Research Questions: Focus, Methodology and Theorisation. IN P. Thomson & M Walker (Eds) (2010). *The Routledge Doctoral Students Companion.* London*:* Routledge.

Pryor, M.G., Singleton, L.P., Taneja, S. and Toombs, L.A., (2009). Teaming as a Strategic and Tactical Tool: An Analysis with Recommendations. *International Journal of Management*, *26,* (2), p.320.

Pyrko, I., Dörfler, V. & Eden, C. (2016). Thinking Together: What Makes Communities of Practice work? *Human Relations*, 70, (4) pp. 389-409.

Raisch, S., Birkinshaw, J., Probst, G. & Tushman, M.L. (2009). Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. *Organization science*, 20, (4), pp.685-695.

Ray, T. (2009). Rethinking Polanyi's Concept of Tacit Knowledge: From Personal Knowing to Imagined Institutions. *Minerva*, *47,* (1), pp.75-92.

Reisser, L. & Roper, L.D. (1999). Using Resources to Achieve Institutional Missions and Goals.IN , GS Blimling, EJ Whitt, & Associates*, Good Practice in Student Affairs: Principles to Foster Student Learning.* San Francisco: Jossey-Bass.

Renner, M. & Taylor-Powell, E., (2003). *Analyzing Qualitative Data*. *Programme Development & Evaluation* Wisconsin-Extension Cooperative Extension: University of Wisconsin. *Research*. Thousand Oaks: Sage.

Ritchie, J. & Lewis, J. (Eds.) (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: Sage Publications.

Robbins, L.R.B., (1963). *Higher Education: Report of the Committee Appointed by the Prime Minister Under the Chairmanship of Lord Robbins, 1961-63* (No. 2).London: HM Stationery Office.

Roberts, J. (2006). Limits of Communities of Practice. *Journal of Management Studies.* 43, (3) pp. 623-639.

Rudestam, K.E. & Newton, R.R., (2007). The Method Chapter: Describing your research plan. *Surviving your Dissertation: A Comprehensive Guide to Content and Process*. Thousand Oaks: Sage Publications Inc.

Salovey, P & Mayer, J. (1990). Emotional Intelligence

Saunders, M., Lewis, P. & Thornhill, A. (2003). 3rd. *Research Methods for Business Students,* Prentice Hall

Saunders, M., Lewis, P. & Thornhill, A. (2009). Understanding Research Philosophies and Approaches. *Research Methods for Business Students*, *4*, Retrieved 27 March 2010, from citeseerx.ist.psu.edu.

Scarso, E Bolisani, E & Salvador (2009). A systematic Framework for Analysing the Critical Success Factors of Communities of Practice, *Journal of Knowledge Management*. 13 (6). 6-16.

Schlager, M.S. & Fusco, J., (2003). Teacher Professional Development, Technology, and Communities of Practice: Are we Putting the Cart before the Horse? *The Information Society*, *19,* (3), pp.203-220.

Schon, D., (1983). The Reflective Practitioner. London: Temple Smith Schumacher.

K.L. & Gortner, S.R., (1992). (Mis) Conceptions and Reconceptioons about Traditional Science. *Advances in Nursing Science*, 14, (4), pp.1-11.

Seidman, E., (1988). Back to the Future, Community Psychology: Unfolding a Theory of Social Intervention. *American Journal of Community Psychology*, *16,* (1), pp.3-24.

Senge, P., Kleiner, A, Ross, R., Roth, G., & Smith, B. (1999). "*The Dance of Change*" New York: Currency Doubleday.

Shamsie, J. & Mannor, M.J., (2013). Looking Inside the Dream Team: Probing into the Contributions of Tacit Knowledge as an Organizational Resource. *Organization Science*, 24, (2), pp.513-529.

