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# **An interpretive study of the co-creation of knowledge in an online community**

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## **Declaration**

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## In the Name of God

قال رسول الله صلى الله عليه وآله:

انا مدينة العلم وعلي بابها فمن أراد المدينة فليأتها من بابها

*Muhammad (pbuh),  
The Prophet of Mercy:*

**“I am the city of Knowledge and Ali is its Gate;  
So whosoever desires -this city of- knowledge should enter it through its gate.”**

*This work is dedicated to Imam Mahdi (May God hasten his advent), the living guide, who will reappear at the end of time with Jesus the Messiah. He will establish truth in place of error, light in place of darkness and justice in place of oppression, so that all will worship God in perfect harmony, sincerity and abundance.*

*May that day be soon.*

عيسى



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## Abstract

*The advances in online technology has revolutionised online communication. As a result of new emerging web technologies virtual interactions have taken a much more interactive structure. These improvements in technology provide richer communication experiences for the users. Online communities, with the aid of new web 2.0 technology, provide the ideal environment for knowledge sharing. It is the interaction and communication between users of such communities that triggers information and knowledge sharing. Knowledge and information sharing sets the foundation for knowledge creation and co-creation. Meanwhile knowledge is known to be one of the greatest assets of any company or organisation. A significant amount of research has been dedicated to knowledge management. Nevertheless little research has been done to explore knowledge creation and co-creation, particularly in an online community setting.*

*This research is investigating the idea of knowledge co-creation within an online community environment. Knowing that knowledge itself is a subjective entity, which cannot be objectively measured or quantified, the research takes an interpretive approach to finding out how this knowledge is co-created by the users of online communities.*

*One of the main significant factors of this study is that it has used a unique and novel research method to tackle what appears to be a difficult subject. The research uses an interpretive case study method, however without any data collection. The investigation will be exclusively interpretive and philosophically evaluated based on the relevant literature and a set of principles introduced by Klein and Myers (1999). These principles were introduced as a guideline for conducting and evaluating interpretive studies in information systems. Using Klein and Myers' principles has the advantage of being based on a well-established contemporary literature in information systems (IS) research methodology. The principles have not been used in an exclusively exploratory and interpretive research before. This itself is a major methodological contribution for future researchers to utilise as a practical example.*

*The study develops a conceptual framework around knowledge co-creation, online communities and the technology. This framework is based on a proposed RECI model offered for knowledge creation in online communities. It also investigates the role of technology in the co-creation process. Finally it proposes a set of characteristics and guidelines that facilitate knowledge co-creation in online communities. These characteristics and guidelines would help design and implement future knowledge co-creating online communities, for example, e-learning and knowledge management systems. Furthermore the research lays the foundations for introducing the knowledge co-creation theory within online communities by proposing the initial hypothesis. Subject to appropriate future research and testing, the hypothesis can be developed into a practical theory.*

**Key words:** Online communities, Knowledge co-creation, Knowledge sharing, Technology, Web 2.0, Collaboration, Interpretive research, Hermeneutical cycle.

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# CHAPTER ONE: INTRODUCTION

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## 1.1 Background Research

Millions of people nowadays meet online to chat, to find like-minded people, to debate topical issues, to play games, to give or ask for information, to socialise, to find support, to shop, or just to hang-out with others. They go to social media platforms, chat-rooms, bulletin boards, join discussion groups or they create their groups and communities using various available technology (Preece and Maloney-Krichmar, 2003).

These online social gatherings are known by a variety of names including 'online community'. A name created by early pioneers like Howard Rheingold, who described these online communities as "cultural aggregations that emerge when enough people bump into each other often enough in cyberspace" (Rheingold, 1994).

At the same time Knowledge has become the hot topic of many organizations and communities. Knowledge is widely recognised as a critical organisational resource irrespective of type of organization or economic sector (Stewart, 1997; Sveiby, 1997; Davenport and Prusak, 1998). A study reported that about 80% of companies in Europe consider knowledge as a strategic asset (So and Bolloju, 2005). Many companies and organizations are now concerned with managing their knowledge and creating new knowledge. The old knowledge equation was: knowledge is power, so collect it. This has been currently replaced by: knowledge is power, so share it in order for it to multiply (Allee, 1997; Akkinen, 2005). This implies that people and organizations should continuously renew and create more knowledge (Allee, 1997).

Knowledge results when people transform information into their personal knowledge store and create new knowledge (Shariq, 1998; Todd, 1999; Martensson, 2000).

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Knowledge is therefore viewed as the personal ability to interpret information through a process of giving meaning to the information (Steyn, 2003). Considering the above, information has little value until it is processed in a person's mind (Martensson, 2000; Roelof, 1999).

Hassell (2007) states that there is no knowledge outside of experience, and that experience is always the experience of some rational individual in a society. Knowledge is therefore associated with a social group (Hassell, 2007). One can therefore make the conclusion that knowledge resides and is generated within communities. This community can take the form of an online community and is not restricted to a physical face-to-face community, as it is the interaction between its members that is valuable. The popularity of online communities has drawn millions of people towards this medium. In terms of knowledge and online communities, they are so tied together nowadays that some describe one with the aid of the other. Faraj states "online communities are a virtual organizational form in which knowledge collaboration can occur in unparalleled scale and scope" (Faraj et al., 2011). The interactions, both online and offline, of members of online communities provide a suitable atmosphere for knowledge sharing and creation.

This research will be investigating the idea of knowledge creation and co-creation within an online community setting.

## **1.2 Previous Research**

Having considered the literature on online communities and knowledge, one will find that there has been a lot of work on the two topics, in particular online communities. Jenny Preece (2000a, 2000b, 2003), Howard Rheingold (1994), Wellman (1999), Kavanaugh (2005), Putnam (1995), Wenger (2000), Zhang (2007), Kraut (2012) and many others have carried out various studies on different aspects of online communities. On the knowledge front, Nonaka (1994, 1995, and 2003), Alavi (1999), Choo (1998, 2000), Polanyi (1958, 1966), Spender (1996), Stenmark (2001), Dalkir (2013) and many others have studied

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aspects of knowledge. Although literature suggests that a lot of this research has been focusing on knowledge management, organizational knowledge, and some on knowledge sharing.

“Knowledge management is the process of capturing, distributing, and effectively using knowledge” (Koenig, 2012). It is commonly understood as information systems implementations that enable processes of knowledge creation, sharing, and capture (Von Krogh, 2012). The concept has been around for over two decades (Maier, 2007) and although it promises much, but often delivers very little (Babu, 2012). One of the main elements within knowledge management is knowledge creation (Fischer and Ostwald, 2001). However despite its importance there remains a dearth of information and research regarding knowledge creation processes (McFadyen and Cannella, 2004; Un and Cuervo - Cazurra, 2004). “One of the explanations for this is the notable definitional and measurement problems that have plagued knowledge creation research” (Mitchell and Boyle, 2010). In other words one of the reasons for this lack of research, can be that knowledge itself is not a clear entity to study. “The question of the nature of knowledge is very challenging” (Martensson, 2000). The concept of knowledge and knowledge creation is complex (Blackler, 1995) and this seems to have worked as a deterrent for research on the issue.

Nonaka (1994) who is one of the first and few individuals who spent his time researching knowledge creation says:

“Although a great deal has been written about the importance of knowledge in management, relatively little attention has been paid to how knowledge is created and how the knowledge creation process can be managed.” (Nonaka, 1994)

Although Nonaka highlighted this problem back in 1994, but over a decade later, he points out that understanding more about diverse origins of knowledge creation is still a key issue (Nonaka et al., 2006). This indicates that researchers have failed to build significantly

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on the idea to fill the gap, and the area of knowledge creation is still an area in need of substantial research and investigation. The literature also suggests that there is very little evidence of research in collective creation of knowledge and co-creation, at least in comparison to the scope of work carried out in knowledge management and online communities.

Interactions and collaboration between individuals, forms the basis for information and knowledge sharing and possibly creation. With this in mind, there seems to be a great potential in online communities, to facilitate knowledge creation. When these two notions are put into context, one can see a clear gap in the research when it comes to associating online communities and creating new knowledge. The actual concept of knowledge co-creation seems to be a new notion, which has not been investigated in the online community context before. Taking the idea of knowledge creation and placing it in an online community environment, points towards group creation and co-creation of knowledge. This is a novel and original area that has not been investigated before to this extend. Ultimately the research is looking to improve the knowledge co-creation process in online communities by understanding its concepts and discovering facilitating factors. The results of this research should pave the way for a more efficient knowledge co-creation process within online communities. This can have desirable outcomes for knowledge based online communities like online communities of practice or in eLearning platforms. It can also contribute to filling the gap of research on knowledge creation in knowledge management systems.

### **1.3 Research Aims and Objectives**

This research intends to study online communities and investigate knowledge co-creation within those environments. The main objective and aim of the study is to find out how this phenomenon (knowledge co-creation) takes place in the desired setting (an online community). In order to reach this goal, there are other objectives and aims that requires attention. One of the other objectives of the research is to carry out a fully interpretive

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investigation that reflects the nature of knowledge. What is being investigated is knowledge, which is subjective and tied with interpretations and personal understandings. The research aims to take a thorough look at online communities and the theories involved in order to try and understand the process of knowledge co-creation within those boundaries. The same would apply for the technology side of things in order to find out what the role of technology in knowledge co-creation would be.

Once the topic of knowledge co-creation is understood, the research aims to propose a set of characteristics and guidelines for design and implementation of an online community that aids knowledge co-creation. The objective is to facilitate and maximise knowledge co-creation in a virtual environment. This can have possible practical applications for electronic (distant) learning or more focused knowledge creating online environments.

In terms of methodology, the investigation aims to use the seven principles set out by Klein and Myers (1999) for conducting and evaluating interpretive research. The study should set an example for using the principles to conduct an exclusively interpretive research. This could then be used as a practical methodological model in future by researchers who aim to use the same research approach. In general, the main objectives of the research are to:

- Review the relevant literature on online communities, knowledge, technology and co-creation in order to find out about theories and concepts that can affect knowledge co-creation in online communities.
- Use Klein and Myers' (1999) principles for evaluating interpretive research to study and evaluate the case study.
- Investigate the role of technology in co-creation of knowledge in online communities.

- Construct a conceptual framework for knowledge co-creation in online communities, based on the finding of the literature review and case study analysis.
- Identify a set of desirable characteristics that provide the right foundation for knowledge co-creation in an online community.
- Propose a hypothesis for knowledge co-creation in online communities that may lead to future theory and established concept.

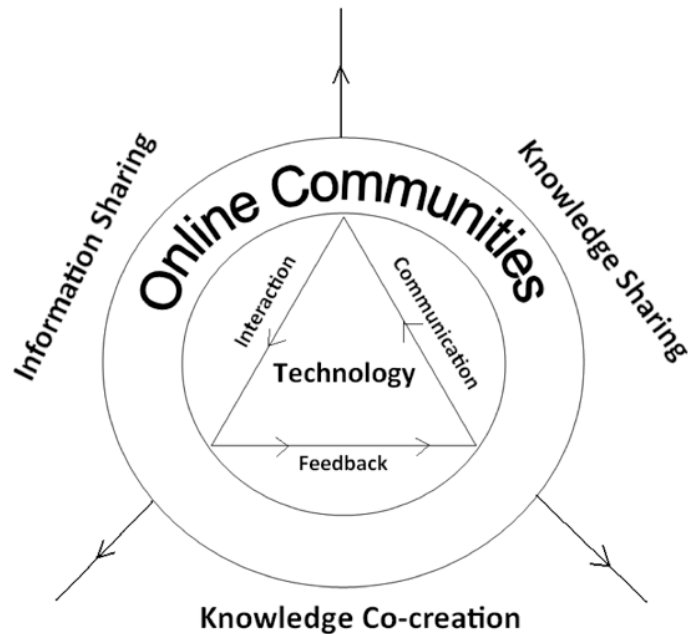
## **1.4 Introductory Conceptual Framework**

One of the aims of this research is to come up with a conceptual framework for knowledge co-creation in online communities. The framework needs to cover the main elements within the knowledge co-creation concept. In order to be able to make relevant reflections and analyse the research process, an introductory conceptual framework is going to be represented. This can help the reader to first of all conceptualise the starting point of this research and see how it develops as the research advances. Furthermore it brings together the initial elements in the researcher with regards to the phenomenon of knowledge co-creation in online community.

Figure 1.1 illustrates the first conceptual framework on knowledge co-creation in online communities in this research. It can be seen that the technology sits at the heart of the online community, which generates interaction, communication and feedback within the community. On the outer shell of the online community and from these interactions and communications, knowledge sharing, information sharing and knowledge co-creation takes place. These are the products of the interactions.

The framework highlights that the main elements within knowledge co-creation are: the technology, online community, information and knowledge sharing, knowledge co-creation, communication, interaction and feedback.





**Figure 1.1:** The introductory knowledge co-creation conceptual framework

## 1.5 Research Questions

To address the research objectives, this study will investigate theories within online communities, knowledge and technology. The main research question of this study is investigating:

‘How is knowledge created and co-created in an online community?’

In order to answer the main question, a few sub questions has been drafted which need to be addressed to help better answer the main research question. The sub questions are as follows:

- What is the definition of an online community?
- What is the definition of knowledge?

- 
- What are the theories and concepts in the literature of online communities, knowledge and technology that may be related or influence knowledge co-creation?
  - What is the role of technology in knowledge co-creation within the online community environment?
  - What factors and characteristics can aid the co-creation of knowledge, when it comes to online communities?

## **1.6 Methodological approach**

One of the main factors that can help a researcher choose an appropriate research method is taking into consideration what he/she is actually researching. The research method should be relevant to what is being researched. For example if one wanted to find out the length of a pillar, it would be no good interviewing and asking people about it. The correct method would be to get the right measuring equipment and actually physically measuring it.

With this understanding in mind, this research will be using an interpretive case study method to try and investigate how knowledge is co-created. Knowledge itself is a notion that is difficult to define and therefore requires in-depth analysis. Hassel (2007) states that knowledge occurs within the context of social activity. Other researchers also believe that knowledge belongs to communities where individuals interact (McDermott, 1999). Moreover qualitative research methods help researchers understand people and the social and cultural contexts around them (Myers, 2013). Therefore it seems that a qualitative approach is the more appropriate approach and thus chosen for this research. Knowledge cannot be quantified and measured. Consequently a quantitative approach would not be fitting the research context.

Researchers in positivist paradigm generally assume that reality is objectively given and can be described by measurable properties (Myers, 2013). However knowledge is a

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subjective entity and cannot be quantified. Therefore the research cannot take a positivist stance. It can also Instead it would need to be interpretive as it is trying to identify, explain and understand how factors in a particular social setting –online community- are related and interdependent. The interpretive approach allows the research to be socially investigated, taking into account the people and the context around them. Although critical research too, like interpretive research, is concerned with social issues, it mainly concentrates on various forms of social, cultural and political domination. The main task of critical research is seen as being one of social critique (Myers, 1997). This does not match the stance this research is taking, as at this stage it is investigating what the phenomenon of co-creation is. For one to be able to critique an entity, he/she needs to know what the entity is first of all. Therefore for this research, the critical philosophical paradigm would not be appropriate either.

In order to undertake the interpretive study, the research will base its evaluation on the seven principles set out by Klein and Myers (1999). These principles are an established set of contemporary principles for conducting and evaluating interpretive studies in information systems.

The main difference between this research and current similar studies in the field is that this investigation has an exclusively exploratory and interpretive approach. There would be no data collection in its traditional form. The research will be based on three main elements. The first and foremost is the literature. Due to the fact that the research is trying to investigate a new phenomenon (knowledge co-creation in online communities) it requires an in-depth literature review study. This is to find out about the aspects and elements that may be involved in such a phenomenon. The literature will concentrate on online communities, knowledge, technology and co-creation. Possible theories within these categories will be inspected. At the end of the literature study an initial conceptual framework will be drafted. This framework will be based on the proposed framework presented in the introduction chapter.

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The second element of the research would be the single case study. The case study will be examined hypothetically. In other words the idea of how the case study would work will be used to evaluate knowledge co-creation. Possible hypothetical scenarios will be used as examples to demonstrate various instances within the case study.

The last element that would be used in the analysis and evaluation of this study would be the seven principles by Klein and Myers. Not only using these principles would help in the evaluation and interpretation of this research, it would actually set a practical example for future researchers to follow, should they wish to take on similar type of research.

## **1.7 Structure of the thesis**

This thesis is comprised of the following seven chapters:

Chapter one introduces the research into knowledge co-creation in online communities, by portraying the setting and background. Previous research in the field is outlined while highlighting areas of concern and interest to the research. The research aims and objectives are set out leading to an initial conceptual framework being outlined. The framework illustrates the initial idea the researcher has at the initial stage of this research. Research questions are set out and the chapter ends with some thoughts about the research method.

Chapter two is the biggest chapter of this research and comprises of the literature review. This is due to the significance of theories and concepts in relating to the study. The chapter starts by looking at online communities and their relating theories. It will then look at the concept of knowledge, its various ontologies and notions. The chapter will continue by looking at the technology side of an online community. Bearing in mind the web is now in its second phase, this section concentrates on web 2.0 and its characteristics. Co-creation is then looked at and roots where the idea came from would be presented. Towards the end of this chapter literature on web 2.0 and knowledge will be touched up on. The

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chapter will come to a close by setting out a second conceptual framework, which is based on the understanding of the phenomenon established from the literature.

Chapter three discusses the possible research methodologies within the information systems discipline. Before setting out the research approach of this investigation. The research method, which is an interpretive case study, will be evaluated and analysed using the Klein and Myers principles.

Chapter four delivers an overview of the case study. The case study is called Plings and is a service run by the Manchester city council to provide positive activities for the youth of Manchester. The Plings system is explained in this chapter. Plings has been taken as an example of an online community where knowledge co-creation takes place. The case study will be examined hypothetically by providing possible scenarios that could take place in such an environment.

Chapter five is the interpretation and exploratory analysis chapter. In this chapter Klein and Myers' principles will be used to evaluate knowledge co-creation. Where suitable, references to theories from the literature will be given and put into the context of the case study.

Chapter six provides a discussion on the issues raised in the analysis chapter and tries to provide answers to the research questions and reflect on the objectives of the research. A final conceptual framework for knowledge co-creation in online communities will be introduced. The role of technology in the co-creation of knowledge will then be explained followed by a set of characteristics and guidelines for designing and implementation of a knowledge co-creating online community. The chapter ends by proposing a knowledge co-creation hypothesis, which with further research, can lead to a possible theory within online communities.

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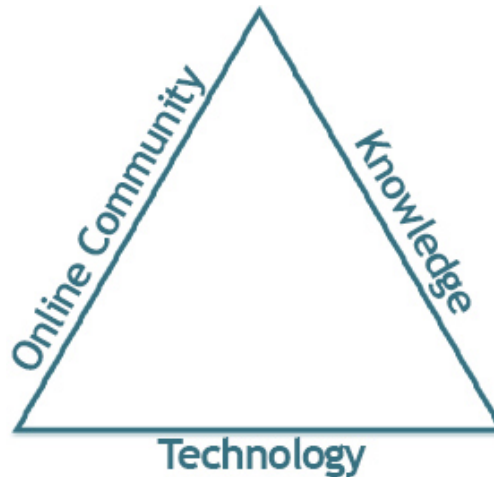
Chapter seven presents a summary of the research while highlighting the main findings. It will then explain the main contributions of this investigation, in terms of theory, methodology and practice. The chapter ends by reflecting on the limitations and challenges of the research and stating possible future investigation routes.

## CHAPTER TWO: LITERATURE REVIEW

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### 2.1 Introduction

The research is set to investigate the notion of knowledge co-creation in online communities. It is believed that there are three main elements behind the co-creation of knowledge in a virtual environment; the online community, knowledge, and the technology that supports the system. These form a triangular foundation for this research, which is illustrated in figure 2.1.



**Figure 2.1:** Triangular concept of this research

This chapter aims to explore and review existing literature on online community, knowledge and technology. On each of these topics the research will look at the different definitions and classifications. The research will state clearly what the stance of this research on each component is. For example if there are a few descriptions for what an online community is, the research will cover them but at the end will give a definition of what the research regards as an online community. The same goes for the technology and knowledge. This will help in clarifying any vague definitions of the elements.

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The literature on the technology behind online communities points towards the web 2.0 notion, which is considered as the second phase of the Internet. It is mainly concerned with more interactive web services. As a result, the technology may be referred to as simply 'web 2.0' from this point onwards in this research.

The literature review chapter will also look at the main theories and concepts within these categories, which may influence or affect knowledge co-creation or the communication and collaboration aspect of it. These theories will later on be used to reflect on how the knowledge co-creation will take place.

Once the main elements are examined, the literature will look at the notion of co-creation and where it initially originated from. It will then state what the research labels as knowledge co-creation. The concepts of the technology and knowledge will be touched upon before the chapter is concluded with an initial conceptual framework based on the whole of the literature review chapter. This will help as a preliminary basis for the final proposed framework.

## 2.2 Online Communities

*We are made for conversation with our kind. ...[and to] communicate and share in the communications of others.*

-John Dewey, Characters and Events, Vol. I (as quoted in Preece, 2000a, p. 7)

Until the arrival of telecommunications technology, definitions of communities focused on "close-knit groups in a single location" (Preece, 2005). Factors such as birth and physical location determined which community you belonged to. Interactions were primarily limited to face-to-face interactions and therefore social relationships with a stable and limited set of individuals (Gergen, 1997; Jones, 1997). This way of defining communities



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became less useful with the development of modern transportation and telecommunication systems, which increased personal mobility and reduced communication costs across long distances (Preece, 2005).

The origins of online communication and the notion of online communities or virtual communities, goes back to the beginning of the Internet. Since 1975 e-mail based list servers and from 1979 newsgroups were used by scientists for the exchange of ideas and information (Zakon, 2006). However as Jenny Preece (2000a) mentions in her famous online communities book, online communities mean different things to different people (Preece, 2000a). For some it creates a warm, fuzzy, reassuring image of people chatting and helping each other. For others, it generates dark images of conspiracy, subversive and criminal behaviour, and invasion of privacy. And still others see a future in which online communities replace or undermine physical communities (Preece, 2000a).

Dictionary definitions, for example talk of groups with common interests, shared goals, activities, and governance; groups and individuals who cooperate to share resources and satisfy each other's needs. Preece in her introduction chapter pins down what she means by online communities and introduces the following four 'high-level' criteria.

"An online community consists of:

- *People*, who interact socially as they strive to satisfy their own needs or perform special roles, such as leading or moderating.
- A shared *Purpose*, such as an interest, need, information exchange, or service that provides a reason for the community.
- *Policies*, in the form of tacit assumptions, rituals, protocols, rules, and laws that guide people's interactions.

- *Computer Systems*, to support and mediate social interaction and facilitate a sense of togetherness.” (Preece, 2000a)

The definition of an online or virtual community does not differ significantly from that of a physical community, though its implementation is different (Garber, 2004). Cyberspace expert, Howard Rheingold (1994), writes: “...virtual communities are cultural aggregations that emerge when enough people bump into each other often enough in cyberspace. A virtual community as they exist today is a group of people who may or may not meet one another face to face, and who exchange words and ideas through the mediation of computer bulletin boards and networks” (Rheingold, 1994). His perception of an online community or virtual community stems from his seven year involvement in the WELL (Whole Earth Lectronic Link), which was an early online community in the San Francisco Bay area (Rheingold, 2008).

In one paragraph Rheingold comprehensively captures the essence of online community in a way that endures today. He writes: “In cyberspace, we chat and argue, engage in intellectual intercourse, perform acts of commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play games and metagames, flirt, create a little high art and a lot of idle talk. We do everything people do when people get together, but we do it with words on computer screens, leaving our bodies behind. Millions of us have already built communities where our identities commingle and interact electronically, independent of local time or location” (Rheingold, 1994). With the advances in web technology, individuals now communicate not only by text but by uploading pictures and videos, tagging, liking and disliking other people’s contents etc. The technology enables the users to have a richer and more interactive communication.

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## **2.2.1 Online Communities from different perspectives**

Online communities can be viewed from different perspectives. This may be the reason why there are so many definitions of online communities. The next section will examine online communities from various perspectives.

### **2.2.1.1 Multidisciplinary brainstorm perspective**

A report (Whittaker, 1997) from a brainstorming workshop held at an ACM CHI (Computer Human Interaction) Conference on the theory and practice of physical and network communities identified the following core attributes:

1. “Members have a shared goal, interest, need, or activity that provides the primary reason for belonging to the community.
2. Members engage in repeated, active participation and there are often intense interactions, strong emotional ties and shared activities occurring between participants.
3. Members have access to shared resources and there are policies for determining access to those resources.
4. Reciprocity of information, support and services between members is important.
5. There is a shared context of social conventions, language, and protocols.” (Preece, 2000b)

### **2.2.1.2 Sociology perspective**

For many years sociologists have struggled to define community, and therefore been defining and redefining the concept over and over again (Wellman, 1982). In their early years communities were defined by their physical features such as size, location, and their boundaries. In later years when commuting became a way of life for many people,

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identifying, defining and measuring physical characteristics of populations, in continual transit, became a problem (Preece, 2000a). Transport became cheaper, and soon it was easier for people to become members of multiple communities to satisfy their needs. It was then that the strength and relationships between people started defining their communities (Wellman, 1997; Haythornthwaite, 1998).

Sociologists map and determine these relationships using established techniques such as network analysis. Due to the intense technological hype surrounding online communities the social interaction that sociologists bring into this field is a welcoming counterbalance. As Wellman and Gulia point out, unfortunately many researchers studying online communities seem unfamiliar with the long history of studying community by sociologists (Wellman, 1999).

#### **2.2.1.3 Technology perspective**

The technology-oriented definitions are at the opposite end of the social-technical spectrum. The software that supports the online communication is a frequently used term for defining them. They very commonly refer to terms like, chat, bulleting board, listserver, UseNet News, or Web-base and Social Networking Communities. These terms are concise and meaningful terms to these so-called insiders. They know exactly the usage and limitations of each of these services. They value technical related issues, but say little or nothing about social organization and interactions.

#### **2.2.1.4 Virtual Worlds perspective**

Virtual world participants are very aware of the technology. They are eager to push the limits of 3D virtuality. "They seek immersive experiences, with the ultimate goal to represent themselves as 3D objects moving around a 3D world with realistic perspective. Not surprisingly, their perspective on online communities involves a sense of immersion that mimics reality. Many virtual worlds portray *fantasy* environments, i.e. where players participate in games or social interactions in which they disguise their true identities" (Preece, 2000a). Their participation generally occurs regularly over long periods, of weeks

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or months, so there is opportunity for relationship building. Consequently their interaction is seen as prolonged and repetitive by researchers.

#### **2.2.1.5 E-commerce perspective**

To E-commerce entrepreneurs who have a very broad view of community, any chat, bulletin board or communication software can be regarded as an online community, because to them the important ingredient is people. As long as there is a website that can attract people and hold them there (also known as the *stickiness* concept), so they will buy goods or services, it is all good. For example, the success of online chat services such as yahoo and MSN, have proven that this phenomena is big business.

E-commerce entrepreneurs anticipate that online communities will not only keep people at their sites, but can also play a big role in marketing, as people tell each other about their purchases and discuss banner ads and advise each other.

“This highly commercial perspective devalues the concept of community” (Preece, 2000a). Although as Steve Jones correctly points out, the Internet, and particularly the web, is a market-driven social space (Jones, 1999). In other words it is business that shapes and dictates social interactions. Thus many researchers of online communities resent the implication that any online communication among people represents a community. “They believe that an online community is more than just a stream of messages” (Preece, 2000b).

#### **2.2.2 Different Types of Online Communities**

“*Community* is quite possibly the most over-used word in the Net industry. True community –the ability to connect with people who have similar interests- may well be the key to the digital world, but the term has been diluted and debased to describe even the most tenuous connections, the most minimal interactivity.” (Brown, 1999)

It is for the reason above, that we now have various definitions of online communities, depending on the discipline and perspective of the one who is defining this phenomenon. This has given rise to a variety of forms of online communities. To better understand its range and concept, a few examples are briefly described below.

David Wilcox (2004) divides online communities in three general categories: Virtual communities of interest, Organisational communities, and Local communities online.

*Virtual communities of interest* - These are groups of people - tens, hundreds or thousands - who may never have met but who have some interest or concern they wish to share using the Internet. This may be a hobby, politics or religion. It may be a rare illness, some aspect of computing or the Internet itself. The main tools for virtual communities are mailing lists, web conferencing, discussion forums, newsgroups, wikis, blogs and other Web 2.0 phenomena. Currently there are a huge number of online communities that fall under the virtual communities of interest title.

“These communities of interest may wax and wane in their activity and can be volatile in their exchanges because those participating may have no common culture or background. They only know each other online.” (Wilcox, 2004)

*Organisational communities* - Increasingly organisations both large and small are setting up internal communication systems (intranets) which use the same technology as the Internet to enable staff to work together more effectively. These systems may be built using mailings lists, Web pages and Web conferencing, or special systems like Lotus Notes or FirstClass<sup>1</sup>.

Those using the systems may be sitting at adjacent desks - or communicating across the world. While they may be diverse in their personal backgrounds and interests, their

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<sup>1</sup> Lotus Notes or FirstClass are examples of organizational communication software, used within companies and organisations for communication and collaboration between its members.

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exchanges will be focussed on organisational business, and (officially at least) conducted within the culture of the organisation.

*Local communities online* - Many neighbourhoods, villages, towns and cities now have their own online presence. "Web pages and discussions that mirror in part the 'real world' of residents, shops, businesses and civic institutions." (Wilcox, 2004). Examples of this may be online communities for local councils aimed at facilitating regional and local communication.

The above are very general classifications of online communities. Depending on the researcher's perspective, online communities can be categorised in many different ways. Many of these categories are also shaped depending on what the members of the community seek from their online interaction. Catherine M. Ridings and David Gefen (2004), surveyed why people use online communities. A summary of the results is displayed in table 2.1.

The stats showed out of the 516 people they questioned; 257 reasons (49.8%) indicated information exchange, 124 reasons (24.0%) indicated friendship, 56 reasons (10.9%) indicated social support exchange, 45 reasons (8.7%) indicated recreation, 9 reasons each (1.7%) indicated technical reasons or common interest, and 16 reasons (3.1%) were put into the other category (Ridings, 2004). Although the scope of the research had been very limited but it can give one a good idea on why people use online communities.

Most of the researchers of online communities agree that the main purpose of the community plays a crucial role in its classification (Preece et al., 2003; Porter, 2004). Schrammel (2009) classifies online communities into the below four categories:

*Business Networking Sites* - These are networking sites that are mainly used to maintain and administer existing and new business contacts. Examples of these networks are LinkedIn or Xing.

Category	Description	Examples
Exchange Information	Obtain and transfer information about a topic, educate about a topic, learn new things.	To get new ideas.
		To learn about new things.
		To find out how to better grow flowers in my garden.
		To learn about new technologies for my business
		To share my knowledge of woodworking with others.
		To share my successes and failures with home-schooling with others
Social Support	Obtain and give emotional support.	A way for me to express my anger to others who will sympathize with me.
		To talk out my problems and get advice.
		I can easily let out my emotions here and others will understand.
		To support others going through a rough time.
Friendship	To make friends	To let others know that I have gone through it too.
		To hang out with people I enjoy.
		To socialize.
		To talk with people with the same interests and values.
		To chat with people with similar interests.
Recreation	For entertainment	To find others like me.
		Because it is fun.
		I enjoy reading and posting in the community.
Common Interest	Love of the topic of the community	I like talking about baseball
		Because I love woodworking is my true love
Technical Reasons	Technical features in the community	The interface is easy to use
		The search function is really cool.

**Table 2.1:** Why people use online communities (Ridings, 2004)

*Social Networking Sites* – The term social network comprehends sites that are mainly used for maintaining social, private relationships and contacts. The most prominent example for such a site is Facebook with over 1.3 billion users (Statista, 2015).



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*Content and Media Sharing Networks* - These sites' major focus is on sharing content with others. Typically networks are specialised on different types of media, e.g. Instagram focuses on pictures and Youtube's main medium is video.

*Social News and Bookmarking Sites* - These sites are used to share and discover interesting links to news and contents on the web. Sites can be more focused on the collaborative bookmarking aspect i.e. del.icio.us or the social news aspect i.e. Digg (Schrammel et al., 2009).

### **2.2.2.1 Online Communities of Practice**

The Term 'Communities of Practice' is a term, which denotes "the social environment in which learning takes place" (Vaughan and Dornan, 2014). It is a sociocultural theory of learning, which can operate in both physical and virtual environments. "Communities of practice 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" (Wenger, 2011). They can be physical or virtual. Examples of physical Communities of practices are cafeterias at workplaces, offices and factories; examples of Communities of Practice which operate in virtual environments are online forums and chatrooms. Communities of Practice can vary in size and form; they can be small or large; local or global; actual or virtual; personal or work-related; formally recognised or informal; supported with a budget or unfunded; visible or invisible (Wenger, 2009).

Communities of Practice can evolve in different ways; some may evolve naturally, due to a shared interest, while others may evolve with the aim of gaining knowledge in a particular field or subject (Davis and Goodman, 2014). In any case the main difference between a community of practice and other communities is that in communities of practice there is a clear aim and goal to share and create knowledge. The advancements in Internet communications and online communities meant that the same physical community could be based online. An example of an online community of practice is a group of cyclists who have formed an online community using some form of technological platform, to communicate about their hobby (cycling). They communicate about a range of topics

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around cycling, from tours and competitions to daily routines and techniques of looking after and repairing their bikes. Online communities of practice are considered as communities with an intentional aim of sharing and creating knowledge.

### **2.2.3 Theories in Online Communities**

In order to study and understand the concept of online communities better, one needs to be familiar with the theories involved. This section will cover the main theories associated with online communities.

Generally there does not appear to be a clear theory or list of theories within online communities' research. Rather one can see reference to a range of theories based on the researcher's background and discipline. The theories are mostly drawn from social sciences, particularly sociology, anthropology, and social psychology.

#### **2.2.3.1 Social Presence Theory**

The sense of being part of a community is an important factor in online communities. "Without a feeling of community people are on their own, likely to be anxious, defensive and unwilling to take the risks involved in learning" (Wegrif, 1998). One of the main factors related to sense of community within an online environment is *Social Presence* (Rovai, 2002). Social presence is the ability of the members of a community to project themselves socially and emotionally as real people in the community (Garrison, 2000).

Social presence theory explains how different communication technologies convey the presence of participations. "When there is no visual image of participants, it is often necessary to include verbal signals (i.e. emotions) and verbal clarifications to convey to readers a sender's intended tone and meaning" (Kavanaugh, 2005). The appearance of Web 2.0 technologies and video sharing sites like Youtube and GoogleVideo, which facilitate vblogs (video blogs), have alleviated the reflection of the social presence theory. Although, this reflection depends on the type of online community and its underlying technology.

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According to Garrison and Anderson (2003), the formation of a community requires a sense of social presence among participants. Social presence is therefore a significant factor, especially in online learning environments, as it improves instructional effectiveness by increasing social interaction, encouraging learning satisfaction, initiating in-depth discussions and promoting collaborative learning (Garrison, 2003).

### **2.2.3.2 Social Exchange Theory**

Social participation in physical communities takes many forms, including individual and collective, and formal and informal participation. We interact with members of our social network (i.e. friends and family) one-on-one and in groups. We participate in various formal organizations (i.e. university, work) and informal groups (i.e. sport activity groups, babysitting circles). This participation in social networks and communities is 'dynamic and negotiated', typically based on an exchange of costs and benefits. We invest time and energy in these groups and at the same time expect some return in terms of direct and indirect benefits (Kavanaugh, 2005). As rational individuals, one seeks to minimize the costs or negative effects of interactions and to maximize the benefits and utility. Norms of reciprocity or balanced exchange of social and material resources is a fundamental form of human interaction and the central premise of social exchange theory (Emerson, 1976).

Social exchange theory states that people will contribute because of benefits resulting from what is received in return, or future reciprocity (Bearman, 1997; Blau, 1964). The social rewards can come in different forms, such as approval, status, and respect. "Social exchange theory suggests that the key to increasing customer contribution is to increase other customers' contribution." (Akkinen, 2005)

It is important to note that lack of reciprocity can become a 'social dilemma' in online communities, especially when the online community is composed of people who are geographically dispersed and their only means of interaction is online (Axelrod, 1984; Kollock, 1998).

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### 2.2.3.3 Social Capital Theory

Putnam describes social capital as the “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995a).

Social capital can take many forms, although Putnam has more intensely examined those forms that serve civic ends such as civic engagement. Civic engagement refers to “people’s connections with the life of their community” (Putnam, 1995b); and includes things such as membership in neighbourhood associations, choral societies, or sports clubs.

Networks, norms, and trust are interrelated and essential parts of the theory of social capital (Putnam, 1995b). Trust eases cooperation, and the more that people trust others and the more they feel that others trust them, the greater the likelihood of cooperation among these people (Blanchard, 1998). According to Putnam, this social trust arises from two related sources: norms of reciprocity and networks of civic engagement. Although there are several norms of behaviour that compose social capital, the norm of reciprocity is the most important (Blanchard, 1998).

Coleman, who originated the concept of social capital back in 1988, called it a common set of expectations, a set of shared values, and a sense of trust among people. "Social capital does not require face-to-face, but face-to-face interaction has more tie density and more reciprocity" (Rice, 2004). That is, in face-to-face interactions, people are more likely to have friends or acquaintances in common (tie density) and more exchange of aid than in computer-mediated interactions (Kavanaugh, 2005).

People who belong to more than one community or organization create weak social ties between groups (Granovetter, 1973), or what Putnam refers to as 'bridging' social capital (Putnam, 2000). Two people may be connected through an interpersonal tie, but a single person may also connect two groups when he or she is a member of both. “Such joint memberships form group-to-group ties that indirectly connect all persons in each separate

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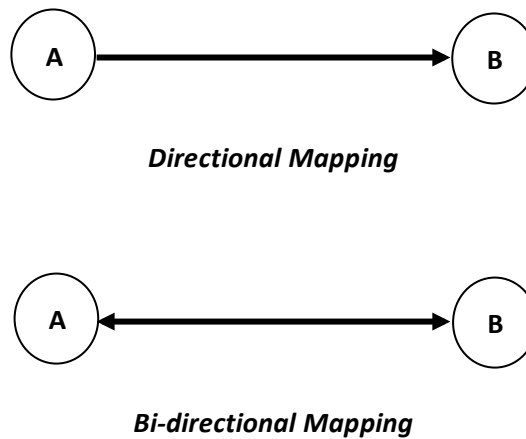
group and that facilitate information flow across separate groups throughout a community, and strengthen bridging (across groups) as opposed to bonding (within groups) forms of social capital” (Kavanaugh, 2005).

“Social Capital can only be generated collectively thanks to the presence of communities, or particular networks, but individuals and groups can exploit it at the same time.” (Ferragina, 2010) Individuals can exploit social capital of their networks to achieve private objectives and groups can use it to enforce a certain set of norms or behaviours. In this sense, social capital is generated collectively but it can also be used individually, bridging the dichotomized approach 'communitarianism' versus 'individualism' (Ferragina, 2010).

#### **2.2.3.4 Social Network Theory**

Social network theory is a branch of social science that applies to a wide range of human organizations, from small groups of people to entire nations. Web enthusiasts have recently used the idea in conjunction with the online community phenomena and come up with the famous Social Networking sites like Orkut, Myspace and Facebook, who have attracted millions of people.

The term network refers to a set of objects, or nodes, and a mapping or description of the relationship between the objects. In the case of social networks, the objects refer to people or groups of people. For example, a network might consist of a person and a mapping from that person to each of his or her friends and relatives. These mappings can be directional or bi-directional (see figure 2.2). An example of a directional mapping would be if person A liked person B, but person B did not like person A. This is a directional mapping from person A to person B. An example of a bi-directional mapping would be if person A and person B both liked each other.



**Figure 2.2:** Directional and Bi-directional mapping

One of the reasons social network theory is studied is that by understanding the mappings connecting one individual to others, one can evaluate the social capital of that individual. “Social capital refers to the network position of the object or node and consists of the ability to draw on the resources contained by members of the network” (Kadushin, 2003). Basically the more mappings a person has in the social network and the more mappings these people have, the more knowledge, influence, and power the original person will control. Social capital can have a substantial influence on a person’s life; affecting such aspects as job searches and potential for promotions (Ethier, 2003).

#### **2.2.4 Online Communities in this research**

There is a fair deal of problem when it comes to defining the term ‘community’. The problem aggravates when researchers from a range of disciplines come together, each wanting to place their stake in the ground to support their own goals and research paradigms. When it comes to defining online communities, depending on whether they come from a technical or social background, they tend to name their communities by their activity and the people they serve, or the technology that supports them (Preece, 2005).

Researchers now consider the strength and nature of relationships between individuals to be a more useful basis for defining a community, rather than their physical proximity

(Hamman, 1999; Haythornthwaite, 1998; Wellman, 1997; Wellman, 1999), as it was the case before the telecommunication advancements.

Jenny Preece (2005) refers to a meeting she had with Amy Bruckman<sup>2</sup> and quotes her saying, “much ink has been spilled trying to work out which online communities are really communities”. She continues saying Bruckman argued that expanding energy and time on developing definitions may not be the best way to proceed, and suggests that a more productive approach may be to *accept the community as a concept with fuzzy boundaries* that is perhaps more appropriately defined by its membership. This can be done for example by noting the similarities and differences of each new member and comparing them with the characteristics of members who are regarded as being within the community (Preece, 2005). This approach to definition may be hard for some academics to accept, but can encourage researchers to concentrate on more important issues, such as - in this case- how communities help create knowledge.

This research will base its definition of an online community on the above notion of community from Bruckman (Preece, 2005). It is however also important to base the research on grounds which are clear and though not firmly specific, but with boundaries. Therefore the term online community, which is referred to in this study, is a group of people with the following characteristics:

- Technically Online – use some sort of electronic telecommunication medium (i.e. the Internet or Intranet), not necessarily as their only means of interaction, but as their main source of communication. This would be the main differentiator between a community and an online community.
- Shared interest or common goal – need to have some form of common goal, purpose or at least mutual interest.

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<sup>2</sup> The meeting Jenny Preece (2005) refers to is not referenced in her work, thus the reference for Amy Bruckman’s statement points back to Preece’s journal paper -- Preece, J., Maloney-Krichmar, D. (2005) Online communities: Design, theory, and practice. *Journal of Computer-Mediated Communication*, 10(4).

- Policies and rules – when they are part of a community they should be obeying certain rules (be it tacit assumptions), protocols or guidelines that guide people's interactions.

The above characteristics define this research's idea of an online community.

## **2.3 Knowledge**

Before exploring how knowledge is created and co-created, it is of great importance to know what exactly knowledge is, or what we mean when we refer to knowledge. Knowledge has been the source of discussion for many years and its term is used very loosely in different disciplines (kmconnection.com, 2007). The term is also variously defined in the Oxford English Dictionary:

“(i) facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject, (ii) what is known in a particular field or in total; facts and information or (iii) awareness or familiarity gained by experience of a fact or situation.”  
(OxfordDictionary, 2015)

The various notions of knowledge in the literature will be looked at below, in order to highlight this research's stance on its terminology and meaning.

### **2.3.1 Knowledge and Information**

In the first instant, there seem to be somewhat of a blur border between knowledge and information. Hildreth and Kimble identify a lack of distinction between knowledge management (KM) and information management (Hildreth, 2002). In order to clarify this distinction it is necessary to understand how information and knowledge are related. Both knowledge and information are formed on the grounds of data. The two can be



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differentiated once their meaning and interpretation is considered. By definition information is informative and therefore it will express something. It is the data that meaning can be derived from. Knowledge is directly related to understanding and it would be gained through interpretation of information (Sharratt, 2003).

Knowledge enables the individual to interpret information for example, derive meaning from data. This interpretation of meaning would be framed by the perceiver's knowledge. Therefore what one may perceive as information may be meaningless data to another (Sharratt, 2003). Therefore information that is interpreted generates meaning and new knowledge. Consequently, information can be added to knowledge to increase what is known. It would also be valid to say that knowledge comes before both information and data as one, needs to know the context of data before it can be interpreted as information. And therefore it can be seen that knowledge is subjective and can only reside within the mind of the individual (Sharratt, 2003).

Fosket (1982) very clearly states his idea of information and knowledge:

*"knowledge is what I know  
information is what **we** know"*

The above quote supports the idea that knowledge is an intangible resource that exists within the mind of the individual (Sveiby, 1997). The sudden explosion of interest around KM has brought with it a lot of confusion with critics arguing that knowledge in itself cannot be managed and that KM is just another management fad (Wilson 2002).

Wilson (2002) also suggests that knowledge resides within the human mind and what comes out can be regarded as information. On the other hand many have at least categorized knowledge as being tacit or explicit (Nonaka, 1994; Nonaka and Takeuchi, 1995; Choo, 1998; Boisot, 1995; Spender, 1996). So what are the different types or forms of knowledge?

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### 2.3.2 Forms of Knowledge

Without getting too deeply involved in the philosophical debates of what exactly knowledge is, it can be noticed fairly quickly that the majority of the voices in Information System and Knowledge Management have rejected the positivistic view of knowledge as an “objectified and monistic absolute truth” (Stenmark, 2001). Instead they have adopted a pluralistic epistemology, acknowledging that there are many forms or types of human knowledge (Spender, 1998). Some of these definitions and forms are touched upon below.

Wilson (2002) defines ‘knowledge’ as what we know:

“knowledge involves the mental processes of comprehension, understanding and learning that go on in the mind and only in the mind, however much they involve interaction with the world outside the mind, and interaction with others” (Wilson, 2002).

Whenever an individual wishes to express what he/she knows, they can only do so by messages of one kind or another i.e. oral, written, graphic, gestural or even through body language. These messages do not carry 'knowledge', they constitute 'information', which a knowing mind may absorb, understand, comprehend and incorporate into its own knowledge structures. Obviously these structures are not identical for the person sending the message and the receiver, because each person's knowledge structures are, as Schutz (Schutz, 1967) puts it, 'biographically determined'. Therefore, the knowledge built from the messages can never be exactly the same as the knowledge base from which the messages was expressed (Wilson, 2002).

Nonaka (1994) classifies knowledge into explicit and tacit knowledge, where explicit knowledge is seen as knowledge that has been captured and codified into manuals, procedures, and rules and is easy to circulate. Tacit knowledge however, is the knowledge that cannot be easily ‘articulated’ and therefore only resides in people’s heads and minds, and reveals itself through their actions (Stenmark, 2001).

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Choo (Choo, 1998) who has based his work on Boisot's (Boisot, 1995) typology, suggests a differentiation between tacit, explicit and also cultural knowledge.

"Cultural knowledge consists of the beliefs an organization holds to be true based on experience, observation, reflection about itself and its environment. Over time, an organization develops shared beliefs about the nature of its main business, core capabilities, markets, competitors, and so on" (Choo, 2001).

Spender (Spender, 1996) also contributes to the notion of knowledge by adding individual and collective knowledge to the two famous forms of tacit and explicit knowledge. Blackler (Blackler, 1995) however, elaborates on Collins (Collins, 1993) idea and speaks of embrained, embodied, encultured, embedded, and encoded knowledge (see table 2.2).

Although several other ways of classifying knowledge exist and have been suggested, they all, more or less, seem to be built on the influential work of Polanyi (1966) and his notion of tacit knowledge. He believed tacit knowledge is a cultural, emotional and cognitive background of which we are only marginally aware of. This tacitness is referred to as a precondition for *focal* knowledge (Prosch, 1986; Tuomi, 2000). Polanyi's view has sometimes been criticized for being too concerned with the tacit aspects of knowledge and thus becoming monistic (Stenmark, 2001). On the other hand his idea that tacit and explicit knowledge are equally constituted and thus should not be separated and treated as two types of knowledge is supported by, for example Tsoukas (Tsoukas, 1996), who argues that trying to separate these two inseparable entities is to miss the point. Although acknowledging the many nuances that exist between these two stances, the terms "explicit" and "tacit" will be used, as they are commonly understood and described by Nonaka (1994).

TYPE OF KNOWLEDGE	DESCRIPTION
Embrained Knowledge	<ul style="list-style-type: none"> <li>▪ Dependent on conceptual skills and cognitive abilities</li> <li>• Synthesizing personal insights models, system thinking</li> <li>• Shared visions of organizational learning</li> </ul>
Embodied Knowledge	<ul style="list-style-type: none"> <li>• Action oriented and likely to be only partly explicit</li> <li>• Acquired by doing</li> <li>• Rooted in specific context</li> <li>• Needs face-to-face and physical presence</li> </ul>
Encultured Knowledge	<ul style="list-style-type: none"> <li>• Process to achieve shared understanding</li> <li>• Socially constructed knowledge</li> </ul>
Embedded Knowledge	<ul style="list-style-type: none"> <li>• Resides in systemic routines</li> <li>• Exploring material resources and relationships between technologies, roles, formal procedures and emergent routines</li> </ul>
Encoded Knowledge	<ul style="list-style-type: none"> <li>• Information conveyed by signs and symbols</li> <li>• Traditional forms i.e. books and manuals</li> <li>• Advanced ones are transmitted electronically</li> </ul>

**Table 2.2:** Types of Knowledge (Blackler, 1995)

Table 2.3 summarizes a short outline of the diverse notions of knowledge. These which are derived from Yau's (2003) literature review on the topic, are very brief and just highlight the various view points on the issue.

Author	Types of Knowledge Defined
Blackler (1995)	embodied, embedded, embrained, encultured, encoded
Boisot (1995)	proprietary, public, personal commonsense
Choo (1998); Choo, Detlor and Turnbull (2000)	tacit, explicit, cultural
Conklin (1996)	formal, informal
Rulke, Zaheer and Anderson (1998)	transactive, resource
Spender (1998)	explicit, implicit, individual, collective
Polanyi (1958)	tacit, focal

**Table 2.3:** Different types of knowledge - source:(Stenmark, 2001; Stenmark, 2002; Hildreth, 2002) – adapted from (Yau, 2003)

### 2.3.3 Knowledge in this Research

Philosophy states that there is no knowledge outside the possibility of experience (Kant, 1965). And experience is the experience of a sentient being. Knowledge occurs within a context of social activity (Hassell, 2007). Knowledge as the experience of a human being means that there is no such thing as disembodied knowledge. “Intelligence is not based on deductions made from rules overlaid on some massive database. Instead, it is a way of acting within an environment or community” (Hassell, 2007).

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Decades of experiments with databases and expert systems have failed to even come close to human intelligence (Dreyfus, 2001). Even the purest form of knowledge, mathematics, is still (arguably) based on the embodied mind (Lakoff, 2000). One does not need to be a philosopher to know that knowledge is not some elaborated data, which can be shoved into a database. Even many in the business community (McDermott, 1999) recognize that knowledge belongs to communities. Damasio (2000) shows that even when the logical centres of the brain remain intact, if the emotional centres become damaged, afflicted individual finds himself or herself incapable of making decisions, or at least *appropriate* decisions (Damasio, 2000). Therefore the afflicted individual is 'irrational'. Therefore knowledge cannot come from the simple transmission mechanisms of information, but must come from within one's self; from a culture, which implies social organization, commitment and common values (Hassell, 2007).

To summarise, below is the view this research will take on the definition of knowledge, which is based on Hassell's (2007) idea:

- There is no knowledge outside of experience.
- Knowledge therefore always originates from a human being and is embodied
- Experience is always the experience of some (rational) individuals *in a society*.
- Knowledge therefore is associated with a social group.