Sharp, J., (1997). Communities of Practice: A Review of Literature http://www.tfriend.com.cop-lit.htm (Accessed 4 July 2010) P2-17

Siau, K., Erickson, J. & Nah, F.F.H. (2010). Effects of National Culture on Types of Knowledge Sharing in Virtual Communities. *IEEE Transactions on Professional Communication*, *53,* (3), pp.278-292.

Siau, K., Erickson, J., & Fui-Hoon Nah, F. (2010). Effects of National culture on Types of Knowledge Sharing in virtual Communities. IEEE Transactions on Professional Communication, 53, (3) pp.278-292.

Silverman, D. (2010). *Doing Qualitative Research* (3rd edition) London: Sage

Sim, C., (2006). Preparing for Professional Experiences—Incorporating Pre-Service Teachers as 'Communities of Practice'. *Teaching and Teacher education*, *22,* (1), pp.77-83.

Smith, J. & Eatough, V., (2006). Interpretative Phenomenological Analysis. IN: G. Breakwell, S. Hammond, C. Fife-Schaw & J. Smith, (Eds.) *Research Methods in Psychology*. London: Sage.

Smith, J.A., (1996). Beyond the Divide between Cognition and Discourse: Using interpretative phenomenological Analysis in Health Psychology. *Psychology and Health*, 11, (2), pp.261-271.

Stewart, A. (1996). The *Invisible Key to Success*, Fortune 134, (3), pp 2-17
Stiles, W.B., (1993). Quality Control in Qualitative Research. *Clinical Psychology Review*, *13,* (6), pp.593-618.

Stoll, L., Stobart, G., Martin, S., Freeman, S., Freedman, E., Sammons, P. & Smees R. (2003). *Preparing for Change: Evaluation of the Implementation of the Key Stage 3 Strategy* Pilot. London: DfES

Stone, D., (2013). *Knowledge Actors and Transnational Governance: The private-Public Policy Nexus in the Global Agora*. Basingstoke: Palgrave Macmillan

Strauss, A. Corbin, J., (1990). *Basics of Qualitative Research* (Vol. 15). Newbury Park, CA: Sage.

Streubert, H. & Carpenter, D., (1995). *Qualitative Research in Nursing: Advancing the Humanistic Imperative* .New York: Lippincott.

Stys, Y. and Brown, S.L., (2004). A review of the emotional intelligence literature and implications for corrections. *Research branch correctional service of Canada*, *10*.

Suppiah, V. & Singh Sandhu, M. (2011). Organisational Culture's Influence on Tacit Knowledge-Sharing Behaviour. *Journal of knowledge Management*, *15,* (3), pp.462-477.

Sztangret, I., (2014). The Concept of Communities of Practice on the Example of IT Sector. *Organizacija*, 47, (3), pp.190-198.

Tarmazi, H., de Vreede, G. & Zigurs, I. (2007). Leadership Challenges in Communities of Practice: Supporting Facilitators via Design and Technology. *International Journal of e-Collaboration*, 3, (1): 18–39.

Torff, B., (1999). Tacit knowledge in Teaching: Folk Pedagogy and Teacher Education IN Sternberg, R.J & Horvath, J.A. *Tacit Knowledge in Professional Practice*, Researcher and Practitioner London: Lawrence Erlbaum Assoc.

Tsoukas, H. & Mylonopoulos, N. (Eds.) (2003). *Organizations as Knowledge Systems*. Basingstoke: Palgrave Macmillan

Tsoukas, H., (2009). A Dialogical Approach to the Creation of New Knowledge in Organizations. *Organization Science*, *20,* (6), pp.941-957.

Tushman, M & Anderson, P (1986). Technological Discontinuities and Organisational Environments, *Administrative Science Quarterly,* 31, (3), pp.2- 14

Universities UK (2011). Efficiencies and Effectiveness in Higher Education: A Report by the UK Universities Efficiency and Modernisation Task Group. Universities UK.