Although knowledge has proven to be a slippery notion to pin down and explain, but this research believes, knowledge is an entity that is beyond data and information. Knowledge is about understanding. It is beyond forming and describing. What is of most importance is the process of "knowing", rather than the output of knowledge. It is the people who turn this notion of "knowing" into knowledge, when they use it. For example knowing the recipe for a dish does not necessarily mean it is knowledge. It becomes knowledge when it is used to cook that dish. When people use the process of knowing, they transfer the information into knowledge. An example of this is books. Would one regard books as knowledge? It does not seem like it. The information or knowledge within the book will

only become useful if it is used. This idea can be looked at from a physics perspective<sup>3</sup>. One can say that the knowledge in books or even tacit knowledge, which resides inside people, is a form of *stored or potential knowledge*. Once this potential knowledge is used, to do something or perform a task, it is transferred to *kinetic knowledge*.

Now that the notion of knowledge in this research is cleared up, it is also important to make a statement about the classification of knowledge in this work. This research will adopt Nonaka's (1995) classification of tacit and explicit knowledge. Tacit knowledge refers to knowledge that cannot be easily transferred because it has not been stated in an explicit form (Nonaka and Takeuchi, 1995). This research refers to tacit knowledge as what is in the individual's mind. The understandings and interpretations, which are deeply rooted in actions and cognition within one's mind, that are not explicit in a way that one can easily share or distribute. On the other hand, Explicit refers to knowledge that is formal and systematic. It can be easily shared and communicated, for example a set of instructions or a manual. The two forms will be used in this research under the umbrella of knowledge.

#### **2.3.4 Knowledge Creation**

Once it is clear what is meant by knowledge, ways in which this knowledge is created needs to be explored. What is meant by knowledge *creation*?

Competitive advantage is driven by continuous innovation, which in turn relies on knowledge creation (Nonaka and Takeuchi, 1995). Knowledge creation is the process of unlocking the knowledge held by individuals within "organizations, exploring it, evaluating it, combining it with other individual and organizational knowledge and using it in the development of innovative new systems, services, products, ideas, or new ways of doing things" (Fletcher, 2003).

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<sup>3</sup> Referring to the notion of *potential* and *kinetic energy* in physics.

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Conversations are the lifeblood of organizations (Wenger, 2000). They function to “create a lively internal marketplace of readily accessible ideas” (Von Krogh, 1998). In today’s business settings they are an arena for creating social knowledge and help to co-ordinate individual actions and insights. Through their conversations, people share their mental models and individual skills.

It is necessary to create new knowledge and ideas constantly to survive and prosper (Bagshaw, 2000). Knowledge creation starts with people sharing their internal tacit knowledge by socialising with other people or by acquiring it in a digital or analogue form (Riley, 1998; Bassi, 1997). The shared knowledge is then internalised by other people which generates new knowledge (Steyn, 2003). This newly created knowledge is again shared with other people and the process begins again. It has no use if organisations have people with intellectual capital who do not share it (Katz, 1998; Riley, 1998).

#### **2.3.4.1 Constructivist Learning Theories**

According to constructivist learning theories, how one constructs and creates knowledge depends on what he or she already knows (Kanuka, 1998). What one knows depends on the experiences he or she has had and how they have organized these into existing knowledge structures.

All constructivist learning theories share two key elements; (a) that knowledge is constructed on what is already known, and (b) learning is an active rather than passive process (Kanuka, 1998).

There are two widely accepted constructivist learning theories: *critical constructivism* and *social constructivism*. Critical constructivism theory assumes that knowledge is constructed as an incorporation of internal contradictions resulting from environmental interactions. “Contradictions drive us to construct knowledge by conceiving of phenomena that lead toward greater understanding of unspecifiable complexities of organization and abstraction” (Young, 1997).



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Social constructivism is currently the most accepted theory associated with online learning. In this view the assumption is that knowledge is embedded in the relationship between the knower and the known. Knowledge is generated through the social intercourse, and it is through this interaction that one gradually accumulates advances in his or her levels of knowing. One of the people who is mostly associated with the social constructivism theory is Vygotsky, a Russian psychologist and philosopher in the 1930s (Kanuka, 1998). Vygotsky emphasized the influence of cultural and social contexts in learning (Vygotsky, 1978). In this view we construct meaning actively and continuously in a social context (Young, 1997). These meanings emerge from the patterns of our social experiences that occur over time in a contextual, situated, and continually changing combination. How one constructs knowledge in this context, is based on his/her social experiences and interactions where “the mind is instrumental and essential in interpreting events, objects, and perspectives on the real world, and that those interpretations comprise a knowledge base that is personal and individualistic” (Jonassen, 1991).

Kanuka and Anderson (1998), in their study of an online community that interacted through the means of an online forum, state that it should be noted that knowledge creation does not necessarily take place visibly. They refer to it as *internal knowledge creation*.

“It should be noted that individual participants might be processing information internally in a reflective manner but not sharing these thoughts with other participants. The asynchronous nature of conferencing environments can be an effective stimulation to this type of internal knowledge creation” (Kanuka, 1998).

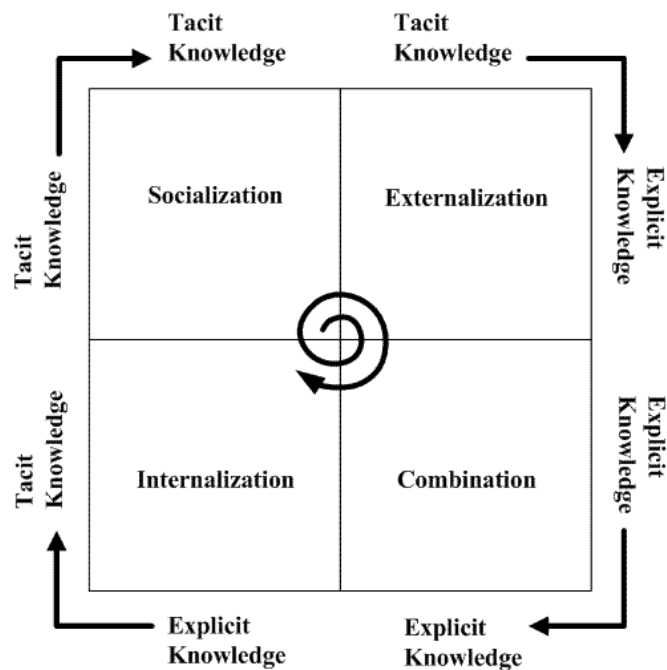
Further on in their research they find evidence of critical constructivism and social discord, which played the role of a catalyst in the knowledge creation process (Kanuka, 1998).

#### **2.3.4.2 Nonaka’s Knowledge Creating Model**

One of the people who has worked considerably on the issue of knowledge and knowledge creation is Professor Ikujiro Nonaka.

“Today, knowledge and the capability to create and utilize knowledge are considered to be the most important source of a firm’s sustainable competitive advantage” (Nonaka, 2003)

As mentioned earlier Nonaka (1995) distinguishes between tacit and explicit knowledge. The creation of knowledge is a continuous process of dynamic interactions between these two forms of knowledge (see figure 2.3). The four modes of knowledge conversion interact in the spiral of knowledge creation. The spiral becomes larger in scale as it moves up through organizational levels, and can trigger new spiral of knowledge creation.



**Figure 2.3:** Nonaka’s SECI knowledge creation model (Nonaka and Takeuchi, 1995)

The SECI model that explains the Knowledge Creation process has four steps to it:

- Socialization
- Externalization
- Combination
- Internalization

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*Socialization* - implies sharing tacit knowledge between individuals, empathizing with colleagues or customers. This means time has to be spent together so that knowledge can be acquired through physical proximity i.e. face-to-face communication or shared experience.

*Externalization* - involves the expression of tacit knowledge and its translation into comprehensible forms that can be understood by others. For example an individual commits to a group and becomes one with the group. The expression of tacit knowledge is in fact its conversion to explicit knowledge and to be able to do this figurative language and visuals are essential.

*Combination* - is the conversion of explicit knowledge into more complex sets of explicit knowledge. Key issues are communication, diffusion and the systemization of knowledge. New knowledge is spread amongst the organization members and is edited, making it more usable. An example of combination is building a prototype.

*Internalisation* - is by the conversion of the newly created explicit knowledge into the organization's tacit knowledge. The individual needs to identify the knowledge relevant to one's self within the organization.

Nonaka (1995) believes Knowledge is created through the process of conversion of tacit knowledge to explicit. As the user goes through each phase the conversion takes place. This is the cause of creation of knowledge in an organisation.

## **2.4 Technology: Web 2.0**

The current state of online technology as it compares to the early days of the Web, is characterised by greater user interactivity and collaboration, more pervasive network connectivity and enhanced communication channels. This is referred to as Web 2.0. This technology is what forms the basis of online communities nowadays and this research will

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refer to the concept of technology by using the term web 2.0. The two words will be used interchangeably.

Over the past few years the term Web 2.0 has attracted a significantly high degree of attention from researchers to entrepreneurs and businesses. It is probably for this reason that it is difficult to come up with a universal definition for it. For example a Web technologist will give quite a different answer to a marketing student or an economist professor. For many people Web 2.0 is making reference to a group of technologies which have become deeply associated with the terms: blogs, wikis, podcasts, RSS feeds etc., which facilitate a more socially connected Web where everyone is able to add to and edit the information space (Anderson, 2007). Bearing in mind that the web has been around since the early nineties, one may ask when this idea of Web 2.0 started. The term Web 2.0 first appeared to be brought up during a brainstorming session organized by Tim O'Reilly and MediaLive International back in 2004 (O'Reilly, 2007). Since then the term has been used to refer to new exciting applications and websites (Bartolome, 2008). To find out exactly what web 2.0 is and is not, examples of both will be provided.

### **2.4.1 What it is not**

Bartolome (2008) states, that Web 2.0 is not a clearly defined set of sites or tools, nor a specific website or resources centre on the Internet. Therefore one cannot 'go to' Web 2.0, register, log on or sign up to it. It is rather more sensible to acknowledge it as a concept used to refer to sites and resources or developments that have some common characteristics. Mean while, at least until today, there has been no registered tag that certifies what is or is not Web 2.0. Web 2.0 is certainly not a new web with new language, new sites, new pages etc. as its principles date back to the nineties (Bartolome, 2008).

### **2.4.2 What it is**

As O'Reilly (2007) points out, there is no "... hard boundary here, but a gravitational core" around which a number of "principles and practices" cohere. It is a concept that included a diverse set of independent yet interlocking applications (relying on generally pre-existing

technologies) that are transforming user experience (Emory, 2007). If the web is split into two sections historically; the early stage of the web (Web 1.0), was about navigating relatively static web sites and accessing content on a print-based publication model. However in contrast, “Web 2.0 developments undermine the traditional boundaries between central publishing sites and a passive audience by providing remotely supported platforms and data for users to undertake their own collaborative content creation and publication” (Emory, 2007).

After the burst of the dotcom bubble, the Internet is again very much alive and kicking. The first generation of Internet sites (Web 1.0) primarily gave information, but with the rise of sites like Facebook, Amazon and Wikipedia the web has become increasingly interactive. In Web 2.0, it is mostly the user who produces the content and not the site administrator or his team. Without user contributions, there would be no Facebook. And without people who post information on Wikipedia and their clips on Youtube, there would be no interactions on these sites. It is apparent that most web users have become into contact with the idea of Web 2.0, knowingly or unknowingly. Blogging, tagging, social networking and social bookmarking have paved the way to a vast range of services offered based on the Web 2.0 principles.

It is interesting that the Web 2.0 movement itself uses mainly Web 2.0 technology and ideas for communication and knowledge transfer. “Up to now, however there have been very few academic publications on the topic – but a lot of blog posts, wiki pages and discussions.” (Rollett, 2007). Because of the collaborative nature and communication methods of Web 2.0 it “is an ambiguous, even polymorph concept, which is understood in different ways by different people.” (Rollett, 2007).

Wikipedia<sup>4</sup>, itself one of the biggest Web 2.0 phenomena’s, describes Web 2.0 as the following:

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<sup>4</sup> Wikipedia.com accessed on 15<sup>th</sup> May 2009, [http://en.wikipedia.org/wiki/Web\\_2.0#cite\\_note-5](http://en.wikipedia.org/wiki/Web_2.0#cite_note-5)

*"Web 2.0" refers to a perceived second generation of web development and design, that facilitates communication, secure information sharing, interoperability, and collaboration on the World Wide Web. Web 2.0 concepts have led to the development and evolution of web-based communities, hosted services, and applications; such as social-networking sites, video-sharing sites, wikis, blogs, and folksonomies.*

*Definition of "Web 2.0" (Wikipedia.org, 2009)*

A *tag cloud*<sup>5</sup> (Figure 2.4), presenting Web 2.0 themes and ideas, illustrated below, is one of the ways of describing what Web 2.0 is by Wikipedia (Cremonini, 2006).



**Figure 2.4:** A tag cloud presenting Web 2.0 themes

Words like participation, convergence, usability, standardization, social software, data driven and many more are words that come across with the idea of Web 2.0. Rollett et al (2007) suggest that a Web 2.0 approach at defining "Web 2.0" would be not to formally

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<sup>5</sup> A *tag cloud* is a Web 2.0 form of visualising illustration of user-generated tags used typically to describe the content of web sites.

define it, but instead simply characterise it with the help of a lot of keywords that regularly come up in conversations about the topic.

O'Reilly (2007) states in their initial brainstorming attempt back in 2004, they formulated their sense of Web 2.0 by the following list:

Web 1.0		Web 2.0
DoubleClick	→	Google AdSense
Ofoto	→	Flickr
Akamai	→	BitTorrent
mp3.com	→	Napster
Britannica Online	→	Wikipedia
personal websites	→	blogging
evite	→	upcoming.org and EVDB
domain name speculation	→	search engine optimization
page views	→	cost per click
screen scraping	→	web services
publishing	→	participation
content management systems	→	wikis
directories (taxonomy)	→	tagging ("folksonomy")
stickiness	→	syndication

**Table 2.4:** Initial Web 1.0 and Web 2.0 classification (O'Reilly, 2007)

Personal websites took the form of blogs while going through their Web 2.0 transition. Sites like Ofoto turned into their Web 2.0 equivalent, Flickr etc. Similarly other Internet sites and services followed and began their Web 2.0 evolution.

### 2.4.3 Web 2.0 Principles

To understand why there is so much hype surrounding Web 2.0, it is first important to understand the underlying principles that are connected to it. O'Reilly (2007) suggests the principle of Web 2.0 is having this idea of *web as the platform*. When revisiting the

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concept later on, O'Reilly pointed out to other elements like the “relevance of the business dimension of this revolution and the collective intelligence” (Bartolome, 2008). Web 2.0 is a platform that is connected to a large number of devices on the Internet.

The overall goal of Web 2.0 is to provide an online experience that is much richer than the experience gained with Web 1.0. Clearly the principles behind this new system are quite different than the Internet that existed a decade ago.

One of the most important principles behind Web 2.0 is the fact that web based services are now available that can heave information from a number of different sources to serve them to the user. With this new system, data will be freed and exposed to everyone that wants to view it. In addition to this, the data can be altered and edited in a number of different ways.

Rollet et al (2007) refer to a set of *Design Patterns* as the principles of Web 2.0. Reviewing these patterns and principles allows a better understanding and distinguishing of Web 2.0 content.

#### **2.4.3.1 The long tail**

The term *the long tail*, which was coined by Anderson (2004), was originally used in statistics to describe distributions that decline very slowly after initial sharp drop. As a design pattern principle, Rollett et al (2007) explains that the long tail means it is not the top sellers and the most important topics that make up the majority of the web, but rather a huge number of specialised topics and small communities.

#### **2.4.3.2 Data is the next ‘Intel inside’**

Generally in software development building on application features and performance is a common practice. “In Web 2.0 applications, data is of greater value than a feature-rich interface, as defined by the pattern *Data is the next Intel inside*” (Rollett, 2007). Looking at the photo-sharing platform, Flickr as an example; it can be seen that the onsite search for photo outperforms online image search engines like Google or yahoo image searches, in



terms of yielding relevant results. Therefore hosting and storing all available images including their metadata seems to be a key success factor for providing useful image search. Although the likes of Google have grasped the idea too and started using the same concept now.

#### **2.4.3.3 Users add Value**

Users are a key component of a Web 2.0 application (site). The concept of *Users add value* means the users are integrated into the content creation process, thereby adding value to that process and results. Concepts related to this design pattern are *peer production*, meaning the actual content is created by distributed peers and not a central authority or administration group. The most famous example of this principle is Wikipedia<sup>6</sup>. Here the Wikipedia team maintains the platform but does not provide the data, only the facility for publishing, editing and sharing. Another example of this principle at work is del.icio.us<sup>7</sup>, where the bookmarks of users are presented in an aggregated manner. This *co-creation* suggests that multiple people work on the same creative activity, for instance, by writing books together cooperatively as it is done in Wikibooks<sup>8</sup>.

#### **2.4.3.4 Network effects by default**

It is apparent that not all the users of a Web 2.0 applications will be contributing and explicitly adding content for others. A big share of the actual users will be visitors or *lurkers* (Preece, 2000a). This would mean they will only be consuming and not contributing to the content, as for instance, just reading blogs without leaving a comment or having their own blogs. By analysing their use of the application however, data can be generated too. "This in effect is a form of the network effects by default design pattern at work: The more users a service has, the more valuable it is to its users" (Rollett, 2007). For instance in the example of an instant messaging service, the network effects would be that after reaching a critical mass of users, using the service becomes almost inevitable for staying connected.

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<sup>6</sup> <http://www.wikipedia.org>

<sup>7</sup> <http://www.del.icio.us>

<sup>8</sup> <http://www.wikibooks.org/>

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#### **2.4.3.5 Some rights reserved**

The data created by users belongs to themselves, who created it, by default, however an adaptable and flexible set of rights have been created, which are easy to understand and easy to apply. These set of rights, known as the Creative Commons (2006), are integrated using the slogan *some rights reserved* which means that the content within Web 2.0 is not protected by rights as severe as the copyright laws of for example the music industry. This allows the re-use of content and content snippets, like blog entries or images. It leads to a kind of legal remixability, which stands for mixing and re-publishing content from various sources, such as displaying images from Flickr on a map from Google or Yahoo, and transformation of contents. This has given birth to a new phenomena of Web 2.0 application and sites, called *Mashups*. This is where different sources and applications are aggregated and combined to build up a new service, which is more valuable than each of the original services (Rollett, 2007).

#### **2.4.3.6 Perpetual beta**

As mentioned above, features alone are not the driving force of Web 2.0 applications. It is eminent that users want to know that the software they are using is being continuously developed and that there is an active team integrating enhancements and fixing bugs. Therefore a typical Web 2.0 application does not have a version or release number. Instead it is entitled a *perpetual beta*, which means it is constantly evolving, never leaving its *beta* state.

#### **2.4.3.7 Cooperate, do not control**

According to O'Reilly's (2007) Web 2.0 idea of the web as a platform, the web will facilitate users to generate and share content, collaborate and communicate and publish details about their lives, interests and behaviours, which is typical for social software. This would imply that users trust the application providers, giving rise to the *corporate, do not control* design pattern. This principle in practical term means, that on one hand within the Web 2.0 environment, users who contribute with their data expect to be treated with respect; and on the other hand, stands for being open to the outside. This allows for mashup of

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various services of Web 2.0 application, instead of just providing a monolithic service with no possible connection to other platforms (Rollett, 2007).

#### **2.4.3.8 Software above the level of a single device**

Web 2.0 should not be a web only for desktop computing, but it should allow access through devices other than the standard home or office computer. Other than the fact that Web 2.0 uses the World Wide Web as its main communication and presentation platform, which is also reflected by the slogan web as platform, it also provides software above the level of a single device. For example Wireless Application Protocol (WAP, an Internet protocol for mobile devices) interfaces, touch screen and pen or speech interfaces will work as input alternatives to keyboards or push services for mobile devices.

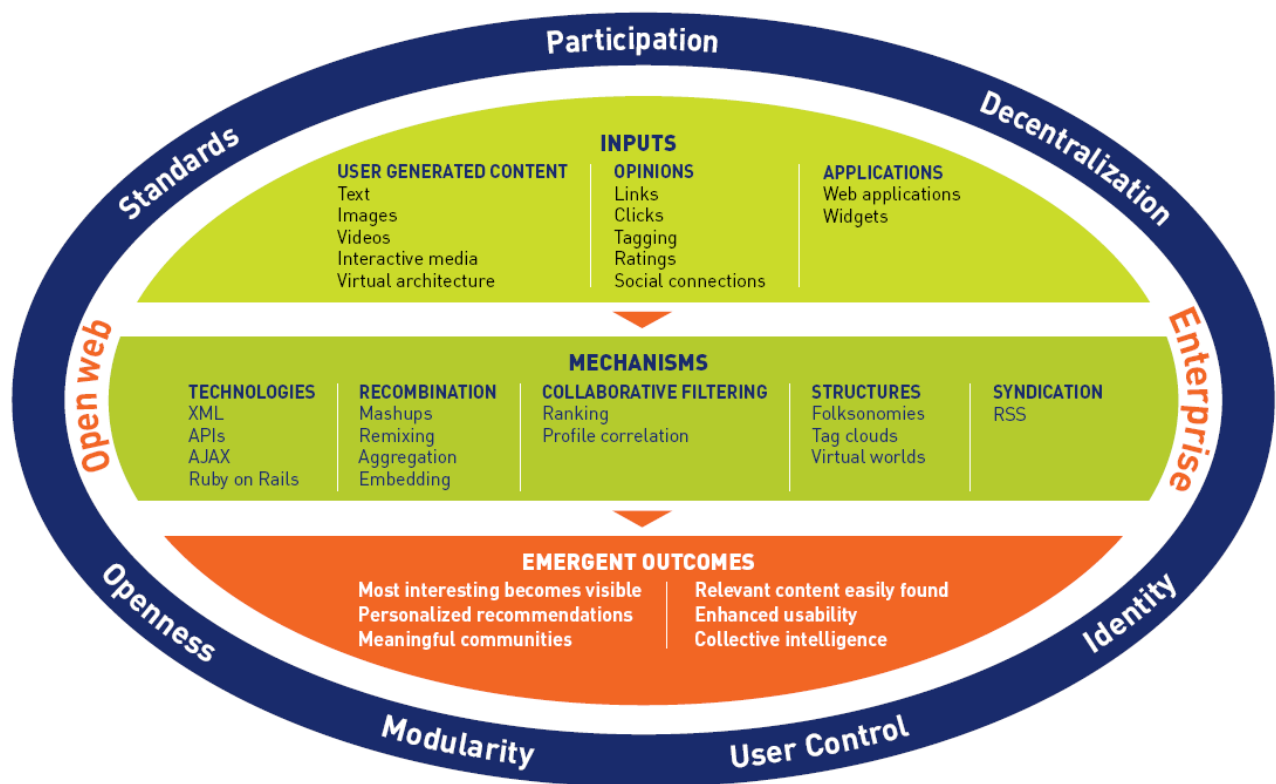
#### **2.4.4 Web 2.0 Framework and Characteristics**

Dawson and the Future Exploration Network (2006) created the *Web 2.0 framework* with the intention to provide a clear, concise view of the nature of Web 2.0, particularly for senior executives or other non-technical people who are trying to grasp the scope of Web 2.0, and the implications and opportunities for their organizations. There are three key parts to the Web 2.0 Framework, as shown in figure 2.5: Inputs, Mechanisms, Emergent Outputs.

Web 2.0 is founded on seven key Characteristics: Participation, Standards, Decentralization, Openness, Modularity, User Control, and Identity (Dawson, 2007) - These will be explained later on.

The two key domains, which Web 2.0 has expressed, are: the Open web, and the Enterprise. At the heart of Web 2.0 is how it converts Inputs (User Generated Content, Opinions, Applications), through a series of Mechanisms (Technologies, Recombination, Collaborative Filtering, Structures, Syndication) to Emergent Outcomes that are of value to the entire community (Dawson, 2007). Take the example of Youtube for instance. It resides on personal video uploads (Input – user generate content) allowing for the videos to be tagged and linked to each other along with a rating system. The technology that

makes this work (XML, APIs, AJAX etc.) uses certain mechanisms and algorithms like ranking systems to allow videos to be searched and found in a meaningful manner. The result is a rapid responding website functioning and hosting videos with the ability to search for specific videos based on their ranks and tagging system, making the site ideal for finding specific information in video format. It is important to note the comments and feedback system embedded on the site, paves the way for user collaboration and sharing of knowledge.



**Figure 2.5:** Web 2.0 Framework by Future Exploration Network (Dawson, 2007)

Anderson (2007) describes six big ideas behind Web 2.0, from Tim O'Reilly's (2007) earlier work, as the following:

- Individual production and user generated content
- Harness the power of the crowd

- Data on an epic scale
- Architecture of Participation
- Network Effects
- Openness

Dawson (2007) took the idea and classified Web 2.0 characteristics as the following seven key ideas:

- Participation
- Standards
- Decentralization
- Openness
- Modularity
- User Control
- Identity

#### **2.4.4.1 Participation**

Every aspect of Web 2.0 is driven by participation. Web 2.0's transition was enabled by the emergence of platforms such as social networks, blogging, and free image and video uploading, that collectively allow extremely easy content creation and sharing by anyone.

#### **2.4.4.2 Standards**

It is of great importance that the Web 2.0 platform consists of sets of standards. Common interfaces for accessing content and applications are the glue that allow integration across the many elements of the emergent web. These standards are like a set of measurements that are applied to various applications, so they match and are able to communicate with each other.

#### **2.4.4.3 Decentralization**

Web 2.0 is decentralized in its architecture, participation, and usage. Power and flexibility emerges from distributing applications and content over many computers and systems, rather than maintaining them on centralized systems.

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#### **2.4.4.4 Openness**

It is the spirit of openness whereby developers and companies provide open, transparent access to their applications and content, which has made the world of Web 2.0 possible.

#### **2.4.4.5 Modularity**

Web 2.0 emerges from many components or modules that are designed to link and integrate with others, together building a whole that is greater than the sum of its parts.

#### **2.4.4.6 User Control**

One of the main objectives of Web 2.0 is for users to control the content they create, the data captured about their web activities, and their identity. This powerful trend is driven by the clear desires of contributors.

#### **2.4.4.7 Identity**

Not only identity is a critical element of Web 2.0, but it is a key factor and the future direction of the Internet. Day after day there is more opportunity to choose and represent our identities however we please, within virtual worlds, across interactions, and in social networks. We can also own and verify our real identities in transactions if we choose to.

### **2.4.5 Web 2.0 applications and services**

There are a number of Web-based services and applications that portray the foundations of the Web 2.0 concept. These applications which are already being used by millions of users are not really technologies as such, but services built using building blocks of the technologies and open standards that supports the Internet and the web. These applications include wikis, blogs, multimedia sharing services, content syndication, podcasting and content tagging services. Many of these applications have been in use for many years and are relatively mature, although new and more exciting features are being added regularly. "It is worth noting that many of these newer technologies are concatenations, i.e. they make use of existing services" (Anderson, 2007).

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#### **2.4.5.1 Wikis**

A *Wiki* is a webpage or a set of webpages that can be easily edited by anyone who is allowed access (Ebersbach, 2006). A wiki is used to refer to the created document, the site where it is located and the application to produce it. The most famous wiki site, which initiated the wiki revolution, is Wikipedia. Wikipedia's admired success means that the concept of the wiki as a collaborative tool that facilitates the production of a group work, is widely understood (Anderson, 2007). According to Bartolome (2008) key elements of a wiki are:

- Hypertextual structure
- Social authoring - collaborative production
- Process log in 'history'
- Limited use of html - lack of layers, cascade styles, JavaScript...
- Dynamic document - always under construction

Wiki pages have an edit button where any user may change or even delete the contents of the page. Characteristics like, ease of use, flexibility, and openness; make the wiki an ideal Web 2.0 application for group work (Lamb, 2004).

There are indisputably problems for wiki type systems, which have such a high level of openness. Wikipedia itself has suffered from malicious editing and vandalism (Stvilia, 2005). Although there are some who argue that these acts of vandalism and mistakes are quite quickly rectified, by the self-moderation at work. In other words the huge number of genuine contributions will out number the malicious and vandalism. This can in a way, to some extent, immune the site from long term damage.

#### **2.4.5.2 Blogs**

Whereas the wiki is usually a way of constructing knowledge, a blog is a way of distributing news (Bartolome, 2008). The term weblog, or blog, was coined by Jorn Barger in 1997 and refers to a simple webpage consisting of brief paragraphs of opinion, information,

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personal diary entries, or links, called posts, arranged chronologically with the most recent first, in the style of an online journal (Doctorow, 2002). The majority of blogs also allow visitors to leave a comment below a blog entry.

The key elements of a blog can be summarised as follows:

- There are one or several authors that produce entries
- Visitors can add comments
- New entries and comments do not substitute older ones
- It is possible to subscribe in order to receive news via email or through RSS readers.
- Entries usually include the source of information, thus validating it.

Each post or blog entry is usually tagged with some keywords, allowing for the post to be categorised within the system for future access. This allows the users and viewers of the blog to search for certain topics via keywords and retrieve a list of related posts and entries. Linking is also an important aspect of blogging as it deepens the conversational nature of the blogosphere and it's sense of immediacy. It also helps to facilitate retrieval and referencing of information on different blogs (Anderson, 2007).

The *permalink* is a permanent URL, which is generated by the blogging system for every blog entry. As one of the characteristics of a weblog is to display posts in reverse chronological order, it is apparent that a post will automatically move down the page and eventually into archives as new entries are added. The permalink makes sure the entries are kept in a clear archive format with easy, quick access.

As technology becomes more sophisticated, bloggers have begun to incorporate multimedia into their blogs and there are now photo-blogs, video blogs (vlogs), and, increasingly, bloggers can upload material directly from their mobile phones –mob-blogging- (Anderson, 2007).



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### 2.4.5.3 Tagging & Social Bookmarking

A *tag* is a keyword that is added to a digital object i.e. a picture, video clip or a website. The tag describes the object but not as part of a formal classification system. One of the first large scale applications of tagging was introduced with the del.icio.us website. This launched the *social bookmarking* phenomenon.

Social bookmarking systems have a number of shared attributes (Millen, 2005). They allow users to create their own list of bookmarks or favourites. These are then stored on a remote system (rather than storing them in the user's browser), where they will be shared with other users of the system (creating the social aspect of it). One of the great advantages of social bookmarking over traditional browser based folder bookmarking, is that each bookmark will be associated with one or more keywords (tags). This means a bookmark no longer belongs to one specific folder or category. Instead it can belong to more than one; for example a photo of a baby can be tagged as both 'baby' and 'cute'.

The idea of tagging extends to a variety of digital objects. Services like Flickr (photo sharing) and Youtube (video sharing) are other prominent examples of social tagging, and have attracted millions of users worldwide.

### 2.4.5.4 Multimedia sharing

Without doubt part of Web 2.0's huge success and popularity has been the introduction of multimedia sharing websites, most famous of which are Youtube, Instagram and Flickr. The idea behind these websites is very simple as it is based on the idea of an online data storage system. They allow their users to upload and share their multimedia content on the web. These services take the idea of the *Writable Web*, where users are not just consumers but main contributors of the content.

These services have become so popular that now; millions of people use them and participate in the sharing and exchange of these forms of media, by producing their own videos and photos. This development has only been possible through the widespread

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adoption of high quality, but low-cost digital media technology such as hand-held video and digital cameras and smart phones (Anderson, 2007).

#### **2.4.5.5 RSS and Syndication**

RSS is a family of web feed formats which allows users to find out about updates to the content of the RSS-enabled website, such as blog entries, news headlines, audio, and video—in a standardized format, without having to actually visit the original sites. Instead, information from the website, which is typically a new story's title, synopsis and the original website's name, is collected within a feed –using RSS format- and is *pip*ed to the user in a process called *syndication*.

In order to be able to use a feed, the user must install a software tool called *feed reader* on their computer desktop or on their website. Once the technicalities are over, all the user needs to do is choose which RSS feeds (which websites or blogs or RSS suppliers) they want to receive and *subscribe* to. The client software will then check for updates to the RSS feed periodically, and keep the user updated. The creation of this technology/service has made web browsing a much more pleasant and faster experience, as the users will quickly and easily get updates and will save a lot of time.

#### **2.4.5.6 Social networking**

Web sites that allow people to link to others to share opinions, insights experiences and perspectives, are called *social networking* sites. These sites attract a wide range of users from music fans on MySpace, business contacts on LinkedIn, or classmates on Facebook. Many media sites have adopted social networking features such as blogs, message boards, podcasts and wikis to help build online communities around their content. The main aim of these sites is linking people together and allowing them to communication by providing exciting tools and mediums for them to stay connected.

Most services are primarily web-based and provide a collection of various ways for users to interact, such as chat, messaging, email, video, voice chat, file sharing, blogging, discussion groups, and so on. Social networking has revolutionized the way we

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communicate and share information with one another in today's society. Various social networking websites are being used by millions of people everyday on a regular basis and it now seems that social networking is a part of everyday life. The main types of social networking services are those which contain directories of some categories (such as former classmates), means to connect with friends (usually with self-description pages), and recommender systems linked to trust. Popular methods now combine many of these, with MySpace and Facebook being the most widely used worldwide (Nelson, 2008). According to Facebook stats, it has jumped from having 200 million active users in 2009 (Facebook.com, 2009) to 1.3 billion in 2015 (Statista, 2015). These stats illustrate the huge popularity and vast breadth of these types of services.

#### **2.4.5.7 Mashups**

The term *Mashup* originated in the music industry. It is music that is made up of other songs already released, usually by other artists. In a Web 2.0 context, a Mashup refers to a website that contains information from multiple sources and websites (even though this is usually quite seamless to the user). Sources are usually from third parties using web services. A typical mashup pulls together and combine data from different sources (typically various sites) to create a new service.

Mashups have become popular recently because many web sites which host applications for social networking, photo and video sharing, searching and mapping provide Application Programming Interfaces (APIs) for software developers to use in order to access the original data and make use of it in their own applications. An example of a mashup would be a hotel website integrating Google maps as its address locator, and using a Youtube embedded video to show a full view of its rooms.

Mapping and photo mashups are the most common types of mashups. Some mashups are really portal pages, web sites that display content from several different sources, but the content on the combined page doesn't interact with each other. For example, <http://www.msn.com> is a portal: you can specify the different sites from which it might obtain customized content, such as MSNBC News, Fox Sports, MSN Weather, and Hotmail

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all in one place. However, there is usually no interaction between each of these items. The portal web page is simply a container for all of them (Frydenberg, 2008a).

#### **2.4.6 Technology behind Web 2.0**

“The most prominent technology and quasi standard is *Ajax*, short for Asynchronous JavaScript and XML” (Rollett, 2007). Ajax allows downloading and uploading content from and to a web server using JavaScript from within a web page without reloading the web page as a whole.

The intent is to make web pages feel more responsive by exchanging small amounts of data with the server behind the scenes, so that the entire web page does not have to be reloaded each time the user makes a change, in other words making the load time and inevitably the interaction faster. The content of the page is modified using the Document Object Model (DOM) with JavaScript based on the results of the download or upload process. Ajax communication is most commonly performed using XML (eXtensible Markup Language) which is a development of the original HTML (hypertext markup language). Syndication and remixing of content is usually accomplished by using feeds offered in Atom or RSS formats (Rollett, 2007).

### **2.5 Knowledge Co-creation**

Looking at the current theories within online communities, one can see a range of theories based on various disciplines involved. Knowledge Co-creation, which refers for the co-creation of subjective (opinion/experience based) knowledge, takes place in online communities. This hypothesis is linked closely with other related theories in online communities, which were highlighted earlier. Before discussing examples of this knowledge co-creation, and how it links with other theories within online communities, this research will briefly look at the background literature on the notion of co-creation in order to see where the concept originates from.

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### 2.5.1 What is Co-creation?

The term Co-creation is a term largely used in marketing and business strategy. Co-creation underlines the generation and on-going realisation of mutual firm-customer value. "It views markets as forums for firms and active customers to share, combine and renew each other's resources and capabilities to create value through new forms of interaction, service and learning mechanisms"(wikipedia, 2014). This differs from the traditional market idea of the past, where there were passive consumers and active firms. Co-creation is sharing innovation and product development with partners outside the corporate boundary, being either customers, suppliers or contractors (Tang, 2008b).

On the company-consumer front, where the majority of the literature and articles point towards, there is reference to the *co-created value* or *value co-creation*. Rampen (2009) suggests that this has numerous different shades and is rather a concept at this point in time than a well-rounded theory with substantial academic evidence to support it.

"Value is Co-created with Customers if and when a Customer is able to personalize his Experiences through a product or service – in the lifetime of its use – to a level that is best suited to get his job(s) done." (Rampen, 2009)

Most of the literature refers towards C K Prahalad and V Ramaswamy who introduced the concept in their 2000 Harvard Business Review article, *Co-opting Customer Competence* (Prahalad and Ramaswamy, 2000). They further developed their arguments in their book published by Harvard Business School Press, *The Future of Competition* where they offered examples stating that customers would no longer be satisfied with making yes or no decisions on what a company offers (Prahalad and Ramaswamy, 2013). They argued that value is co-created (created together, as a team) by the company and the customer, rather than being created exclusively by the firm or company. "No longer is the institution the centre of gravity," Ramaswamy explained. "The centre is now the point of intersection between companies and individuals. Interaction is becoming the heart of value creation" (Prahalad and Ramaswamy, 2013). They believe that customers are moving away from the

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traditional idea of buying products and services as transactions, but rather purchases are being part of an experience. This is a trend of jointly creating products, thus being called *co-creation*. They argue that consumers endeavour freedom of choice to interact with the company through a range of experiences. Customers feel the need to interact and transact in their preferred style and language. They want to be able to define their choices in a manner that reflects their view of value (Prahalad and Ramaswamy, 2013). Thus, in co-creation, customers truly feel like they are a part of the company (family, ecosystem, etc.) and that their voice is heard (Rice, 2005).

It is clear that consumer interaction with the company/corporation is at the heart of the idea of co-creation. With the advances in web technology and online interactions, the Internet had the potential to become an essential platform for consumers to be heard. In recent years, this has become the main means of communication and interaction between the firms and their consumers. New communication channels, such as blogs, online forums, and even audio or video podcasts, enabled anyone to broadcast their thoughts and ideas to a wide audience (Tang, 2008b; Tang, 2008a). Ramaswamy explains that at first, consumers aired their grievances while companies became disconnected from customers. However with the help of the web, customers were empowered to voice their opinions and tell them, regardless of whether the company wanted to hear it. Tang (2008a) in his article mentions the story of a blogger called Jeff Jarvis who single handily took down Dell computers back in 2005.

“After a series of disappointing customer service incidents, Jarvis wrote an open letter to CEO Michael Dell, chastising the company for its lack of attention to detail. The letter was picked up by other online bloggers, and instantly became a full-blown virtual hurricane of discontent. Since then, Dell actively reaches out to its customers to get feedback on products and customer service” (Tang, 2008b).

Over the past few years, this interaction has become even more intimate. Consumers are wielding greater influence earlier on in the product development process, and are now

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contributing their ideas even before a product hits the market. Successful companies now rely on seeding community brainstorm and prototyping new product ideas with online collaborators in forums, blogs and persistent virtual environments like Second Life (Tang, 2008b).

Bringing the consumers into the equation, allows for rapid changes to be made during the creation process. This would allow various participants to make suggestions and recommendations, and to learn from each other's mistakes. All this occurs at what many traditional companies would call a breath-taking pace.

### **2.5.2 Advantages of Co-creation**

One of the advantages of co-creation is that it speeds up the entire product development process (Tang, 2008b). The need for the traditional focus groups is certainly reduced and, as Ramaswamy explains, the overall cost of product development decreases as well. "Once you start co-creating, your investment risks go down. You create brand stickiness faster, you create relationships, you deal with people in a more authentic way. This reduces your cost of ongoing interaction." He continues "...and it definitely beats conventional market research and having all these intermediaries between you and the customer. It's much more direct." (Prahalad and Ramaswamy, 2013)

Co-creation can also reduce redundancies. If something is already built, it does not need to be built again. This links in with the open source idea where one shares their product so others can build on it. Developers team up on a project and will then make it freely available to users and other developers. Other developers can work together to build features and add-ons that the original developers did not even envision. This sometimes leads a project to evolve much further beyond the original developer. Tang (2008) mentions the example of Mozilla Firefox as a widely adopted example of open source software. The Internet browser is downloaded for free by the users, where they can customize the functionality with a variety of free add-ons created by third-party developers. Another extremely popular example of this can be seen in Android or Apple's iPhone and iPod devices, where the platform is set for thousands of applications

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developed by third-party developers. The idea has attracted a huge number of users and developers. According to a report by Apple in 2015, an entire industry has been built around app design and development since its launch in 2008, where 627,000 jobs were created in the US alone. The App Store which is a platform to download and purchase these apps, has more than 1.4 million apps for iphones, ipad, and ipod users in 155 countries around the world (Apple.com, 2015).

Another prosperous example is the social networking site, Facebook. In lines with Facebook's vast popularity, the number of applications and developers that use Facebook as a platform are striking. Facebook hosts 500,000 applications, developed by over one million developers and entrepreneurs from more than 180 countries (Digitalbuzzblog.com, 2010).

Co-creation can also foster a new type of competitive advantage. "In general, products and services are becoming increasingly commoditized, so there's not much left in being able to differentiate, and competitive advantage gets eroded" (Tang, 2008b). Interaction is the key to firms differentiating themselves with their competitors. The advantage comes from learning faster what customers and stakeholders value, which in practice allows one to innovate at a greater pace. The increased interaction helps build trust and fosters customer loyalty and even brand advocacy. When customers enjoy the experience they have, they will share much more rapidly. This word of mouth and feedback that comes from the customer is first of all more trusted by other customers and secondly reduces marketing costs for the firm.

One of the big challenges of implementing co-creation is harvesting and selecting the good ideas from the mass, which is being spawned in by external stakeholders. When it comes to feedback and consumer opinion, if the communication channel is successful, the firm is expected to deal with a great quantity of input. Separating the wheat from the chaff and getting the good ideas funnelled to the appropriate internal resources, can be a challenge for the firms (Tang, 2008a).



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Industries, markets, companies, systems and people do not change quickly. One of the downsides of co-creating is that implementing it can be a slow process. Thus it will take quite some time before the whole world is co-creating. Co-creation also challenges many of the habits of managers. To change the mind-set of people within a company, into the way that an external customer thinks, is not an easy task.

Prahalad and Ramaswamy (2013) indicate co-creation involves the following steps:

- Defining clear objectives for the project.
- Creating corporate transparency so that customers have access to information and knowledge expertise within the company.
- Participation and engaging in dialogue. Creating a platform so people can engage on those platforms and create value. The design of the platform may not be open, per se, but on the platform, people can create what they want. Allow people to mess with it; allow them to be more involved. This will allow room for creativity.
- Figuring out who are the right customers to involve in the process. The customers of today might be different than the customers of tomorrow.
- Working with customers to find out what they really want to include in a product or service.
- Designing products or systems jointly to meet those customers' needs. This includes selecting the partners to be included in your network.
- Following through on the ideas that are gathered. Actualize those ideas into products and evolve the design of the engagement platform itself.
- Deciding how to share the value.
- Overcoming internal resistance to change - within seller, buyer and partner organizations. This is a critical step in ensuring that you control the channel.

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### 2.5.3 What is Knowledge Co-creation?

Literature suggest that the notion of co-creation is commonly linked to the business and marketing fields. It refers to the convergence of two parties, the firms and the so called consumers. Research indicates that the interaction between the customer and the firm; forms the idea of value co-creation. The communication and interaction provides the firms and companies with an insight into customer ideas and conceptions, on their products and services. Here there are two main parties, the firm and the consumer; and it is from their interaction that value co-creation is produced.

The concept of co-creation can be reflected in communities where people communicate and exchange ideas and experiences. This can also take place in virtual communities. The difference is that instead of having a two party system, there is only one huge party, and that is the users. The users will be interacting and communicating on a platform. Therefore co-creation is in need of technology, as an underlying essential, to allow for the interactions to take place in their varied forms.

The main factor in co-creation is the element of sharing and communicating. If the communication and interaction factor is taken out of the equation, one can say that no co-creation would take place. For example if there were no interaction, in the form of giving and taking information, between the firm and its consumers, then there would be no value co-creation. There would be no feedback from customers on the products and services. From the other side, the firm will have no appropriate means of communicating with its customers and involving them in essential processes i.e. product design. In essence it is the interaction and collaboration between the parties that leads to co-creation.

The advantages of online communities can also significantly enhance co-creation. For example virtual communities break geographical boundaries, and although people who communicate through them would usually require a common language to communicate, it can still connect a much greater community, who are constrained by physical geographical factors. For a company, who for example sells electronic goods, this means it can get

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feedback and correspondence from its customers around the world. Another attribute of a virtual community is the fact that the communications between the users are asynchronous, which allows the users to read, view an input from other users, and reply in their own time. Bearing in mind that most of the interactions are recorded they can take time to think about their reply or input. This particular characteristic has proved effective in internal knowledge creation. Kanuka (1998) states: "The asynchronous nature of conferencing environments can be an effective stimulation to this type of internal knowledge creation" (Kanuka and Anderson, 1998). Generally these features facilitate co-creation in online communities.

Co-creation in this research refers to the process of forming ideas, interpretations and communications that take place by the users of a community, when they interact and collaborate with each other. Indeed one of the principles of any (online) community is the communication factor. In the same way that the collaboration between the customers and firms produces value co-creation in marketing and business strategy; it is the users' interactions in online communities that generates co-creation.

The form of interaction and collaboration varies based on the type of community and the underlying technology. For example in one community users might communicate, by uploading videos and responding to other videos and comments. In another community users may interact by uploading pictures, tagging, commenting or using other methods of feedback. Depending on the technology, the richness of the interaction will vary. The collaboration between users will allow the construction of co-creation and the technology will facilitate it.

One can argue on a name for the content, which is co-created as a result of the communication. Some may label it as *value*, but this research prefers to give it the *knowledge* tag. This is because the co-creation involves personal experience and interpretations and understandings of users who contribute to the co-creation process. The important issue is that, whatever you label this co-creation as; it is very valued and

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precious to both firms (in marketing) and users (in online communities). The interactions between users stems from their experience and evaluations as they share information and knowledge via the online medium. With the emergence of more interactive technology like web 2.0, the Internet has become a user run factory. The introduction of wikis, Youtube and social networking sites like Facebook, means it is actually the users who are providing and exchanging the content. It is this characteristic that forms one of the main pillars for Web 2.0's popularity. Users share and distribute knowledge online. When this knowledge is shared and passed on through online means to a number of users, it forms knowledge co-creation.

In the same way that value co-creation took place when the firm and consumers started interacting and exchanging ideas and experiences; knowledge co-creation takes place in online communities where knowledge sharing is an inseparable element. Knowledge co-creation can occur in many different instances, from uploading a home made video to writing an official work report and discussing a product. As soon as the information is shared online, it provides the essential ingredients for knowledge co-creation. One may argue whether the co-created value, can be labelled as *knowledge* or not, but what is important here is the fact that the fruit of this co-creation is a useful addition to the users of the community and of great importance.

Web 2.0 and specifically social networking platforms have revolutionised the way sharing takes place. They comprise of a great deal of personal touch, which makes them popular. Users use these platforms to communicate and collaborate on a range of things. The users' interactions are based on their experiences and evaluations and thus allow knowledge and interpretations to be shared and created. This collaboration leads to what we label as co-creation of knowledge.

#### **2.5.4 Examples of Knowledge Co-creation**

Many examples of knowledge co-creation can be found, as there is a vast range of diverse technologies, which enhance online communication. By giving examples of when this

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knowledge co-creation takes place, one can paint a better picture of what this new idea is about and when it takes place.

The examples provided here are based on the researcher's personal experience of various virtual and web 2.0 mediums and platforms.

As co-creation is based on interactions and collaborations, it seems that the most significant cyber environment where co-creation takes place is where the second generation of Internet, Web 2.0, is introduced. Due to the rich nature of web 2.0 technologies and the varied methods of interaction and collaboration, co-creation mostly takes place in online communities, which use these technologies. A great example of this is Facebook. Facebook, which is primarily based on the social network theory provides a unique environment for users to communicate and collaborate in a range of ways. Wherever users communicate with one another, through whatever means, be it through uploading pictures and videos or writing comments and notes; co-creation can take place.

For example Andy posts a picture of the Munich war museum building, which he had taken in his field trip to Germany with his architecture group, on his Facebook account. He tags Lee, his classmate, who missed the trip due to illness. Sophie and Sara who are in Andy and Lee's network of friends, and had been on the trip start commenting on their views of the building and their general perception on architecture in Germany. Referred to the picture from an email notification, Lee views and comments on it, stating that the building looks very old and big and that in his opinion it resembles power. Sara expresses her agreement with Lee's statement by clicking the 'like' button and continues describing a funny incident that took place with their group when they were visiting the museum, when Andy fell off his seat in the middle of one of the introductory speeches. Sophie, who had managed to take a picture of Andy when he was on the floor with all his papers around him and his coffee spilt, provides the link to the picture on her wall and says here is the proof. Andy then goes on admitting how he hates to be the centre of attention in

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crowds. The dialogue about the building and the incident continues and Lee contributes by telling the group what he got up to when they were away.

The above scenario is a very common day-to-day account of interactions that can take place on social networking sites like Facebook. Here each individual puts forward their thoughts, ideas, beliefs and feelings about various events and subjects. They engage in a rich collaboration, which is facilitated by Facebook's web 2.0 technology. They learn, share, argue, acknowledge, and communicate in many ways. The interaction between them creates what we call subjective knowledge. This knowledge, which is based in experience is not measurable, but has great benefits, which the users may not be aware of. The simple picture gives Lee an overview of the monumental building and he can analyse it with his architectural mind. He states his opinion on it. While other people can verify or disagree with him, they share their thoughts on the matter. Here they learn from each other.

In a simple scenario like this; Lee, Sophie and Sara will learn that Andy is not the type of person who likes to be in the spotlight. It reveals a side of his character where they might not have noticed before. This is of value to his friends who are interacting here. They may not realise that the simple reference to his character is of any importance; however this can become valuable when for example his friends are preparing their group presentation. Knowing Andy's lack of confidence when it comes to communicating and dealing with a group of people, they can either give him a smaller part in the presentation, or better still try and help him overcome his dilemma by providing him with more support. Here knowledge co-creation takes place from the interactions of the group. At the same time other users who are friends of either of these individuals or who can view their conversation and comments online, will gain more knowledge about these individuals. The knowledge that is created here from the interactions of the group is called *knowledge co-creation*.

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Twitter is another example where virtual communication and knowledge co-creation takes place. Users broadcast short messages to their friends via tweets. These messages which are usually a reply and answer to “what are you doing?” usually consists of informal collaboration and quick information sharing between a user and his/her online group of friends or followers. It is a much quicker way of communicating with a bigger group than email and instant messaging. Tweets which can range from personal messages to business announcements is a powerful knowledge sharing tool, which can co-create knowledge when users start responding and communicating with each other. They are greatly rooted in the mind-set of each individual and are often a simple reflection of its author’s personality and character. When users reply to each other’s messages they engage themselves in an indirect learning process, which we call knowledge co-creation.

For example when Barry tweets that the Italian hot special pizza at his local take away tasted more like an over spiced cheese and tomato pizza from ASDA, he gets feedback from Mo who had also had the same pizza the week earlier. Here they share their experience; thoughts and opinions on this matter and learn about each other’s eating preferences. From their communications, they can learn for example that Mo usually does his weekly shopping on Friday nights. Or the fact that Barry isn’t that much of a great cook, and prefers to buy take-away food. They can then arrange to go shopping together on a Saturday, as Barry works on Friday evening, and Mo, who is also a good cook, would then help teach Barry make a nice homemade spicy pizza. Here we see from a simple tweet about Barry’s bad experience of the local takeaway’s pizza, they end up learning from each other and co-create this subjective knowledge. This co-created knowledge, which is experience based, can have great practical benefits for them.