Van de Ven, A.H. & Poole, M.S., (1995). Explaining Development and Change in Organizations. *Academy of Management Review*, *20,* (3), pp.510-540.
Vince, R (2004). Uncomfortable Knowledge Management: The impact of emotion on organisational learning.

Vince, R. & Martin, L. (1993). "Inside Action Learning: An Exploration of the Psychology and Politics of the Action Learning Model", *Management Education and Development*, 24, pp.205-15.

Völpel, S.C., (2002). Strategic Intellectual Capital Creation: Decontextualizing Strategy Process Research. *Journal of Intellectual Capital*, 3, (2), pp.118-127.

Von Krogh, G. (1998). Care in Knowledge Creation, *California Management Review*, 40, pp. 205.

Von Wright, G.H. (1993). *The Tree of Knowledge and Other Essays* (Vol. 11). New York: Brill.

Vygotsky, L.S., (1978). Mind in Society: The Development of Higher Mental Process IN Cole, M., Steiner, V. Soubner, S. & Souberman, E. (Eds.) (1978) Mind in Society: the Development of Higher Psychological Processes. Cambridge: Harvard Press.

Wang, S. & Noe, R.A. (2010). Knowledge Sharing: A Review and Directions for Future Research. *Human Resource Management Review*, 20, (2), pp.115-131.

Wenger E, & Trayner B, (2013). Leadership Groups: Distributed Leadership in Social Learning Accessed online http://wenger-trayner.com/wp-content/uploads/2013/03/13-11-25-Leadership-groups-V2.pdf
Wenger, E. & Trayner, B. (2015). Communities of Practice: A Brief Introduction. Accessed online http://wenger-trayner.com/wp-content/uploads/2015/04/07-Brief-introduction-to-communities-of-practice.pdf

Wenger, E. (1991). Communities of Practice: Where Learning Happens (Essay), Benchmark, http://www.ewenger.com/pub/pubpapers.htm (Accessed 18 July 2010).

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

Wenger, E. (2009). Communities of Practice and Social Learning Systems: The Career of a Concept, Accessed online http://wenger-trayner.com/wp-content/uploads/2012/01/09-10-27-CoPs-and-systems-v2.01.pdf

Wenger, E. (2011). "Communities of Practice: a brief introduction, available at https://scholarsbank.uorgen.edu'xmlui/handle/1794/11736 (accessed 10th March 2015).

Wenger, E., McDermott, R. & Snyder, W. (2002). *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Boston M.A: Harvard Business School Press.

Wenger-Trayner, E., & Wenger-Trayner, B. (2014). Learning in landscapes of practice: a framework IN E. and Wenger-Trayner, M., & Fenton-O'Creevy, S., Hutchison, C., Kubiak, C. & Wenger-Trayner, B. (Eds.) Learning in Landscapes of Practice: Boundaries, Identity and Knowledgeability. London: Rutledge. Pp.13-30.

Yang, C.L. & Wei, S.T. (2010). Modelling the Performance of CoP in Knowledge Management. *Total Quality Management*, 21, (10), pp.1033-1045.

Zárraga, C. and Bonache, J., (2003). Assessing the team environment for knowledge sharing: an empirical analysis. *International Journal of Human Resource Management*, *14*(7), pp.1227-1245.

Zboralski, K., (2009). Antecedents of Knowledge Sharing in Communities of Practice. *Journal of Knowledge Management*, 13, (3), pp.90-101.

Zhang, W. & Watts, S., (2008). Online Communities as Communities of Practice: A Case Study. *Journal of Knowledge Management*, 12, (4), pp.55-71.

Appendix 1: Consent forms

Information Sheet for Potential Participants

Journey to the Edge: Exploring Dimensions of Tacit Knowledge Sharing in Communities of Practice

I would like to invite you to participate in a research study into Communities of Practice within the Doctor of Business Administration programme at Edinburgh Napier University.

The purpose of the research study is to

The research seeks to explore the views and perceptions of the CoP membership on the characteristics affecting tacit knowledge sharing in their CoP environments.