Youtube is another example of a knowledge co-creating environment. Users upload various videos ranging from personal video diaries to TV clips and movie trailers. Although Youtube is known for providing a platform for video sharing, a bi-product of this video sharing and communication can be the co-creation of knowledge. Apart from uploading videos users have their own channels where they can add other friends and receive

updates. They can also comment on videos and rate them. A recent development to Youtube has been the addition of responding to an individual's video by posting a response video. The response can then be made as a link under the original video. The various forms of collaboration allow a richer communication between the users. For example Rachel uploads a video on the current political uprisings in the Arab world and specifically Egypt. Khalid, an Egyptian student, replies to her video by a video response, stating that how he disagrees with her idea and why they are not accurate. The discussion continues via the comments sections under each video. Other people join in the discussion and add their videos of the events in Egypt. Throughout the discussion each person reads, hears and watches other people's contributions and in the process co-creates knowledge. This co-creation is not exclusive to the contributors. Others who view the videos and read the comments can engage in the learning process.

Further similar examples of knowledge co-creation can be seen in similar online communities and virtual environments. It is in essence the collaboration and communication between the users that co-creates knowledge.

### **2.5.5 Knowledge Co-creation and other theories**

Knowledge Co-creation hypothesis can be seen as a future addition to the theories within online communities. The concept is a reflection of the results of online communication, which predominantly takes place in virtual communities.

#### **2.5.5.1 Knowledge Co-creation and Social Presence theory**

For the members of the community to be able to express themselves they need to have some sense of presence. This social presence can sometimes play a crucial role in knowledge co-creation. For example the social presence in a social networking site is reflected by the profile entity of the user. Each user has a profile with their information and details. The groups they like, their hobbies, favourite movies, and other general information, which reflect their character. With their profile they have a presence in the community. It is this presence that allows them to communicate and collaborate with others. It seems the stronger social presence they acquire within their online community,



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the better chance of collaboration they will have. And the more frequent this collaboration and communication, the higher the chance of knowledge co-creation.

#### **2.5.5.2 Knowledge Co-creation and Social Exchange theory**

As discussed earlier social exchange theory can be the lifeline of an online community. Users need to benefit from a system for them to go back to it and use it again. One can suggest that knowledge co-creation cannot take place if social exchange is not occurring. It is the core reason behind people's communication. In other word there would have been no communication if there were no reply from other users.

The whole idea of web 2.0 technology is based on reciprocity and a balanced exchange of social material and information. If it was a system of one-way traffic of information, which was what Web 1.0 was mainly about -sites providing information-; we could not see the development of social media nowadays. The success of web 2.0 application and the popularity of sites like, twitter, Facebook and Youtube are based on these two-way interactions. Therefore knowledge co-creation would be non-existent without the social exchange theory.

#### **2.5.5.3 Knowledge Co-creation, Social Network and Social Capital theory**

Users' interactions and associations with various networks and communities define their level of social capital. This means the more networks one is part of, the greater chance of social capital they have, as they are connected to a greater number of people who they can interact with. Social network theory is the connections and relations of each user to other users in its network/s. Therefore the bigger social network connections a user has, the greater social capital he/she will have access to. Their friends will be part of other networks and communities and therefore can co-create knowledge on a greater scale depending on their communications. When one collaborates with them, he/she will be in a better position to someone who has a much more limited network of friends. Therefore social network and social capital theories directly impact knowledge co-creation.

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## **2.6 Web 2.0 and Knowledge**

Recent years has seen a change in how people have used the World Wide Web as it evolved from a tool for distributing information and conducting business to a platform facilitating new ways of information sharing, collaboration, and communication in a digital age (Frydenberg, 2008b). The new set of vocabulary that emerged, as Mashups, Flickr, Facebook, Youtube, Del.icio.us, Twitter, and Wikipedia have come to characterise the variety of interactive applications collectively known as Web 2.0 (Frydenberg, 2008b). Web 2.0 applications use the Web 2.0 platform to deliver software as a continually updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an “architecture of participation”, and going beyond the page metaphor of Web 1.0 to deliver rich user experiences (Yan et al., 2008). On the other hand the importance of knowledge and knowledge management within organisations, corporations and communities is at its peak. The development of the World Wide Web has had its own impact on the process of managing knowledge. So how is this process of knowledge management, sharing and creation affected in the Web 2.0 era?

With the widespread utilisation of Web 2.0 applications and services, which are now hugely available, comes a suitable platform for the sharing, creation and even co-creation of knowledge. The whole idea of collaborating and communicating with a group of people, which is the basis for knowledge transfer, is further enhanced by the creation of rich online and virtual environments. This means easier and quicker access for users, therefore bringing a greater number of people together, increasing the chances of knowledge sharing and creation.

### **2.6.1 Knowledge management**

Knowledge management comprises of practices used by organisations to identify, create, represent, distribute and enable adoption of what it knows, and how it knows it (Yan et al.,

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2008). This has become an established discipline since 1995 where a body of university courses and both professional and academic journals dedicated to it.

Knowledge management programs are now very popular in organisations and are usually tied to organisational objectives such as improved performance, competitive advantage, innovation, developmental processes, lessons learnt transfer and the general development of collaborative practices. Knowledge management is closely linked to what has become known as the learning organisation, lifelong learning and continuous improvement, as that is one of the aims of its existence. However this can be distinguished from Organisational Learning, as it has a greater emphasis on the management of knowledge and cultivation of the channels through which knowledge, information and signal flow (Yan et al., 2008).

### **2.6.2 Web 2.0 for Knowledge Management**

One of the most important steps within the whole process of knowledge management is the knowledge transfer stage. In order to better understand knowledge management with Web 2.0, Yan et al (2008) suggest that one needs to analyze the framework for what is called *knowledge work*.

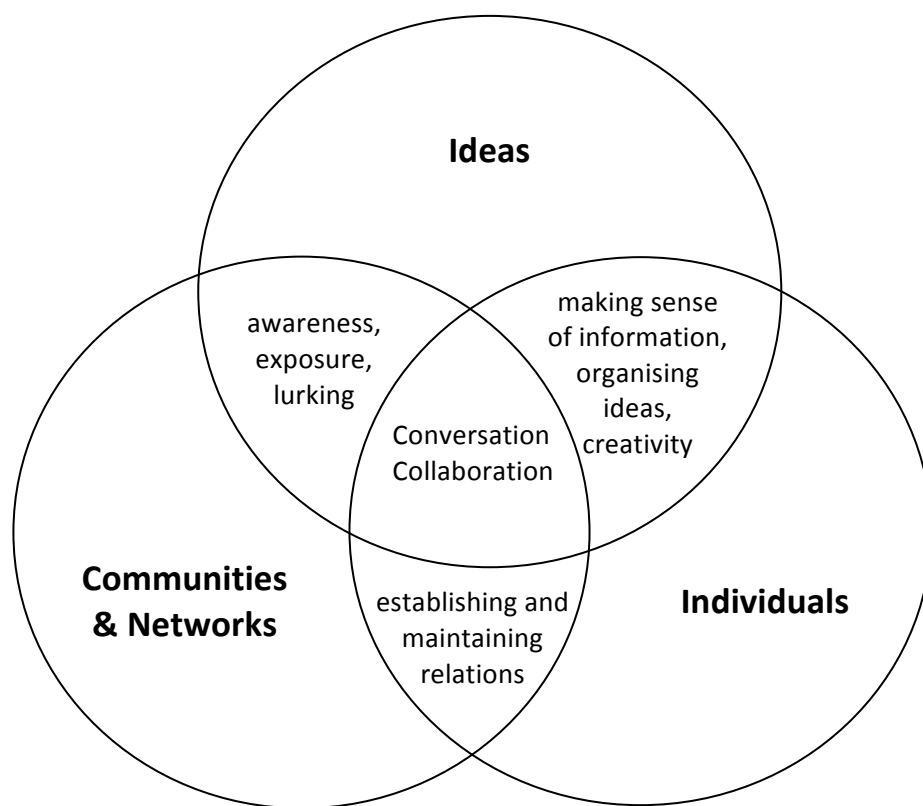
Efimova in 2004, developed a general framework for knowledge work analysis. This framework is suitable for structuring knowledge transfer in a Web 2.0 world and therefore can be used as the model centred on knowledge management processes.

Users of various Web 2.0 applications, who are labelled as *Individuals* in Efimova's framework (figure 2.6) interact with *Communities & Networks*. At the same time they also interact with knowledge work resources like *Ideas* contents and technologies.

#### **2.6.2.1 Individuals and Ideas**

In traditional knowledge transfer, individuals got their ideas by face-to-face interactions with other people. They acquired information through various mediums (hard copy) of information, such as books, brochures, newspapers, TV, radio etc. In the early stages of the Internet, referred to as the Web 1.0 era, Internet became a focal point for acquiring

information, which was then turned into knowledge. However with the application of Web 2.0 services, users have a huge range of various special learning platforms to achieve knowledge in a more convenient form (Yan et al., 2008). Characteristics of Web 2.0 like 'less is more', 'pursuing simplicity', 'efficiency'; lower the complexity for users. Web 2.0 emphasizes on micro-content, re-mixture ability and transformation of the content. Thus with Web 2.0, users can organize ideas and create new knowledge much easier (Yan et al., 2008).



**Figure 2.6:** Framework for knowledge work analysis (Efimova, 2004)

### **2.6.2.2 Individuals and Communities & Networks**

It is undeniable that Web 2.0 greatly relies on social software to provide its services. This means the users and individuals can communicate with others under networks, communities and web groups. They can establish and maintain their relations very easily. Due to the fact that social software covers a large part of Web 2.0 applications, and that

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it's based on interactions between individuals in the form of online groups and communities; it can be said compared to more traditional methods, with Web 2.0, users have more chance to share and transfer knowledge.

### **2.6.2.3 Communities & Networks and Ideas**

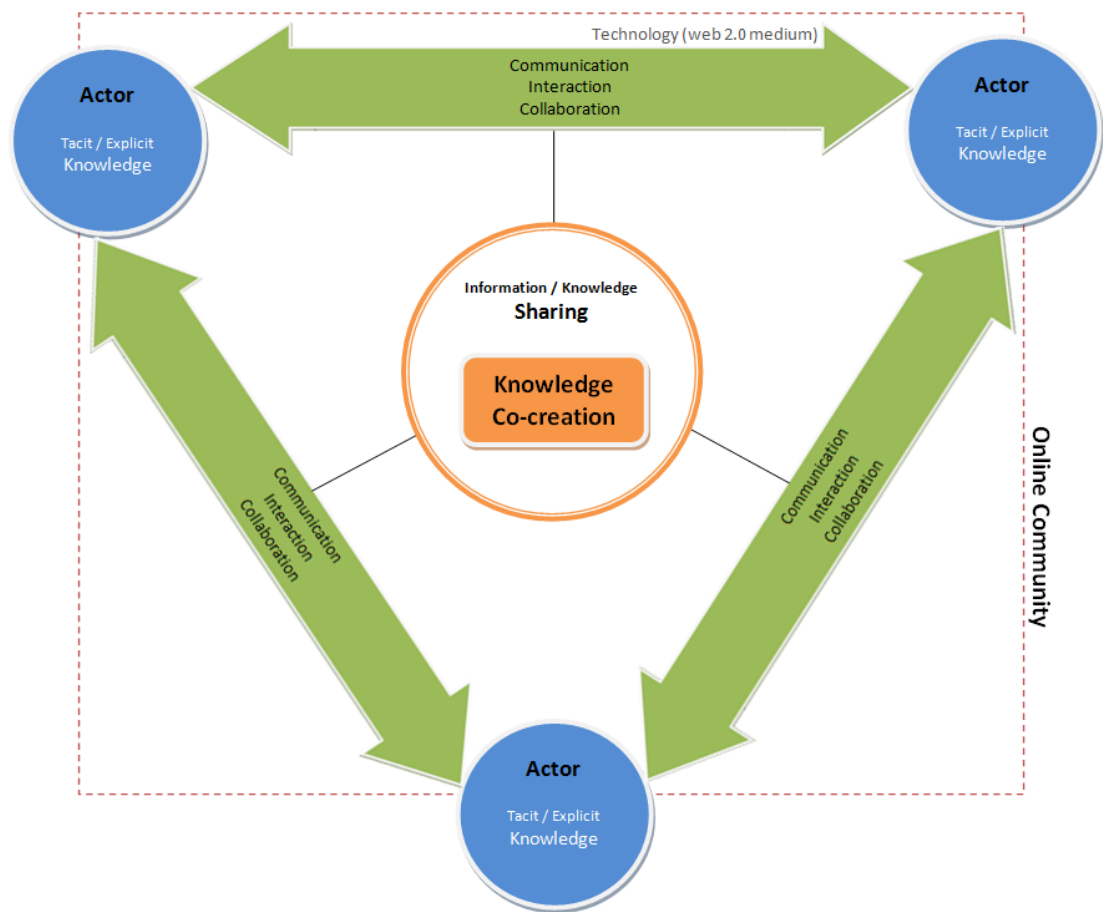
The emergence of new generation of web related technologies and standards are one of the important drivers of behind the development of Web 2.0. Now the web can be used as a platform (Anderson, 2007). It has two principles both content and technology. One consequence of the web as a platform is that there is less emphasis on the software and far more on the application providing the service. The advances on the browser technology has also moved to a new stage in its development with the introduction of what are known as Rich Internet Application (Yan et al., 2008). The key technologies behind Web 2.0, such as Ajax, REST and RSS, make it much easier than ever for communities to exploit readily available content and services by tying them together in new ways i.e. Mashups. This is easier for idea awareness, exposure and lurking and of course ideally suited for knowledge transfer (Yan et al., 2008).

### **2.6.2.4 All the three elements**

At the core of knowledge transfer and this framework, are conversations and collaboration. Users and individuals engage with the community through ideas. The advance in technology means conversations can take a broad range of forms and are no longer limited to online discussion forums or chat rooms. This multiplicity in forms of these discussions and conversations, mean more individuals will be willing to participate in one way or another cross the web in various contexts. In addition, the Web 2.0 approach brings more convenience for individuals to sharing knowledge. The rise of services like blogs, wikis and podcasts mean users can do the same thing at the same time through collaboration. They can share ideas and exchange information, which paves the way for knowledge sharing and creation.

## 2.7 Initial Conceptual Framework

The literature has highlighted the importance of the main three elements within this research: online community, knowledge and the technology, which in this case is mainly focused on Web 2.0. Using these elements to construct a conceptual framework for knowledge co-creation allows the researcher to visualise the phenomenon in its surrounding context. Figure 2.7 illustrates an initial conceptual framework. This was based on the earlier introductory framework model proposed in the introduction chapter.



**Figure 2.7:** Initial knowledge co-creation conceptual framework based on literature review

The members of the community and users who use the system are referred to as actors. They are placed in the online community boundary and communicate, collaborate and

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interact with one another using web 2.0 technologies. The result of their communication is information and knowledge sharing which then produces knowledge co-creation at the heart of the model.

The literature review has provided an important insight into the main three principles underlying this research. However the proposed framework here is only aiming to capture the overall picture of this research's initial idea of knowledge co-creation and its involving elements. It is very important to keep this framework as abstract as possible and avoid unnecessary details that may clog up and block the overall view. It is therefore decided to keep the framework as simple as possible. It is not appropriate –and not the aim of the research- to include all the details of the components found in the literature in the proposed initial framework. Although one can see where the main components of the framework have been drawn out of the literature to form the framework.

The idea of actors within the online community is rooted in the actor network theory within online communities. An example of three actors is illustrated in the framework in order to simply conceptualise their relationship.

In the online community section it was suggested that instead of categorising and describing various types of online communities, it is better to keep fuzzy loose description of them based on the type of communication and collaboration between its members. Therefore the communication, collaboration and interaction elements are illustrated between each actor that can help define the type of online community.

The tacit and explicit knowledge within each actor stems from the literature on knowledge where it was stated that this idea is based on Nonaka's categorisation of the types of knowledge. Additionally, information and knowledge sharing seem to be the basis for knowledge co-creation, and therefore represented on the framework.

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The literature on the underlying technology within online communities also suggested that web 2.0 is the technology behind the vast majority of online communications. Obviously as discussed earlier, this web 2.0 has its own characteristics and features, however it is not suitable to reflect those on our model.

Overall this initial conceptual framework is a simple illustration of the main components. This model will form the basis of investigation of knowledge co-creation in an online community setting in this study.

## **2.8 Summary**

The literature review chapter has five main sections. In the initial three parts, the main elements of knowledge co-creation in online communities were examined in detail. The concepts of the online community, knowledge, and the technology were studied and their related theories highlighted. Due to various definitions of online communities and knowledge, a quick overview of the relevant definitions was given.

At end of the online community section a definition was given for what this research counts as a virtual community. It was stated that an online community is a group of people who are first of all technically online, using an electronic telecommunications medium to interact with one another; secondly are communicating due to a shared interest or goal; and thirdly are governed by a set of policies and rules.

At the end of the knowledge section, it was stated that the knowledge referred to in this work is based on Hassell's idea (2007); that there is no knowledge out side of experience. And experience is always the experience of an individual in a society. This means knowledge is rooted in a human being and a social context. It was also stated that this research adopts the idea of tacit and explicit knowledge from the work of Nonaka (1994).



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His knowledge creating SECI model was also explained as one of the most significant and few pieces of academic work on knowledge creation.

The technology section concentrated on Web 2.0 characteristics and identified it as the technology behind online communities run nowadays. The notion of co-creation was looked at and explained. It was stated that although co-creation is a term mainly used in business strategy and marketing, however its concept can be applied in an online community environment where knowledge is co-created. The chapter then looked at the Web 2.0 technology and concept of knowledge and how they relate and affect one another. The literature review chapter was concluded by proposing an initial conceptual framework for knowledge co-creation in online communities; based on the findings up to now.

## CHAPTER THREE: RESEARCH METHODS

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### 3.1 Introduction

In any acceptable research, the research methodology needs to be appropriate and in accordance with the subject being studied. This chapter will discuss the possible approaches and methodologies for carrying out research in the Information Systems discipline. The possible approaches and philosophical paradigms will be explained, followed by research methods and data collection techniques. Once the possibilities are noted, it will then discuss the chosen research method, stating the reasons for its choice and rejection of other methods.

### 3.2 Research Approach

Creswell identifies three main approaches to research, Quantitative research, Qualitative research and Mixed Methods approach (Creswell, 2003).

Quantitative research methods were originally developed in the natural sciences to study the natural phenomena (Myers, 2013). Quantitative research tends to concentrate on quantities in the sense that numbers come to represent values and levels of theoretical constructs. Here the concepts and the interpretations of the numbers are viewed as strong scientific evidence of how a phenomenon works.

The presence of quantities is so predominant in quantitative research that statistical tools and packages are an essential element in the researcher's toolkit. Sources and context of data are of less concern in identifying an approach in such research. The conclusions and evaluations are based on empirically derived numbers which lie at the core of the scientific

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evidence assembled. Here the researcher is motivated by the numerical outputs and how to derive meaning from them (Straub et al., 2004).

Examples of quantitative methods now well accepted in the social sciences include survey methods, laboratory experiments, formal methods (e.g. econometrics) and numerical methods such as mathematical modelling (Myers, 1997).

Qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena (Myers, 1997). They help researchers understand people and what they say and do and the social and cultural context they live in.

One of the main advantages of qualitative research is that it allows the researcher to observe and understand the *context* within which decisions and actions take place (Myers, 2013). When studying human decisions and actions, it often becomes apparent that the only way of understanding them is by paying attention to their context. Thus it is the context that helps *explain* why someone acted the way they did. Qualitative researchers argue that if you want to understand peoples' motivations, their reasons, their actions and the context for their belief and action in an in-depth manner, qualitative research is the best form of research (Myers, 2013). As Kaplan and Maxwell (1994) suggest, the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context will largely be lost when textual data are quantified.

Examples of qualitative methods are action research, case study research, ethnography and grounded theory. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions (Myers, 1997).

The third notion, which is variously called multi-strategy (Bryman, 2004), mixed methods (Creswell, 2003), or mixed methodology (Tashakkori, 1998) research, is a mixture of qualitative and quantitative approaches (Bryman, 2006). Mixed methods research by

definition is inline with methodology combination, which essentially requires multiple worldviews (i.e., combination of qualitative and quantitative research methods). Mixed methods research, uses quantitative and qualitative research methods, either concurrently (independent of each other) or sequentially (findings from one approach inform the other), to understand a phenomenon of interest (Venkatesh et al., 2013).

From the above three research approaches, quantitative and qualitative methods are the most accepted approaches in Information Systems (Myers and Avison, 2002). The next section will take a closer look at these two approaches.

### 3.2.1 Quantitative vs Qualitative

There are many different ways of categorising research, but as stated earlier the most established categorisation falls under quantitative and qualitative research methods. Myers (2013) provides an overall list of examples for each of these categories (Table 3.1)

<b>Qualitative research</b>	<b>Quantitative research</b>
<b>A focus on text</b>	<b>A focus on numbers</b>
Action research	Surveys
Case study research	Laboratory experiments
Ethnography	Simulation
Grounded theory	Mathematical modelling
Semiotics	Structured equation modelling
Discourse analysis	Statistical analysis
Hermeneutics	Econometrics
Narrative and metaphor	

**Table 3.1:** Examples of qualitative and quantitative research (Myers, 2013)

Qualitative research data are mainly a record of what people have said. For example interviews, which are the most common technique for collecting qualitative data according to Myers (2013), record what one of the informants said about a particular

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topic. "In all cases the qualitative data can help us to understand people, their motivations and actions and the broader context within which they work and live." (Myers, 2013)

Quantitative research in general is best suited if one wants to include a large sample size and intends on generalizing to a large population. In such case the researcher will look to study a particular topic across many people or organisations. They will try to analyse their data using various statistical techniques to find patterns and trends that apply in different situations.

The major disadvantage of this method, as a general rule, is that the researcher will lose or ignore many of the social and cultural aspects of the organisation. The *context* is usually treated as *noise* or as something that gets in the way (Myers, 2013). In other words there is a trade off between the context and generalisation across a population.

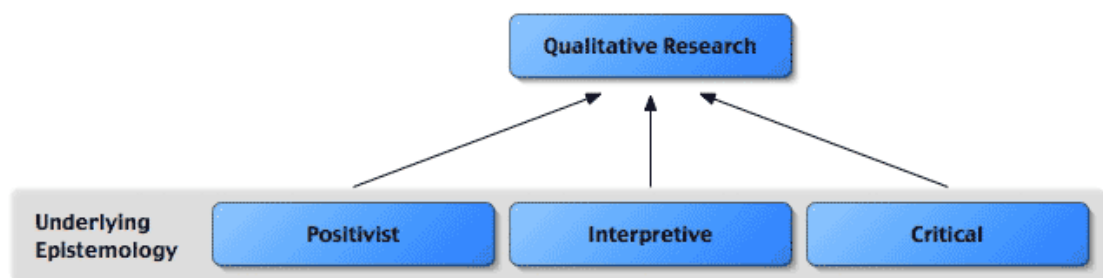
The qualitative research is used for studying a particular subject in depth and extensively. It is mostly beneficial for exploratory research when the topic of research is new and there is not much previously published research on the topic. Qualitative research is also ideal for studying the social, cultural and political aspects of people and organisations (Myers, 2013).

The big downside of this type of research is that it often becomes difficult to generalise to a larger population. You can generalise from qualitative research, but not by sampling as the research is in depth, extensive and time consuming. For example if a researcher conducts three in-depth case study researches of three organizations, a sample size of three would not be much different than one. Therefore they say it is normally impossible for qualitative researchers to make generalisations from a sample to a population. Although you can generalise from qualitative research to theory, and you can generalise from just one case study or one ethnography (Klein and Myers, 1999; Lee and Baskerville, 2003; Yin, 2013; Myers, 2013).

### 3.3 Philosophical Paradigms

All research approaches (whether quantitative, qualitative or mixed-methods) are based on some underlying assumptions about what constitutes 'valid' research and which research methods are appropriate. In order to conduct and/or evaluate any research, it is therefore important to know what these (sometimes hidden) assumptions are (Myers, 1997). In this research, the most important philosophical assumptions are those, which relate to the underlying epistemology, which guides the research. Epistemology refers to the assumptions about knowledge and how it can be obtained.

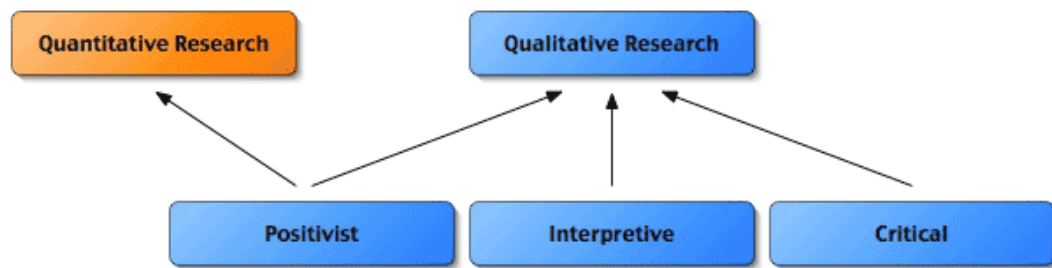
Myers (1997) follows on from Orlikowski and Baroudi (1991) and suggests three philosophical research paradigms: Positivist, Interpretive and Critical research.



**Figure 3.1:** Epistemological Assumptions for Qualitative Research (Straub et al., 2004)

Figure 3.1 shows how, for qualitative research, the basic epistemological positions to choose from are threefold: positivist, interpretive, or critical. In the case of quantitative research however, the interpretive and critical positions are not meaningful; only the positivist one is.

The positivist epistemology relies on a host of scientific methods that produce numerical and alphanumeric data (Straub et al., 2004). Accordingly, epistemological assumptions for both quantitative and qualitative research are represented in Figure 3.2.



**Figure 3.2:** Epistemological Assumptions for Qualitative and Quantitative Research (Straub et al., 2004)

It also needs to be stated that although these research epistemologies are philosophically distinct (as ideal types), in the practice of social science research these distinctions are not always so clear-cut (Lee, 1989). The three philosophical perspectives are discussed below.

### 3.3.1 Positivism

Positivism is the oldest of the three paradigms discussed here. It underlines what is called ‘the scientific method’, the approach to research in the natural sciences such as physics, chemistry, biology, and metallurgy (Oates, 2006). Positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments. “Positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena” (Myers, 1997).

The positivist epistemology relies on a host of scientific methods that produce numerical and alphanumeric data (Straub et al., 2004). Orlikowski and Baroudi (1991) classified Information Systems research as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to stated population.

### 3.3.2 Interpretivism

Unlike positivism, interpretive studies do not prove or disprove a hypothesis, but try to identify, explain, and understand how all the factors in a particular social setting, like

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within an organization, are related and interdependent. They look at how people see the world as individuals or groups, and try to understand the phenomena through the meanings and values that assign to them (Oates, 2006). The aim is to create a rich understanding of a possibly unique context and 'an organized discovery' of how human agents make sense of their perceived worlds, and how those perceptions change over time and from one person or group to another (Checkland and Holwell, 1998).

Interpretive researchers assume that access to reality is only through social constructions such as language, shared meanings, consciousness and instruments. Interpretive research does not predefine dependent and independent variables, but focuses on the full complexity of human sense making as the situation emerges (Kaplan and Maxwell, 1994). It is seen that in general, the research methods and tools of the natural sciences are not appropriate for the study of social and organisational phenomenon. Social scientists believe in order to understand a particular social or cultural phenomena, one needs to look at it from 'inside' and not from a distant external researcher. In other words, a social researcher must already speak and understand the same language as the people being studied, if he or she is to understand any data at all. They are like 'subjects' and are just as much interpreters of social situations as the people being studied. Therefore interpretive researchers tend to focus on meaning in context. Their aim is to understand the context of a phenomenon, since the context is what defines the situation.

Myers (2013) illustrates the importance of context by giving a simple example. Think about what the following question mean: 'Did you watch the football last night?' The answer to this question can vary depending on your background and which country you live in. In order to understand the question correctly you need to know what the speaker means by the word 'football'. One would know the answer to this by looking at the context within which the speaker asked the question. If for example the speaker was English and an passionate fan of Manchester United football club, one would know that the reference to football in the question refers to 'soccer'. However if an American living in Chicago, being



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an ardent fan of Chicago Bears, would have asked the question, his or her reference would have been about American football.

The idea in this example is that the meaning of a particular word depends upon its context within a sentence, paragraph, or culture and without an understanding of a broader context it would be impossible to understand the correct meaning of the data. Similarly the meaning of a social phenomenon depends upon its context, the context being socially constructed reality of the people being studied.

### **3.3.3 Critical Research**

Critical research in information systems, which is less known and accepted than other forms of positivist and interpretive, is concerned with identifying power relations, conflicts and contradictions, and empowering people to eliminate them as sources of alienation and domination (Oates, 2006). Researchers in the critical research paradigm, like the interpretivists, believe that social reality is created and re-created by people. But then they go on further to say that social reality also possesses objective properties that tend to dominate our experiences and ways of seeing the world. Critical researchers believe that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researchers consider that their ability to do so is constrained by various forms of social, political and cultural dominance. Therefore not all interpretations are given the same weight in any social situation and some are preferred over others (Myers, 2013). Rather than simply describing current knowledge and beliefs, critical research's idea is to challenge those prevailing beliefs, values, and assumptions that might be taken for granted by the subjects themselves.

"The main task of critical research is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Critical research focuses on the oppositions, conflicts and contradictions in contemporary society, and seeks to be emancipatory i.e. it should help to eliminate the causes of alienation and domination." (Myers, 1997)

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## **3.4 Research Methods**

There are various types of research methods and techniques. The section below will highlights the main methods used within the field of information system research.

### **3.4.1 Surveys**

The idea of a survey is that one can obtain the same kinds of data from a large group of people or events, in a standardized and systematic manner, and then look for patterns in the data, where it can then be generalised to a larger population, than the group targeted. It is very common to assume that a survey will use a questionnaire for its data collection method. However as Oates (2006) states, “surveys are also possible using other data generation methods such as interviews, observations, and documents.” (Oates, 2006)

Surveys can produce a lot of data in a short period of time at a reasonably low cost. Surveys via postal or web questionnaires, observations or documents are suited methods for people who do not posses very good communication skills.

One of the main disadvantages of surveys is that they lack depth and richness. Instead they focus on breadth of coverage. This is something in complete contrast to this research as this study is examining in depth, the co-creation of knowledge within online communities, which requires extensive research on the subject. Here the scope and span of the research is not important as it is now just trying to understand the co-creation process and build up a credible hypothesis.

Surveys provide snapshot data collections and lose out on examining the on-going processes and change throughout a period of time. With postal, Internet and telephone surveys researchers cannot judge the accuracy or honesty of people’s responses by observing for example their body language. Surveys are also very much associated with collecting data that can be counted and measured and subject statistical analysis. This is

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while aspects of research that cannot be reduced to numbers may be overlooked (Oates, 2006).

### **3.4.2 Experiments**

In academic research, an experiment is a strategy that investigates cause and effect relationships, seeking to prove or disprove a causal link between a factor and an observed outcome (Oates, 2006). This method is very common in the field of physical sciences (i.e. physics and chemistry) and with positivist researchers. Therefore in short an experiment is designed to prove or disprove a hypothesis or theory via a clear and comprehensible method.

Experiments are a well-established strategy, which is seen by many as the most 'scientific' and therefore acceptable approach. They also allow researchers to stay at their normal place of work, without the time and costs incurred by visiting field sites. They are however criticised for creating artificial situations, which are not comparable to the real world. This would not be a suitable mean of approach as a lot of things in this research are not clear and ambiguous. There are notions which are new, and concepts which have not been studied before. The research is aiming to explore ideas and therefore it cannot draw up a clear plan of experiment for this research.

### **3.4.3 Case Study**

Case study research is the most common qualitative method used in information systems (Orlikowski and Baroudi, 1991; Alavi and Carlson, 1992). Although there are numerous definitions, Yin (2013) defines the scope of a case study as follows:

"A case study is an empirical inquiry that:

Investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." (Yin, 2013)

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A case study focuses and investigates on one instance of an organization, a department, an information system, a community, a development project and so on. This instance or case is studied in depth using data collection methods such as interviewing, observation, documents analysis, and questionnaires. Case study research can be positivist, interpretive, or critical, depending upon the underlying philosophical assumptions of the researcher (Myers, 1997). Yin (2013) and Benbasat et al. (1987) are supporters of positivist case study research, whereas Walsham (1993) is a believer of interpretive in-depth case study research. Oates (2006) lists the advantages of the case study research as follows:

- Case studies can deal with complex situations where it is difficult to study a single factor in isolation.
- It is both suitable for theory building and theory testing.
- It is appropriate for situations where the researcher has little control over events.
- It allows the researcher to show complexities in life and to explore alternative meanings and explanations.
- It produces data that is close to people's experiences and can be more accessible than highly numeric studies.

These advantages make case study research a suitable method for this research. As the concept of knowledge has its own complexities and needs close examination, case study research can provide the right attention to the phenomenon of knowledge co-creation. Myers (2009) states one of the advantages of case study research is that it allows researchers to explore or test theories within the context of a messy real-life situation. These situations are never as neat and tidy as the theories. For example there may be multiple, of the same situation, or a chief executive officer (CEO) might have many reasons for carrying out a particular action, some personal, some professional and some based on rational business principles. These types of complexities can only be brought out via a research method that allows a researcher to get close to the action, and the case study approach does.

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Case studies have their disadvantages too. They are sometimes seen as lacking rigour and leading to generalise with poor credibility. It can be difficult and time-consuming to negotiate access to the necessary settings, documents and people. Sometimes the presence of the researcher can have a negative effect and people may behave differently, and the researcher will end up with an artificial (or unrealistic) study.

### **3.4.4 Action Research**

There are numerous definitions of action research, however one of the most widely cited is that of Rapoport's, who defines action research in the following way:

“Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework.” (Rapoport, 1970)

Action research is a research method that solves immediate practical problems while expanding scientific knowledge (Avison et al., 1999). Unlike other research methods, where the researcher seeks to study organizational phenomena but not to change them, the action researcher is concerned with creating organizational change and simultaneously studying the process (Baburoglu and Ravn, 1992). Although there are many different forms of action research (Baskerville, 1999; Baskerville and Wood-Harper, 1998), all are based on collaboration between researchers and practitioners.

Action research can bridge the gap between the rarefied academic world and the everyday world of most people. It is particularly suitable for creation of system development and problem solving methods. On the other hand it is not yet known and accepted by many computer and information systems researchers (Oates, 2006). It is also criticized for limited use of its results, as it may not be applicable to other situations. Action research can sometimes be confused with consultancy and finally it can be difficult to meet the needs and expectations of everyone involved.

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Action Research would not be a suitable research method for this research, as it requires more of an observation on the co-creation process, and less of becoming involved in the case. Action research is strongly oriented towards collaboration and change involving both researchers and subjects. The distinctive feature of action research is that the researcher deliberately intervenes while at the same time studies the effect of its own intervention. This is very much different with other research methods, where the researchers try not to intervene with their subject matter. This research is trying to understand a phenomenon by observation of a system in its context. There is no involvement and collaboration with the subject, and thus this research method is deemed unsuitable for this research.

### **3.4.5 Ethnography**

Ethnography means a description of peoples or cultures (Oates, 2006). Ethnographic research comes from the discipline of social and cultural anthropology where an ethnographer is required to spend a significant amount of time in the field. Ethnographers immerse themselves in the lives of the people they study (Lewis, 1985) and seek to place the phenomena studied in their social and cultural context. Ethnography is now widely used in the study of information systems in organizations (Myers, 1997).

Ethnography is considered as one of the richest research methods in information systems research. It provides a detailed picture of a particular situation putting events and practices into context rather than picturing one or two aspects in isolation. The findings do not emerge from an artificial experimental setting, but from the natural setting and lives of the people studied. It is a good way of understanding complex and embedded social systems, which are not fully understood. It is also used to study something over a long period i.e. the introduction of a new information system and how people adapt it over time (Oates, 2006). In ethnography, the researcher has enough time to extensively study the system and see the unwritten rules of how things work, or meant to work. These unwritten rules are rarely verbalised, but can be discovered by patient ethnographic fieldwork. The method of discovery is one where everything is seen in its context. One of the most crucial elements for an ethnographer is context. In many quantitative researches, context is seen as something that can get in the way and be a nuisance. In ethnographic

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research, however, context is the very thing that is being sought after (Harvey and Myers, 1995). Understanding actions and beliefs in their proper context provides the key to unravelling the unwritten rules and taken-for-granted assumptions in an organization. The main task of the ethnographer is to observe and analyze the context so that meaning in context can be obtained.

Myers (2013) describes four approaches to ethnographic research: The Holistic School, The Semiotic School, Critical Ethnography and Netnography.

In The Holistic School believes that the ethnographer should go 'native' and live in the group just like the local people. They assume that the researcher has to become like a blank slate in order to fully understand the local social and cultural practices. In this approach the researcher acts like a sponge, absorbing and soaking up the language and culture of the people under study (Myers, 2013).

The Semiotic School, says that anthropologists do not need to have empathy with their subjects. Rather the ethnographer has to search for words, institutions, images, behaviours – with respect to one another and to the whole that they comprise. They say that anthropologists need to understand the 'webs of significance' which people weave within the cultural context, and these webs of significance can only be communicated to others by thickly describing the situation and its context.

Critical ethnography sees the ethnographer as an emergent process, in which there is a dialogue between the ethnographer and the people in the research setting. Critical ethnographers tend to concentrate on scrutinising hidden agendas, power centres, and assumptions that inhibit, repress and constraint.

Netnography is the term used for the study of culture and communities on the Internet. Instead of conducting fieldwork in the 'real' world and physical communities, netnography involves the study of culture through computer mediated communications. The data is

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gathered through participant observation and interactions with members of an online community.

Ethnography in general can be a useful research method for this research due to its depth and richness. It can comprehensively examine the concept of co-creation in an online community environment.

One of the main downsides of ethnography is that it takes a lot of commitment and time, as everything that happens needs to be written up and analysed. Not only it takes a long time to do the fieldwork, it also takes a long time to analyse the material and write it up. Although ethnographic research is considered to be very time consuming, it is nevertheless a very productive research method considering the amount, and likely substance, of the research findings (Myers, 2013).

Another disadvantage of ethnography is that the study is always under the danger of becoming biased, as everything is being recorded by the one author, who is inevitably biased and sees things from his perspective. This however can be said for any interpretive research, as the analysis and evaluation relies on the author's understandings and opinion. One of the other disadvantages of ethnography is that the in-depth study of one situation may not produce findings that are relevant to any other situation. In other words it does not have much breadth, which leads to in-depth knowledge only of particular context and situations. This can however be said for any qualitative research. Although it would not be true if the findings can be linked to established theories and concepts in the area. It is then that even one study can be generalised and used in order to understand other similar situations. Walsham (1995) states that generalizations can take the form of concepts, theories, specific implications or rich insights.

### **3.4.6 Grounded Theory**

Grounded theory is a research method that seeks to develop theory that is grounded in data systematically gathered and analysed (Myers, 1997). According to Martin and Turner, grounded theory is "an inductive, theory discovery methodology that allows the



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researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data" (Martin and Turner, 1986). The major difference between grounded theory and other methods is its specific approach to theory development - grounded theory suggests that there should be a continuous interplay between data collection and analysis (Myers, 1997).

Grounded theory is very useful in developing context-based, process-oriented descriptions and explanations of organizational phenomena. It offers relatively well-signposted procedures for data analysis (Urquhart, 2000) and potentially allows for the emergence of original and rich findings that are closely tied to the data (Orlikowski, 1993). It can be noticed from various definitions and descriptions of grounded theory that the researcher does not start with a set of hypotheses that he or she seeks to test. Rather the concepts and theories are supposed to emerge from the data. For the concepts to emerge solely from the data, the researcher needs to make sure that he or she has no preconceived theoretical ideas before starting the research. It is for this reason that some interpreted grounded theory in a way that suggests the researcher should not carry out a literature review before starting the empirical study. However the originators of the idea did not argue against conducting a literature review per se; they only argued that the researcher should make sure that reading of prior literature does not stifle creativity (Urquhart and Fernandez, 2006). Therefore it would be fine to conduct a literature review before starting grounded theory study. However the grounded theory researcher must be careful to avoid having preconceived theoretical ideas about what he or she might find out. In general grounded theory is particularly useful for studying regular, repeated processes.

One of the disadvantages of grounded theory is that it is very labour intensive and difficult to use with large samples. Grounded theory cannot be used for confirmatory purposes and draws heavily on the conceptual skills of the researcher. Also, the results are often hard to report succinctly because of the need to use transcripts to demonstrate validity (Woolley et al., 2000).

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Grounded theory would not be a suitable method for this research as it seeks to develop theory that is grounded in data, which is systematically, gathered and analysed (Myers, 1997). Whereas in this research this may not be necessarily the case. The understanding of knowledge co-creation must rely on some preliminary theories about online communities and social interactions. And the results of the study may not lead to a new theory as such. Therefore it is important not to restrict and tie the research to possible theories as the outcome. Another point is that this research does not have any data collection in its classical sense.

### **3.4.7 Data Collection**

There are various data collection methods, which are popular in information systems research, including observations, interviews, questionnaires and document analysis.

#### **3.4.7.1 Observations**

To observe is to watch and to pay attention to. It involves seeing, hearing, noting, analysing, forming theories, imposing meaning and making inferences (Oates, 2006). Observation is a direct data collection method and there is no connection or ties in between your data collection and analysis. Researchers observe people to see what they actually do, not what they declare they do. Observation as a data generation methods can be used with any of the research strategies mentioned earlier on.

Oates (2006) names two types of observation, covert and overt. In covert research the people being observed do not know, and the researcher acts like a spy. The advantage of this approach is that the researcher is likely to get a realistic view of how things work, and how interactions genuinely take place. The obvious and main problem with it is that it can be classed as unethical as the people being observed do not know about the research and have not given consent for it. Some say it can still be ok if the research is done in public places and where people know that strangers maybe watching (Oates, 2006).

In overt research people know they are being observed and it is therefore a lot more ethical as people can give their consent. Some argue however, that sometimes people may

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be forced in a way to give consent and also the fact that people may act differently if they know they are being observed. Thus the researcher will not get realistic results.

Observation can be a suitable data collection method for this research as it mostly involves looking and understanding how things work in their normal state. With unobtrusive or covert observation one can get a rational view of how members of a community communicate and collaborate through the various means of technology. This allows the research to expand its understanding of the new notion of knowledge co-creation and from that build the conceptual framework and maybe draft a hypothesis. As this research has an exploratory approach towards a novel phenomenon, it requires a method that mainly observes and analyses the actions and interactions between various stakeholders. This itself is the main structure for the research.

#### **3.4.7.2 Interviews**

An interview is a particular type of conversation. Interviews usually have a set of normal assumptions. Usually one person will have a purpose for undertaking the interview i.e. want to gain information from the other individual or group. Thus the interview does not happen by chance.

There is also an agenda, as particular issues will be raised. The researcher will guide the overall direction of the interview. A research interview cannot be carried out covertly; therefore it has a safety net for being ethical.

Oates (2006) states "interviews can be suitable data generation methods when a researcher wants to:

- Obtain detailed information;
- Ask questions that are complex, or open-ended, or whose order and logic might need to be different for different people;
- Explore emotions, experiences or feelings that cannot easily be observed or described via pre-defined questionnaire responses;

- Investigate sensitive issues, or privileged information, that respondents might not be willing to write about on paper for a researcher that they have not met.”

The interview method would not be a suitable data collection method as this research is in the early stages of actually discovering a phenomena or a framework (between the three notions of communities, technology, and knowledge). This research is not using a case study as an example to explain and back up a framework. It is using a conceptual framework to explain the case study. Therefore here the case study would not be at the heart of the research, rather a conceptual framework will. Also the notion of co-creation is a new notion and it can be created unintentionally. It would be thus meaningless to interview people about something they are not aware of. Even if it was going to interview, who would be interviewed and with what aim? It is clear that the answers that one would get from directly interviewing the stakeholders of the case study would not be of much benefit to this research. Consequently the interview technique would not be a suitable data collection method.

### **3.4.7.3 Questionnaires**

A questionnaire is a predefined set of questions, assembled in a pre-defined order. In other words a questionnaire is a document that is used to obtain information from a respondent without an interviewer having to be present. Questionnaires can be self-administered where the respondent completes the questions without the presence of the researcher. Or they can be researcher-administered where the researcher is present and asks the questions and records the responses (Oates, 2006). This can be like a structured interview.

Questionnaires are best used in cases where the researcher needs to gather data from a large number of people in an economical fashion. Though in that case, the questions need to be brief and uncontroversial. The gathered information can then be easily collected and compiled for statistical purposes.

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The drawback is that they may be difficult to design. Also the responses may be inadequate, as people usually avoid putting their opinions and ideas in writing, although they would verbalise it in an interview.

Similar to interviews, the questionnaire technique focuses on a direct form of gathering data from the required group. This form of data collection as mentioned before would not be of much use to this research as there is no set target group to investigate. There can be many stakeholders involved in online communities and their direct or indirect input would not be of benefit to the research at this stage.

#### **3.4.7.4 Documents**

Another source of data is documents. They can be divided into two categories: found documents and researcher-generated documents (Oates, 2006).

Found documents are documents that already exist prior to the research i.e. documents in an organization: profit/loss accounts, list of sales etc. Researcher-generated documents are documents put together for the purpose of the research task, which would not have existed otherwise i.e. researcher undertaking ethnographic research may take some photographs, which would not have existed if the research was not being carried out.

Data in the form of documents is relevant in this research as it can help understand the underlying theories and ideas behind fundamental concepts related to the research. Looking at current work and the theories behind online communities, social collaboration, web 2.0 technology, and co-creation are much needed to construct a conceptual framework. Apart from the literature the research can use documents to understand how the case study is meant to run.

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## **3.5 Choice of Research Method**

This section will now discuss the approach and methods that this research is going to follow. Reasons for the choice of methods will also be given.

### **3.5.1 Research Context and Approach**

This research is investigating the phenomenon of Knowledge Co-creation in online communities. It tries to investigate the factors that help knowledge co-creation in an online community setting. In order to reach answers it also needs to look at the role that the technology and online community play in this co-creation. Previous works have concentrated on in-depth work on online communities and knowledge management, while there seem to be a lack of focus on collaborative knowledge creation (co-creation); especially in online communities.

The main question of this research is investigating how knowledge is created and co-created in online communities. “The question of the nature of knowledge is very challenging” (Martensson, 2000). This quote supports the idea that knowledge itself is a difficult entity to study and to be able to explore it we need extensive in-depth research and analysis. Investigating communities and people in a social context, also requires thorough research.

Myers (1997) states: “Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live”. Therefore it seems that the more suitable research approach for this investigation is a qualitative approach. The fact that the question which is being asked is a ‘how’ question means one should be interested in the details of how the phenomena, knowledge creation, takes place, which would be very difficult to find by a quantitative method. This is due to the fact that the nature of knowledge is not in the form of data that can be easily calculated and measured, and therefore a quantitative approach will not be suitable.

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### 3.5.2 Philosophical Paradigm

Trauth's (2000) suggests that an important influence on the choice of research method is the theoretical lens that is used to frame the investigation. By theoretical lens, Trauth is referring to the philosophical issues of epistemology and a choice among positive, interpretive and critical studies. The starting point for researchers is to identify one's philosophical and theoretical assumptions leading to a choice of an appropriate methodology (Rowlands, 2005). The following paragraphs make explicit this research's fundamental assumptions about the nature of knowledge (epistemology), and the nature of ways of studying the phenomena (methodology).

Researchers in the positivist paradigm generally assume that reality is objectively given and can be described by measurable properties, which are independent of the researcher (observer) and his or her instruments (Myers, 2013). This is while the research question and investigation is around the concept of knowledge, which is very difficult, if not impossible, to measure. It was mentioned earlier that Orlikowski and Baroudi (1991) classified Information Systems research as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to stated population. Therefore based on this interpretation, this research cannot take a positivistic approach as none of the above holds true. The research is simply trying to explore the notion of co-creation in online communities. There is no set hypothesis to test. In fact, the research is trying to find out if a hypothesis can be built based on the current study of such phenomenon and hopefully come up with a conceptual framework for this process of co-creation.

On the other hand, the interpretive approach studies try to identify, explain, and understand how all the factors in a particular social setting, like within an organization, are related and interdependent. It looks at how people see the world as individuals or groups, and tries to understand the phenomenon through the meanings and values that is assigned to them (Oates, 2006). This type of paradigm, suites this type of investigation as what is going to be investigated needs observation and interpretation of the researcher in

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order to make sense of the information in the scenario. Here the research is trying to understand co-creation, and therefore would need to take the interpretive approach to try and identify the process of knowledge co-creation. Myers (2013) suggests that the research methods and tools of natural sciences are seen as being inappropriate for the study of social and organizational phenomena. This is while the research has a great emphasis on the social and community side of co-creation as it investigates online communities. Interpretive approach allows the research to be socially investigated, taking into account the people and the context around them.

Although critical research is similar to interpretive research, but its main difference is that it concentrates mainly on the restrictive and alienating conditions of the status quo. While this may be of importance depending on the research, it may be a better approach as a follow up to this interpretive research.

The research approach needs to be consistent and compatible with the epistemological and ontological assumptions that the world and reality are interpreted by people in the context of historical and social practices (Rowlands, 2005). Also experience of the world is subjective and best understood in terms of individuals' subjective meanings rather than the researcher's objective definitions. Therefore by choosing the assumption of subjectivity and interpretivist methods for this research, it claims that the aspect of the phenomena under investigation – knowledge co-creation – is too complex to define and measure objectively.

Not only interpretive research emphasise on the socially constructed nature of reality, it also acknowledges the intimate relationship between the researcher and what is being explored, and the situational constraints shaping this process. As stated earlier, in terms of methodology, interpretive research does not predefine dependent or independent variables, nor does it set out to test hypotheses, but aims to produce an understanding of the social context of the phenomenon and the process whereby the phenomenon influences and is influenced by the social context (Walsham, 1995).



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The interpretive philosophical approach gives the research a certain degree of freedom to explore and discover the phenomena, and thus is the most suitable philosophical paradigm for this research.

### **3.5.3 Other Research Methods**

The importance of research methodology in any study, and its impact on the actual findings of the investigation is an undeniable matter. Any rational researcher agrees that the research methodology needs to be carefully selected to be suitable for the subject that is being studied. Trauth (2000) argues that the nature of the research problem should be the most significant influence on the choice of a research methodology. "What one wants to learn determines how one should go about learning it" (Trauth, 2000).

This research takes a qualitative approach at trying to explain the phenomenon of knowledge co-creation in an online community environment. Following on from the literature, it is clear that at the heart of this research there are three main elements: online community, the technology and knowledge. These elements lend themselves towards a qualitative and in-depth research, as they are firmly tied in a social context. From the list of qualitative research methods there are two methods that stand out, as they are very rich in nature: case study research and ethnography.

Surveys are a suitable means of research method when the scope of the research is large and one is mostly concerned with breadth of coverage. They do however lack depth and richness and thus will not be a suitable method for this research.

Although the experiments research method is considered a very scientific technique, it does not suit this research, as there are too much ambiguities and unknown elements involved in the process of knowledge co-creation at this stage. It may be a more suitable method to be used to test a hypothesis or theory once they are discovered.

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Despite action research gaining more popularity in IS research in recent years, like other methods, it would still need to be used with consideration of the 'what is being studied'. Action research, as the name suggests, aims to actively change and alter the system as it is studying it. There is a bold collaboration between the researcher and the participants and stakeholders of the studied system. This would not be a suitable research method for this investigation as the phenomenon of co-creation is just being investigated and observed. There are no clear theories or hypothesis about knowledge co-creation yet. It is essential at this stage that the researcher does not get involved and make changes to the system. The researcher is merely trying to observe and find out what is going on in the system and how this co-creation is taking place, and therefore should not be in a position to make any changes as the research is still in its early stage of discovery. Consequently action research would not be a suitable research method for this investigation.