You have been invited to participate in the study because of your involvement in a Community of Practice. Please note you may not benefit directly from participation in this research study.

If you agree to participate in the study, you will be asked to be interviewed for approximately one hour. The interview will be digitally recorded for transcription by the researcher only and should you wish a copy to add written comments this will be provided.

You have the option to decline to take part and are free to withdraw from the study at any stage, you would not have to give a reason. All data will be anonymised as much as possible, your name will be replaced with a participant number and it will not be possible for you to be identified in any reporting of the data gathered. All data collected will be kept in a secure place (stored on an encrypted remote storage device) to which only the nominated researcher has access.

The results may be published in a journal or presented at a conference.

If you would like to contact an independent person, who knows about this project but is not involved in it, you are welcome to contact Dr, Ann Munro, Faculty Director of Research Degrees, at Edinburgh Napier University (Tel: 0131 455 4345 Email: A.Munro@napier.ac.uk

If you have read and understood this Information Sheet and you would like to be a participant in the study, please complete the Consent Form overleaf.

Consent Form

Journey to the Edge: Exploring Dimensions of Tacit Knowledge Sharing in Communities of Practice

I have read and understood the Information Sheet and this Consent Form. I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in this study.

I understand that I have the right to withdraw from this study at any stage without giving any reason.

I agree to participate in this study.

Name of Participant: _____

Signature of Participant: _____

Date: _____

Researcher Contact Details:

Name of Researcher: David Telford

Address: The Business School,
Edinburgh Napier University – Craiglockhart Campus
Edinburgh
EH14 1DJ

Appendix 2: High-level interview questions

Question	Reason for question	Comments
What practice communities do you believe you are a part of?	To understand the interest and type of CoP the Participant is a member off and relevance to the literature	Seeking to understand the membership nature of the CoP
How would you define the boundaries of the COP or COPS that your involved in?	Both the previous question and this address alignment to the literature. Specifically looking for tacit sharing and how it occurs	The views of the participants of their CoP gives insight into these current CoPs
What are the benefits of being a member of that COP, What does not work for you?	Seeking to test the literature in relation to the views of the CoP membership. Link to subject, topic, sharing	An opportunity to understand what's important to the membership
How does the CoP share information	Moving the discussion onto how sharing occurs in the CoP	This was intended to encourage the participant to discuss how and where sharing occured
How do you interact with each other within the COP?	Encourages the respondents to consider their relationships within the CoP and where they may be operating	This was intended to open the discussion on how sharing was occurring between

		members and where
Is the interaction important to knowledge sharing?	Having considered how knowledge is shared we now look to explore the group interactions in sharing	It was anticipated the respondents would identify common areas of tacit sharing and or those they considered as having valuable insight
Are their individuals you would interact with more than others?	It is important to reflect on the reasons sharing may be occurring more with some individuals	Personal experiences are important here and attempting to understand what encouraged sharing
Why do you interact with them more than the others?	These reflective questions seek to elicit the personal stories and experiences that may explain tacit sharing in the CoP	Personal experiences are key data in this study given that it is a phenomenological study.
Why then do you interact less with the others?	This allows the participant to reflect on their engagement with the CoP members	It was have the opportunity to explain their own possible reluctance to engage and share

Are their individuals in the COP you don't interact with?	This questions seeks to understand what may be getting in the way of tacit sharing	The participant should they have this experience can explain why this might be
Are there individuals in the COP who do not interact with you? Why?	Again an opportunity for the respondent to comment what may be occurring in the relationships with the CoP	The respondent has now had the opportunity to explain the complete view of the interactions associated with tacit sharing in the CoP
What sustains the COP and keeps it going?	The question was intended as a wrap up question to ascertain their view and experiences, good or bad, on what sustains a CoP	Exploring sustainability and considering what the participant views or insider knowledge may be