It was pointed out earlier that ethnography seems to be one of the two suitable methods which has a rich enough depth to investigate what seems to be a complex process of co-creation of knowledge in an online community platform. Ethnography, which is now widely used in the study of information systems in organizations (Myers, 1997), requires the researcher to join the system –under investigation- in order to study a certain phenomenon. This is not feasible in the case of this research as the process under investigation is being studied as an example of an interpretive case study using a set of principles, which will be explained later on. It does not require such a close up involvement at present. Maybe ethnography can be used as a follow up to this research to test the hypothesis or conceptual framework's validity.

The grounded theory methodology, aims to develop theory based on systematically gathered data (Myers, 1997). This research will not have collected data as such, as it is going to analyse existing scenario of knowledge co-creation, without the positivist use of data. It also does not intend to be tied down for theory development purposes. It requires a certain degree of freedom to allow flexibility in the form of results and findings. Therefore grounded theory will not be a suitable research method.

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### 3.5.4 Chosen Research Method

The debate about research method needs to take place within the context of what is being investigated. As the research is studying knowledge co-creation within an online community, it would be in need of a very detailed and thorough research method that not only concentrate on the stakeholders but also on the surrounding context. There are many social elements within an online community, which requires extensive investigation. At the same time this investigation is not trying to test a hypothesis, rather find out what the hypothesis is, if any. The work is trying to investigate *how* knowledge is co-created in a certain environment. Case studies can be very useful where you are investigating a specific phenomenon but may not have a clear set of guidelines. One looks to explore and see how things work within a system or organization.

It is clear that this study entails a need for a research method enabling exploration and then explanation to this problem – knowledge co-creation in online communities. It seems that after studying the most common research methods in IS, an in-depth case study would be the suitable method. The case study has been an essential form of research in the social sciences, and has been used in extensive research within organisations (Barrett and Walsham, 2004). According to Yin (2013), a major strength of the case study is that it allows the researcher to understand the problem, the nature and complexity of the process taking place; and valuable insights can be gained into new topics emerging in the rapidly changing field (Rowlands, 2005). In addition, case research can contribute to knowledge by relating findings of the particular to generalizable theory.

The case study approach is chosen because as Yin (2013) states it is suitable for studying complex social phenomena. Knowledge is a complicated notion to examine and thus suits this research method. It is also the type of research method for investigating how and why questions (Yin, 2013). Consequently appropriate for looking at how knowledge is co-created in online communities. Case study research produces data that is close to people's experiences and can be more accessible than highly numeric studies. Hassell (2007) states

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there is no knowledge outside of experience, therefore the case study method was found to be the suitable approach for this research.

There are various underlying epistemological positions to case study research that can affect the research method. Yin's (2013) idea of a case study research, which seems to be the most popular in IS research, looks at case studies from a positivistic perspective as he recommends the use of hypotheses and/or propositions. He bases his approach to case study on a constructivist paradigm. Constructivists claim that truth is relative and that it is dependent on one's perspective (Baxter and Jack, 2008). This paradigm "recognises the importance of the subjective human creation of meaning, but doesn't reject outright some notion of objectivity. Pluralism, not relativism, is stressed with focus on the circular dynamic tension of subject and object" (Miles and Huberman, 1994). Constructivism is built upon the premise of a social construction of reality (Baxter and Jack, 2008). One of the advantages of this approach is the close collaboration between the researcher and the participant.

Walsham (1995) takes a slightly different approach to interpretive case study research. He argues that interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors. He further states that the theories concerning reality are ways of making sense of the world, and shared meanings are a form of inter-subjectivity rather than objectivity (Walsham, 2006).

Walsham (2006) adds that although a lot of attention has been given to interpretive research, there is not enough work on how to actually carry this out. He states that his paper, published in the European Journal of Information Systems in 2006, which follows his earlier paper back in 1995, is addressing the same problem. He concentrates on explaining how one can perform this interpretive research in the IS field.

In his work Walsham points to a comprehensive framework, developed specifically for the conduct and evaluation of interpretive research in IS. They are the set of seven principles based on anthropology, phenomenology and hermeneutics that have gained prominence in recent years based on a paper by Klein and Myers (1999). The principles involve demonstrating that the researchers have applied a hermeneutic approach with critical reflection to the social and historical background of the study and their own role in it; that they have demonstrated multiple interpretations of the participants and shown how data findings sometimes contradict earlier theory, and related the findings to theory, showing sensitivity to biases and distortions (Walsham, 2006).

Klein and Myers have been frequently cited by IS researchers to justify or validate their research approaches (O'hEocha et al., 2012). Cardoso and Ramos (2012) affirm that the work of Klein and Myers (1999) has had a significant impact in IS research community and accounts for an impressive number of citations. For example it has been cited more than 3580 times in Google Scholar<sup>9</sup>, as of November 2014.

These seven principles; are described by Klein and Myers as a set of principles for conducting and evaluating interpretive field studies in Information Systems research. They have been recognised as a critically important set of criteria on how to judge knowledge claims generated from interpretive research (O'hEocha et al., 2012). Klein and Myers principles have been cited as particularly important in terms of establishing the generalizability of interpretive research (Lee and Baskerville, 2003; Gregor, 2006). However, a search of the literature has not revealed any major previous studies involving the formal operationalization of the principles. Whereas the principles of Klein and Myers are based on best practices of interpretive research that have been developed for decades in other disciplines, the question remains as to why the most prominent IS journals do not promote more compellingly their operationalization by publishing articles that make clear reference to those principles (O'hEocha et al., 2012).

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<sup>9</sup> [www.scholar.google.com](http://www.scholar.google.com) is an online, freely accessible search engine that lets users look for both physical and digital copies of academic articles.

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As the research is taking an interpretive approach to finding out how knowledge is co-created in online communities, it would be somewhat imprudent to disregard the set of principles Klein and Myers have set out for conducting and evaluating interpretive research. In fact as this is an established piece of methodological contribution to interpretive study, it would be a suitable method to actually take these principles and use them as a tool to study the phenomenon under investigation.

This research will be based on Walsham's (1995, 2006) idea of an interpretive case study and use the established principles of Klein and Myers, to investigate the phenomenon of knowledge co-creation in online communities. Using this set of principles means this will be a contemporary methodology for carrying out interpretive research. Therefore the research method used for this research is a case study, which is adopting an interpretive stance. In order to adopt the interpretive stance, the researcher can follow these sets of principles. One aspect, which kind of makes this research unique in its own way, is the fact that there is no data collection as such in its traditional form. The case study is going to be examined from a completely interpretive perspective. The Plings case study, which will be described later on, is an example of an online community in which knowledge co-creation takes place. This case study will be explored interpretively.

Walsham (1995) states it is desirable in interpretive studies to preserve a considerable degree of openness to the field data, and a willingness to modify initial assumptions and theories. This will result in an iterative process of data collection and analysis, with initial theories being expanded, revised, or abandoned altogether (Walsham, 1995). This approach goes hand in hand with the idea of a *hermeneutical circle*, which forms the basis of Klein and Myers' principles. It also maps closely onto the *dialogical reasoning* principle. Therefore the two complement each other as a practical approach towards interpretive case study research using Klein and Myers principles. The case study, which will be shortly described in the next section, will act as a practical example that will be studied using the seven principles.

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### 3.5.4.1 Klein and Myers' principles

In 1999 Klein and Myers wrote a paper and came up with a list of seven principles for conducting and evaluating interpretive field studies in Information Systems research. Although these principles were suggested for interpretive field studies, this research will try and use them but without any empirical data collection. This will obviously have certain implications and differences to how these principles are normally applied in a field study. Therefore it is important to point out how applying these principles might be different in this study as compared to a normal field study. These principles will now be mentioned briefly, although they will be explained and evaluated in depth later on.

#### **Principle of Hermeneutic Circle**

*This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles. (Klein and Myers, 1999)*

When applying this principle in a real life study or fieldwork, the researcher actually applies it to the components he/she is researching. For instance in the example given by Klein and Myers, about the study of the richness in email communications of an organisation, the hermeneutic circle was looking at the iterations between the separate message fragments of individual e-mail participants as parts and the global context that determines the full meanings of the separate messages to interpret the message exchange as a whole. In this type of research, the concepts of what is being studied will be hermeneutically analysed not the actual components that is being investigated.

#### **Principle of Contextualisation**

*Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged. (Klein and Myers, 1999)*

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Here again the main difference between this type of research and a field study, is that in a study with not empirical data, one will look at the concepts and their surrounding context and background, rather than actual components.

#### **Principle of Interaction Between the Researchers and the Subjects**

*Requires critical reflection on how the research materials (or “data”) were socially constructed through the interaction between the researchers and participants.*

(Klein and Myers, 1999)

This principle is probably the only principle that cannot be applied to such a research, as there is no interaction between the researcher and ‘participants’. There are no participants as there is no empirical data, and while in a field study one needs to critically reflect on this interaction, this type of hypothetical interaction does not exist. Even the scenarios are hypothesised by the researcher alone.

#### **Principle of Abstraction and Generalization**

*Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action.* (Klein and Myers, 1999)

(Klein and Myers, 1999)

As with principles one and two the difference between this type of hypothetical research and an empirical research in this principle is that in the latter the actual incidents and components in the case will be examined while in the former, the concepts will be related to general theory. In a way the researcher will look at the hypothetical scenarios and tries to map it onto the relevant theory, and concepts.

#### **Principle of Dialogical Reasoning**

*Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings (“the story which the data tell”) with subsequent cycles of revision.* (Klein and Myers, 1999)



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This principle seems to adapt to an empirical study better than a hypothetical study like this. The reason is that the start and end of the study is clear. One is before data collection and another is after data collection and analysis. In a completely interpretive study like this, the researcher is continuously analysing and evaluating hypothetical concepts and theory and there does not seem to be a clear line between the starting point and end point of the research.

### **Principle of Multiple Interpretations**

*Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it. (Klein and Myers, 1999)*

It is clear that using this principle in a field study requires the researcher to be sensitive of the various narrations of the same story by different parties. Similarly in an exclusively interpretive research the understandings of the components can be looked at from various stakeholders perception. There is a danger of bias here as these interpretations are created by the understandings of the researcher and not given directly by real participants. Therefore in a way the researcher needs to put himself/herself in the position of the each participant and stakeholder to try and view the issue from their perspective. The risk is that this can potentially be artificial and unreal.

### **The Principle of Suspicion**

*Requires sensitivity to possible “biases” and systematic “distortions” in the narratives collected from the participants. (Klein and Myers, 1999)*

In a field study where empirical data collection is involved, the researcher will need to be suspicious about the data he/she collects from the participants, as they might have certain interests that may distort the true perception. This principle is quite difficult to execute in a research without empirical data as there is no participants who have provided their narrations and data. One can say that this principle does not really apply to this type of research, as there is no data. However it can be said that this suspicion should be reflected

on any source of input of information. For example in this research their needs to be suspicion towards the information provided by Substance Ltd. They are the sources that explain how the Plings system will work. Strictly speaking they may have certain biases or distortions in their information that the researcher needs to bear in mind. However the impact of that is of not much of a concern, as the research is not looking to assess Plings as a case study. Rather it is just using Plings as an example to build hypothetical scenarios that can help understand the co-creation of knowledge.

### **3.5.5 Research Process**

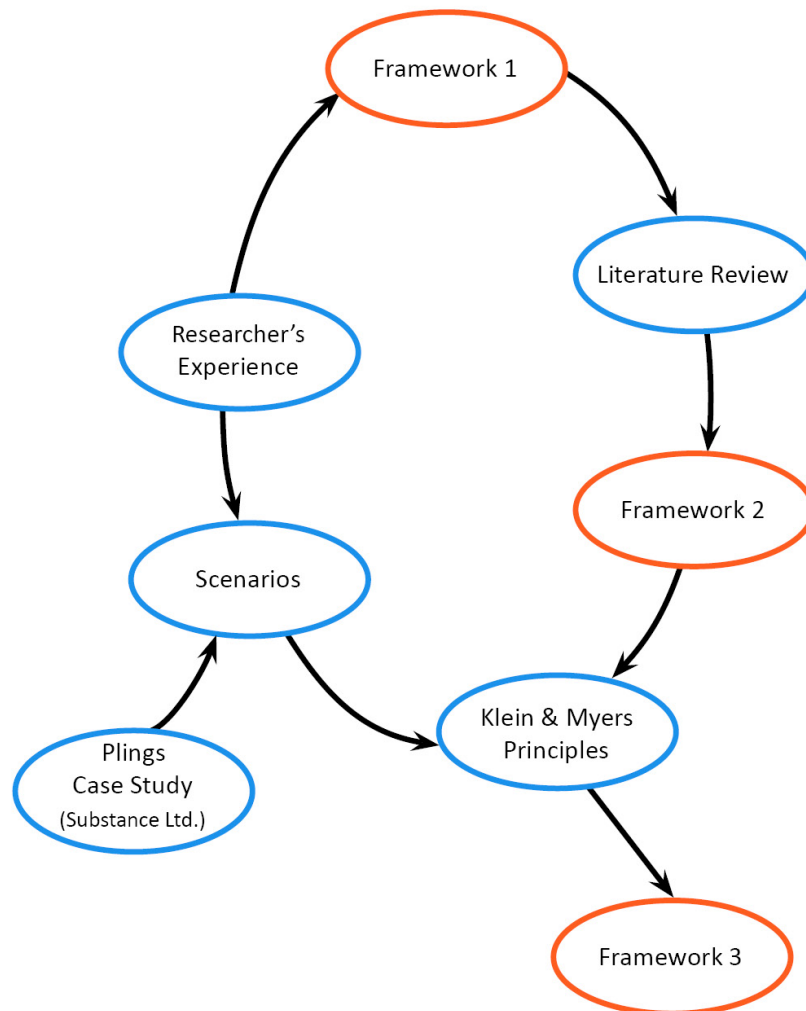
Bearing in mind this research method is not the standard traditional research method used in IS research, it is of great importance to clearly explain the process. This will help future researchers to better understand and benefit from the proposed method.

There are eight important elements that form the structure of this research. They are:

- Framework 1 (introductory framework introduced in the introduction section)
- Literature review
- Framework 2 (initial framework introduced at the end of the literature review section)
- Experience (the experience of the researcher from working with web 2.0 online communities)
- Scenarios (hypothetical examples of scenarios)
- Plings (case study, explained by Substance Ltd.)
- 7 principles (Klein and Myers principles)
- Framework 3 (final proposed framework for knowledge co-creation in online communities)

Figure 3.3, demonstrates the evolution of the frameworks in this study by illustrating the research processes. The above eight elements form the research process. The process

illustrates how the frameworks have developed and by what factors they have been affected.



**Figure 3.3:** Research process diagram

Framework 1, which is the framework introduced in the introduction chapter as the introductory framework, is created from the experience and understanding of the researcher at the very beginning of the research. It demonstrates the researchers idea of what knowledge co-creation is. Following on from framework 1, a set of in-depth literature reviews will be carried out which leads to the formation of framework 2. Framework 2 is

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referred to the *initial conceptual framework* in the research. This is a developed framework, which is based on framework 1 and the literature review chapter.

Other elements that have a significant impact on this research are the case study (Plings), Scenarios, and Klein and Myers' seven principles for evaluating interpretive research. The Plings case study has input from the company called Substance Ltd. Substance describes how the Plings system will work. This understanding of how the case study works, along with the researcher's own previous experience in dealing with online communities and web 2.0 technology result in the creation of some hypothetical scenarios. These scenarios are potential examples of typical communications and collaborations of members of an online community, which can possibly lead to knowledge co-creation.

Klein and Myers' seven principles will then be used to interpret the scenarios and framework 2, which will eventually lead to the creation of the final conceptual framework for knowledge co-creation within online communities. This final framework is labelled as framework 3.

It is strongly believed that due to the nature of what is being investigated the most suitable method is an interpretive case study research. In order to execute this it is decided to use Klein and Myers' principles which is firmly rooted in contemporary IS research methods. However the difference here with other studies is that no data as such is going to be used. The reason for this decision is that due to the fact that the research is in the process of introducing a new phenomenon, which has not been described before, thus the research takes an exploratory perspective. For example interviewing or surveying people about something the researcher does not know about seems quite vain. Once this research finds out what this co-creation is and how it is formed, then further research with data can back up the idea and either support its findings or alter them.

As with any research method, this type of research has its own limitations and drawbacks. One can say one of the biggest limitations of the research is that the research is heavily

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based on the interpretations of the individual carrying out the study. It severely relies on the researcher's understandings and hermeneutical evaluations. Unlike other studies where there is data and one can make his/her own conclusions about what the data is suggesting, a lot of this study is carried out in the researcher's mind and evaluated there. One may not necessarily see a clear process of reaching certain evaluations. Thus it is prone to misjudgements and preconceptions that may not necessarily be accurate. For example the scenarios which are created, significantly rely on the researchers own experience. His/her experiences can be different to other researchers, and therefore influence the whole results. This leads to another challenge, which is the lack of empirical data. One can say that this research is the first step in finding out about the phenomenon of knowledge co-creation in online communities, and requires further empirical studies to complete it. Although the researcher admits to these types of limitations, at the same time it strongly believes that it is the most suitable research method as the starting point of research into the topic.

### **3.6 Case Study: Plings**

The case study used in this research is called Plings (short for *Places to go, Things to do*). The project, which was a government initiated scheme, looked at ways of informing the youth about positive youth activities in the Manchester area. Manchester City Council as the operating body was involved in the process of finding out about the activities for the youth of Manchester and delivering this information to the youth in various forms. A company called Substance Ltd. then used various Web 2.0 technologies to forward this information to the youth. The combination of Web 2.0 technology, the sense of community of the people who used this service and the possible prospect of knowledge co-creation, from their interactions, meant that this case could be used as an example to try and understand the phenomena of "knowledge co-creation". The process of understanding and forming a conceptual framework and hypothesis is to be done by investigating the literature and background theories, research of various web 2.0 services and observing the processes of the case study hypothetically. Although the case study is

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going to be examined hypothetically, the initial idea of how the Plings system works, comes from Substance Ltd. Substance is the company in charge of executing the project on behalf of Manchester City Council. Once it is clear how the case study works as a whole, hypothetical examples will be given about specific scenarios to allow a better understanding of the situation. It is important to note that although the examples and scenarios provided in this research from the Plings case study have not actually taken place, but they are instances that do occur daily in similar online communities. These are hypothetical scenarios created by the researcher to put the research in context, so that the phenomenon (knowledge co-creation) could be studied. In a way only the idea of Plings is being studied and not the actual system. Furthermore to make sure that the research method matches the context of what is being investigated, an interpretive approach will be taken. This will be done, by applying the seven principles suggested by Klein and Myers (1999).

There would be no data collection in its traditional form of interviews or questionnaires as the case study is looked at solely from an exploratory and interpretive perspective. The case itself will be looked at using an unobtrusive observation. Due to the fact that the investigation is trying to understand how the process of co-creation takes place and what factors may help in this process, it is important to have an overall picture of the three main elements; the online community, knowledge co-creation and the technology. Understanding the three elements and their links could not be established by interviewing or surveying. As this is the first step in understanding such phenomenon, therefore the research needs to be observational in order to try and understand what is going on. This type of research is useful when the subject is often general or vague, and becomes more focused as the research progresses. If an interview or survey were to be carried out, it would not have been clear whom exactly it should question or of what use would the gathered data be. Another point is that it is believed that co-creation often takes place unintentionally when the parties involved, are not aware of it. Therefore it would be difficult to directly question individuals about something they are not aware of creating.

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### **3.6.1 Substance Ltd.**

It is important to clarify the details of the embedded and empirical research with Substance Ltd. As stated earlier, the company was nominated to execute the Plings project on behalf of Manchester City Council. The researcher performed a data collection project for the council (Substance Ltd.) where details of youth organisations that provided youth activities in the Manchester area were gathered into a database. This data collection exercise did not relate to this study directly however it gave the researcher the opportunity to find out about how the Plings system was going to be run. Therefore this study used information from Substance Ltd. to find out how a potentially knowledge co-creating online community (Plings) works. Once it was known how Plings would operate, then hypothetical scenarios could be drafted to evaluate and study the co-creation of knowledge using Klein and Myers' principles.

## **3.7 Summary**

This research is an exploration of the concept of Knowledge co-creation in virtual communities. Exploratory research is a type of research conducted for a problem that has not been clearly defined. It often relies on secondary research such as reviewing available literature and/or data, or qualitative approaches i.e. interviews, case study analysis. Exploratory research is used when problems are in a preliminary stage. It is used when the topic or issue is new and when data is difficult to collect. This is the case with this research as there is no data collection as such (known in common sense of the matter in quantitative and qualitative research). Exploratory research is flexible and can address research questions of all types (what, why, how). It is however often used to generate formal hypotheses.

Social exploratory research "seeks to find out how people get along in the setting under question, what meanings they give to their actions, and what issues concern them. The goal is to learn 'what is going on here?' and to investigate social phenomena without explicit expectations." (Schutt, 2011). Qualitative research methods such as case study or

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field research are often used in exploratory research. The objective of exploratory research is to gather preliminary information that will help define problems and suggest hypotheses.

This research is an exploratory investigation, as it is trying to recognize the notion of knowledge co-creation. Therefore the exploratory research is subjected to further research investigations.

The research lends itself to a case study approach but one without quantitative or qualitative data at hand. The evaluation and analysis will focus on how co-creation takes place in the chosen case of Plings and finding out what factors help knowledge co-creation. This is done by looking at the key theories in each category, both in online community literature and in the technology characteristics. Plings will be studied as a sample of a possible online community, which has the potential of knowledge co-creation. The observation of the Plings system is not restricted to a specific time and the system is studied and evaluated as a whole structure.

The case study is most useful for generating hypotheses, whereas other methods are more suitable for hypotheses testing and theory building (Flyvbjerg, 2006). Thus it would be a suitable method for this type of research as it is aiming to come up with a hypothesis and conceptual framework for the co-creation process.

The case study will be examined and evaluated interpretively using the seven principles set out by Klein and Myers (1999) for conducting interpretive field studies. This method, which does not use collected data in the forms of interviews or questionnaires, is unique in its own way. This is confirmed by looking at literature of IS research. It should provide a practical example for using case study research in a completely exploratory and interpretive manner, in the IS research field. Moreover it will provide a practical reflection of the set of principles set out by Klein and Myers. The study should provide suitable



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information so that a set of desirable characteristics, for knowledge creation in online communities, can be drawn and presented.

This investigation will be the first step of work on 'knowledge co-creation' through an exclusively interpretive research approach. Further work needs to be done to test the potential hypothesis and framework by applying it to other cases. This type of research helps to pave the way for a more rigorous, conclusive future study on the topic. Although the research may not seem as robust as research backed with quantitative data, but it is still an essential first step. The nature of what is being examined (knowledge co-creation in online communities), leads us towards this type of research.

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## CHAPTER FOUR: PLINGS CASE STUDY

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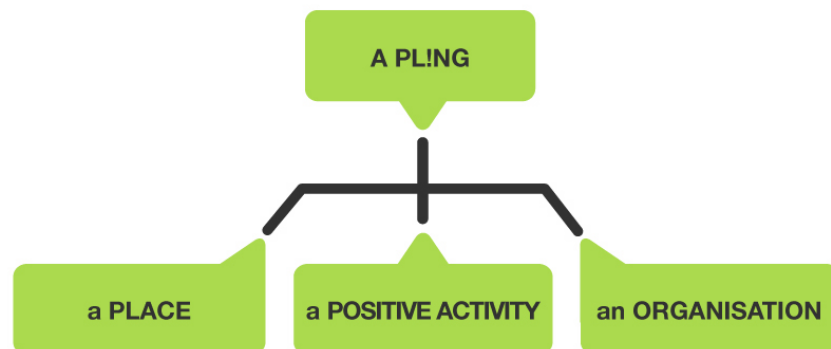
### 4.1 Introduction

This chapter will look at the single case study of this research called 'Plings'. The case study is used as an example of an online community where co-creation of knowledge takes place. Plings is a project initiated and run by Manchester City Council, Substance Cooperation and Manchester Business School. The project, which is developed as a response to the need of positive activities for the youth of Manchester, became the case study of this research. This section will review the Plings case study and the ideas behind its creation and functionality. Most of the information in this chapter has been provided by the company called Substance Ltd. This chapter basically explains how the Plings system works without any reference to the ideas of this research. The Plings case study will be investigated hypothetically. This means the idea of how Plings works is going to be studied not the actual Plings system.

### 4.2 What is a Pling?

In simple terms, Plings stands for 'places to go, things to do'. Referring to the youth of Manchester (in this instance) Plings intends to create awareness about a range of positive activities for the youth. There seems to be an intelligent idea behind the way Plings is functioning and being run. The idea is that an effective way to get a message out is by trying to look in places where people may already be. In other words, *fishing where the fish are*. In this case, the technologies that the youth are already using for instance websites, social networks, email lists, mobile devices etc. are used to form a service based on positive activities. Plings is not trying to come up with a new social networking website, but instead, using what is already available (and people are already using) to provide a useful and efficient service to them.

A Pling would consist of the following three elements: a place, a positive activity and an organization (see figure 4.1). It is of importance that the activity which is taking place, should be a *positive activity* in that it provides the space, time and support for young people aged 13-19.



**Figure 4.1:** Elements of a 'Pling' (Substance, 2008)

Steven Flower from Substance<sup>10</sup> describes a Pling as a piece of information consisting of:

- A Place: could be a venue, a park, a sports centre, etc
- An Activity: time related info about something that will take place
- An Organization: an entity that is behind this activity, at this place

These three data elements combine to make up a PLING. Thus the aim of the project is to gather all the Pling data regarding youth activities and providing the youth of Manchester with the information in an appealing format. This can take the form of various methods, which will be covered later on.

### 4.3 The Plings Model

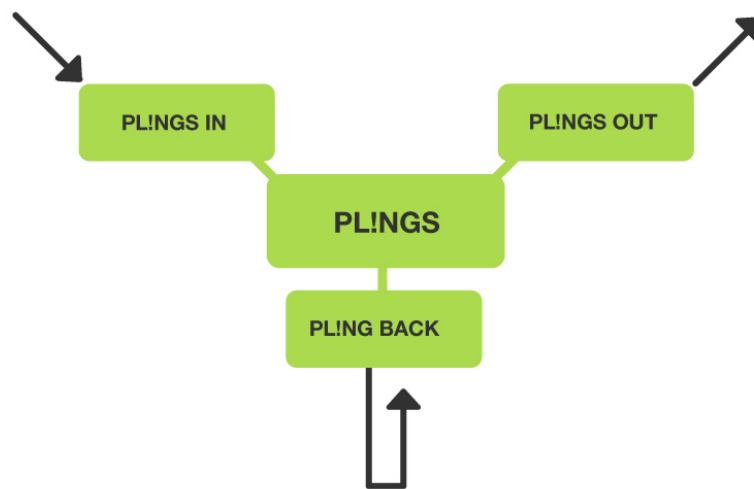
Plings has three main processes, which are illustrated in figure 4.2. The initial process of a Pling is gathering information about the youth activities. This can be information like what

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<sup>10</sup> Substance Cooperation, <http://substance.coop/>

kind of activity is going to be run, when and where it is going to take place and who is going to be running it. This is called *PLINGS IN*.

- PLINGS In – getting information into the project
- PLINGS Out – getting information out and into relevant spaces/places/formats
- PLING Back – gathering feedback and, importantly, making sense of it



**Figure 4.2:** Processes of Plings (Substance, 2008)

*PLINGS OUT* is the process of getting the information and raw data out into relevant spaces and places with a suitable format. Examples of this are on social networking sites, widgets, or as apps on mobile devices. These are means by which the youth will already be interacting with the most, and thus would be a convenient form of communication.

Meanwhile *PLING BACK* is the process in which the youth will be giving their feedback on the activity and in another word relaying the sense of their experience. This process is of great value and importance to this research as it is where the interaction and communication takes place. This is potentially where information and knowledge sharing and co-creation will take place.

## 4.4 How are Plings processed

Plings is all about data. The data goes into the central store and data comes back out but in the form of information (meaningful data). Developers can build applications that use that data for a wide range of purposes. This can be about a custom application for supplying data to Plings, using it in a mashup, or simply displaying the data it wants in the format it wants it.

Figure 4.3 illustrates how Plings are processed. At the core layer, lays the organisation or body that runs the activity. The provider inputs/contributes their PLINGS, and can then use them accordingly (on their website or as a mailshot, etc).



Figure 4.3: How Plings are processed (Substance, 2008)

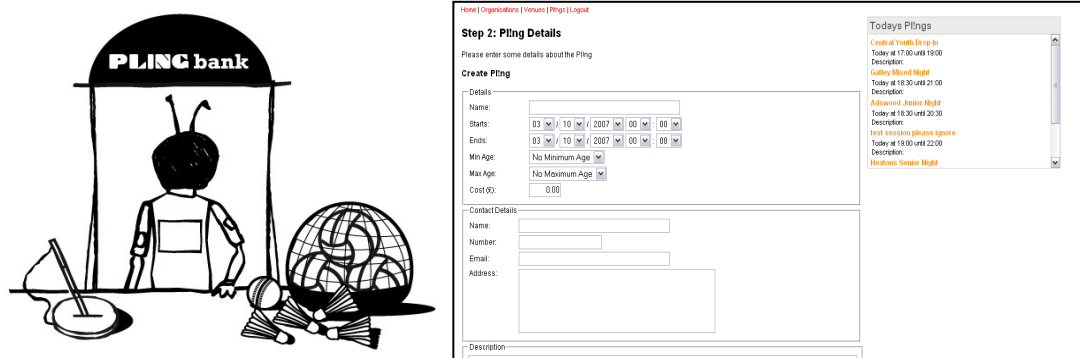
A network – such as the local authority – aggregates and quality assures the Plings of relevant providers to constitute their *youth offer*, which can then be published

accordingly. The Networks can be the voluntary sector, the local authority, government departments, or other relevant private sector organizations that provide youth activities. The information about these activities is then produced in a range of forms from local newspapers, and brochures to websites, mobile apps and digital TV. The varied formats mean that the information is available to a wider range of youth who already interact with various means of communicators.

## 4.5 Plings In

As discussed earlier the idea of *Plings in*, is ways in which the data can be inputted into the Plings' database. These are often raw data i.e. information about an activity, its time and location. A few examples of ways in which Plings data can be inputted will be covered below. Plings in, is based on the concept of the *PLINGbank* (Substance, 2008). PLINGbank explains how providers can easily and safely add their PLINGS. This is done in three approaches.

**Over the counter** – This is the usual manual input where the organisers of the event will log onto the Plings website and manually input the details of their activity (Figure 4.4).



The image is a composite. On the left is a cartoon illustration of a character with antennae standing behind a counter under a sign that says 'PLING bank'. On the right is a screenshot of the PLINGbank website's 'Step 2: Pling Details' form. The form has a header with navigation links: Home | Organizations | Venues | Plings | Logout. The main heading is 'Step 2: Pling Details' with a sub-heading 'Please enter some details about the Pling'. Below this is a 'Create Pling' section with a 'Details' sub-section containing fields for Name, Start (03/10/2007 00:00), End (03/10/2007 00:00), Min Age (No Minimum Age), Max Age (No Maximum Age), and Cost (£) (0.00). There is also a 'Contact Details' section with fields for Name, Number, Email, and Address. A 'Description' field is at the bottom. On the right side of the form is a 'Today's Plings' sidebar listing events: Central Youth Drop In (Today at 17:00 until 19:00), Gully Moon Night (Today at 18:30 until 21:00), Advanced Junior Night (Today at 18:30 until 20:30), and Heats Senior Night (Today at 18:00 until 22:00).

**Figure 4.4:** Over the counter- manual input via website (Substance, 2008)

**A cheque** – This method consists of importing a CSV version of the data from the organisation’s database (in the form of a spreadsheet), directly onto the Plings’ database (Figure 4.5).

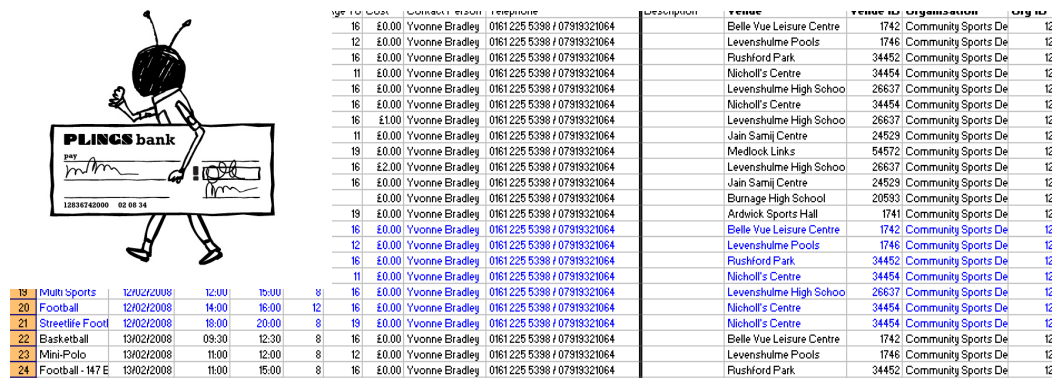


Figure 4.5: A cheque- CSV spreadsheet import (Substance, 2008)

**Standing Order** – This is where the data is read from an existing data source and displayed on a web service. For example from calendar feeds of one website onto an embedded Google map within another website (Figure 4.6).



Figure 4.6: Standing order- reading data from one site and embedding it on another site (Substance, 2008)

## 4.6 Plings out

The concept of *Plings out* is about distributing the data gathered from various organizations and youth activity providers, to the youth themselves. The data is used with a range of communicator technologies to distribute the information about each event in an attractive manner. Figure 4.7 illustrates the Plings model with various ways in which Plings can be sent out. At the core of the project is data in *raw* formats – that can then be built and developed into applications and tools



**Figure 4.7** PLINGS OUT model (Substance, 2008)

The initial basic form of the information distribution is through the Plings website (figure 4.8). The site will display lists of activities in rich format, allowing the youth to interact and have accounts and updates.

Other forms of information distribution are by mobile apps, widgets and even traditional flyer and poster techniques. Although some of these are old methods, they are still powerful techniques to create awareness about an event. The idea is once the Plingbank (database) is created and organizations have submitted their events, it would be just a matter of distributing the information in the most convenient ways possible for the youth.



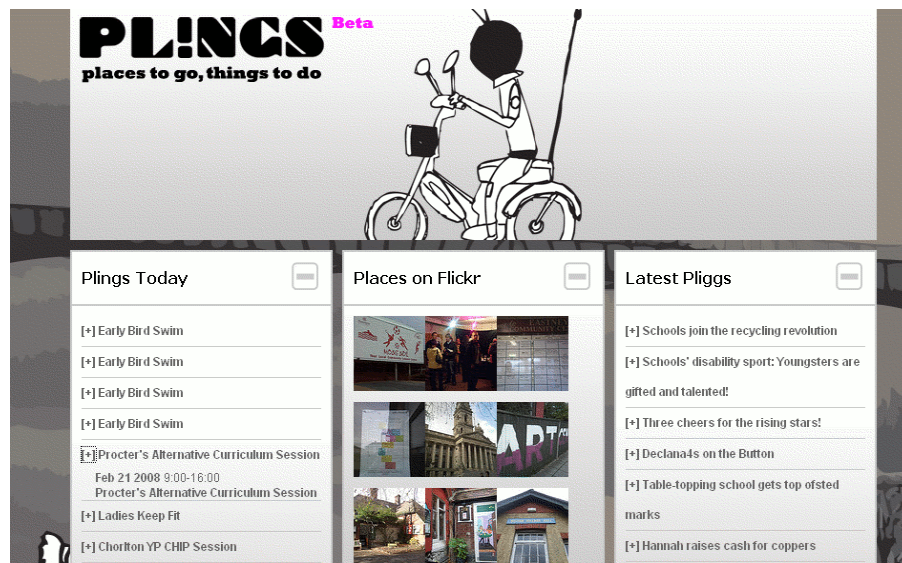


Figure 4.8: Screenshot of initial Plings website (Substance, 2008)

The development of RSS technology allows feeds of youth activities and events to be fed through automatically to websites already providing the information, but in an efficient manner. Websites like Manchester city council will receive RSS feeds from the Plings website and get updated automatically (figure 4.9).

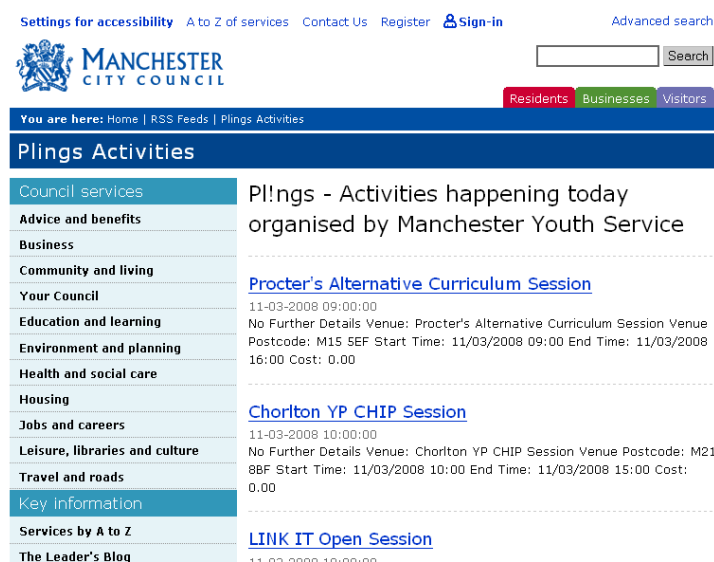
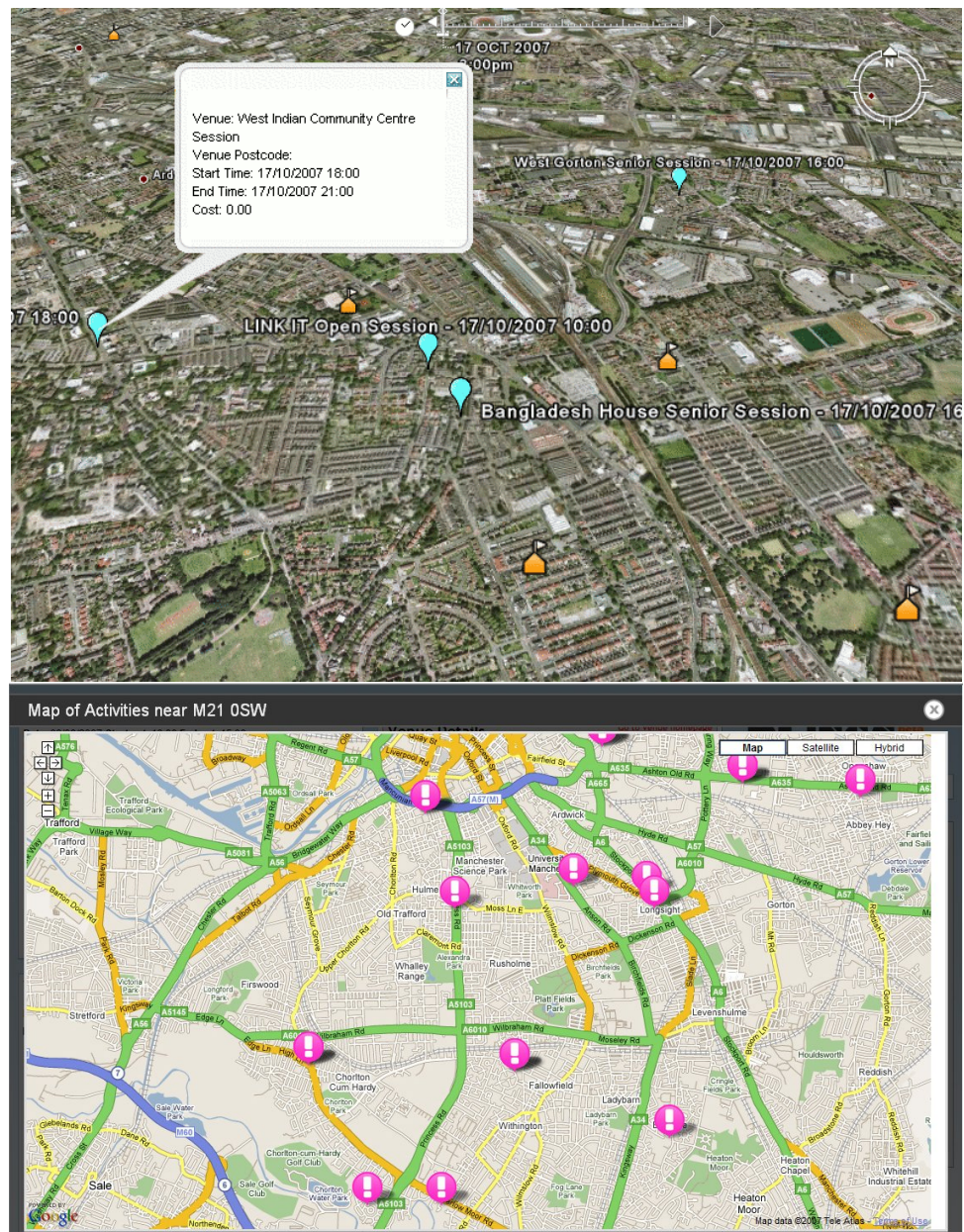


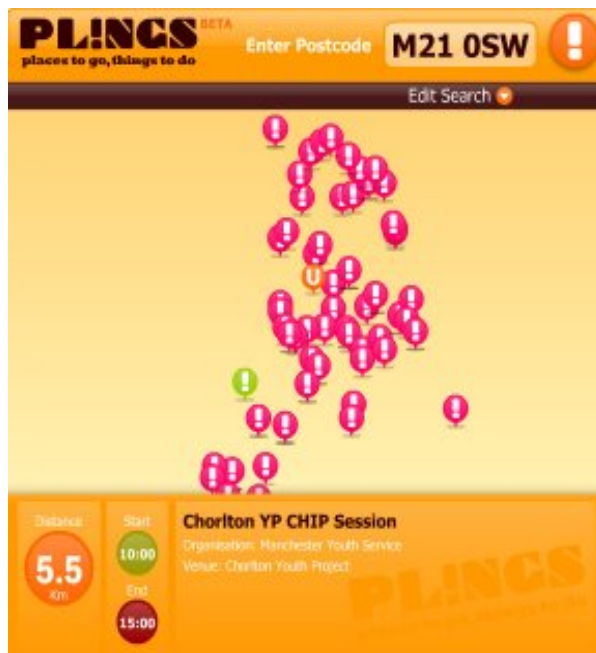
Figure 4.9: Screenshot of Manchester City Council website receiving RSS feeds from Plings (Substance, 2008)

Online maps and in particular geographic information system (GIS) applications (i.e. Google Earth) can be used to graphically locate the whereabouts of each activity, allowing the youth to easily pick out the events taking place close to them (see figure 4.10).



**Figure 4.10:** Plings displayed on GIS applications and online maps (Substance, 2008)

Other than what is already available on the Internet, small desktop applications can be designed specifically for Plings (figure 4.11). Here the information about each activity can be represented in a smart manner, which is only a click away from the youth.



**Figure 4.11:** Interface of a prototype for a Plings desktop application (Substance, 2008)

With the success of social networking sites nowadays, it would be imprudent not to make good use of the technology. Plings social networking applications can be easily incorporated into these websites (i.e. Facebook, Google+ etc.) to make use of the huge number of youth, already interacting via these portals. Instead of attracting the youth to a new social networking site, which may or may not be successful, Plings will take advantage of what already exists. This approach is in accordance with Web 2.0 characteristics, covered in the literature review chapter.

With the same idea in mind, Plings can make widgets that incorporate into people's homepages i.e. the youth's personal google page (igoogler). Like other methods, this is taking the information to the user instead of trying to go through the hassle of attracting them to the service (figure 4.12).



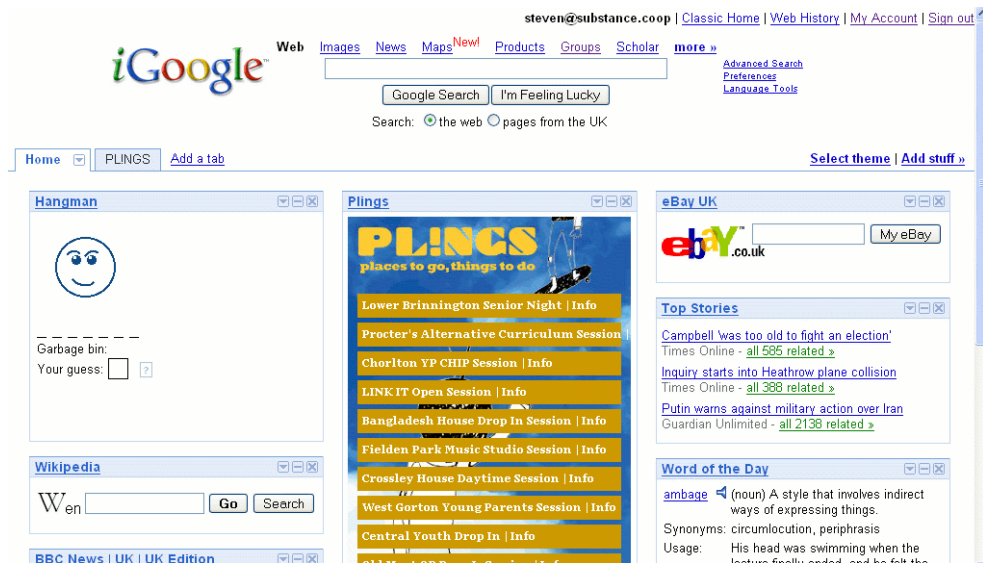


Figure 4.12: Plings widget on igoog (Substance, 2008)

## 4.7 Pling Back

One of the most important aspects of Plings is the *Pling back* idea. The idea is based on Web 2.0 and communities principles. Pling back allows the youth and users of the activities to reflect on their experience and share their thoughts about the events, and things they went through. The youth can get involved by writing about their observations and feelings, rating events and even uploading pictures and videos using sites like Instagram and Youtube to share what they experienced.

Pling back allows Plings and the organizations to obtain valuable feedback from the youth about their activities. Events can be rated and recommended for other youth, allowing them to communicate and discuss matters on an open platform. Feedback and recommendation by users of a service are of utmost value as these are usually a reliable source of advice, for the newcomers. Therefore at the same time that the youth will interact with each other and share their knowledge, the organisers will be looking out to pick out new ideas or current problems, in order to elevate their services.

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## 4.8 Case Study Purpose

As with any project, the Plings project serves various purposes depending on the stakeholders involved. Stakeholders can get involved in the project with different purpose and intention but still end up delivering the same end product or service. Plings is a good example of this premise. It is important to look at the stakeholders in more detail and try and find out what their purpose of involvement is.

Plings, has three main stakeholders, the Government, Manchester City Council, and the Youth themselves, who the whole project is aimed at. Plings may serve a different purpose to each of these stakeholders, though the end product or service is unified under the Plings' umbrella.

### 4.8.1 The Government

In July 2007 Her Majesty's (HM) Treasury published its strategy for young people in England. *Aiming high for young people* (H.M.Treasury, 2007) set out the government's vision for young people in England. All young people, the paper argued, should have access to the support and opportunities they want and need to:

- Succeed in education and continue participating in learning until the age of 18;
- Take part in activities that develop their resilience and the social and emotional skills they need for life, and enjoy their leisure time;
- Make a real contribution to society, using their energy and dynamism to bring about change;
- Be emotionally and physically healthy and able to cope with the demands of adolescence and becoming an adult; and
- Grow up in a safe and supportive environment.

The above are a short summary of the aims of the government for the future of young people in England. The guidelines for reaching the above targets can be very diverse, as

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there are a variety of ways to meet each objective. Therefore indirectly, the purpose of Plings, from the government's point of view can be to provide positive activities for the youth, in order to keep them off the streets and away from trouble, to be kept busy with activities that can help them in their future life, acquire new skills and develop their existing talent.

#### **4.8.2 Manchester City Council**

The national statutory guidance set by the government for Local Authorities (LA), on positive activities, is as follows (Government Office, 2009):

- Access to two hours per week of sporting activity and other physical activities such as aerobics and dance
- Access to two hours per week of other constructive activities in clubs, youth groups and classes. This includes activities in which young people pursue their interests and hobbies; activities contributing to their personal, social and spiritual development; activities encouraging creativity; innovation and enterprise; study support; and residential opportunities.
- Opportunities to make a positive contribution to their community through volunteering, including leading action, campaigning and fundraising
- A wide range of other recreational, cultural, sporting and enriching experiences
- A range of safe and enjoyable places in which to spend time. This could simply be somewhere to socialise with friends.

The guidelines set out the purpose of Plings (as a service), from the Council's perspective. It is obligatory on each local authority to provide *positive activities* for the youth in its constituency. The youth require *places to go* and *things to do*, thus giving rise to the idea

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of Plings. Each council would need to make arrangements for these positive activities to be available and accessible to the youth. The means, in which they have decided to do this in Manchester, is by creating the Plings project. As a result they would be able to meet their purpose of i.e. providing access to two hours of sporting activities and two hours of constructive activities for the youth, per week. This would be some what different to the government's purpose of using Plings as means to keep the youth busy and off the streets, while providing them with purposeful, positive activity.

### **4.8.3 The Youth**

The third and in a way the main stakeholders of Plings are the youth who form the target users of the service. Plings provides them with the necessary information about the positive activities i.e. what activity it is, where and when it is taking place, how they can get there. Not only they will gain information from Plings, but they will also provide feedback and communicate with each other via Plings' communication platforms. The purpose of Plings from the youths' perspective can be to get involved in activities, meet new friends, learn new skills or develop their talent, meet their friends and have an enjoyable time. This is obviously different to the government's idea of Plings. Therefore we can see how one system (in this case Plings) can encompass multiple purposes, while delivering the same service.

### **4.8.4 Importance of Purpose**

So why should purpose be of any importance to online communities with regards to knowledge sharing and knowledge creation. The simple reason is that knowledge can be shared or created either intentionally or unintentionally. For example the main goal of an online community can be to share and create new knowledge.

The main purpose of a community of teachers from across the North West can be to share knowledge and investigate efficient teaching techniques for disabled children of ages 7-10. The community of teachers (brought together with the aid of technology), will be communicating through an online message board. This will allow them to participate at a

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convenient time freely, without geographical restrictions. Here the online community is created solely for the purpose of knowledge sharing and creation.

A community can also be formed for example on general or social community platforms. For instance if the users of Facebook are classed as one huge community, then within this huge community there are many smaller communities, brought together through their interest or common factors. Although the main purpose of Facebook could have been to bring people together in the form of networks, and allowing them to socialise and communicate through the means of the latest web technologies; it could also fulfil other purposes indirectly. The same teachers, who were involved in the online community, can learn and share their knowledge through Facebook in various ways. This sharing and in some cases creation or co-creation of knowledge will be carried out in an unintentional manner.

People will learn and share information and knowledge through the means of various technologies, and the more the technology advances, the richer the knowledge sharing and creation experience will be. In some cases indirect knowledge sharing is a lot more effective than directed knowledge management systems with a clear knowledge based purpose.

## **4.9 Summary**

This chapter looked at the Plings case study describing how the system works. The Plings case study is going to be used as an example of an online community that co-creates knowledge. Plings has three main stages; PlingsIn, PlingsOut, and PlingBack. In the first stage, data from all the organising bodies and activity providers comes into what is called the Plings Bank. Plings Bank is like a big database that holds information about each activity: what it is, when and where it is going to take place and who the provider is. The information is then sent out via various communication mediums i.e. Plings website, mobile app etc. This stage is called PlingsOut. The idea is to get the information to the



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youth and through mediums they are already familiar with and use. The PlingsBack phase is when the youth use the Plings platform to provide feedback and rate and comment on the activities. This sets the ground for collaboration and communication of the youth with one another.

The topic of purpose was quickly touched up on at the end of the chapter. It was highlighted how different stakeholders within Plings were able to have a different purpose of setting up or using Plings, but still ended up with one unified service. By looking at the topic of purpose in Plings it is clear that in some cases knowledge sharing and creation can be intentional or unintentional.

# CHAPTER FIVE:

## INTERPRETATION AND EXPLORATORY ANALYSIS

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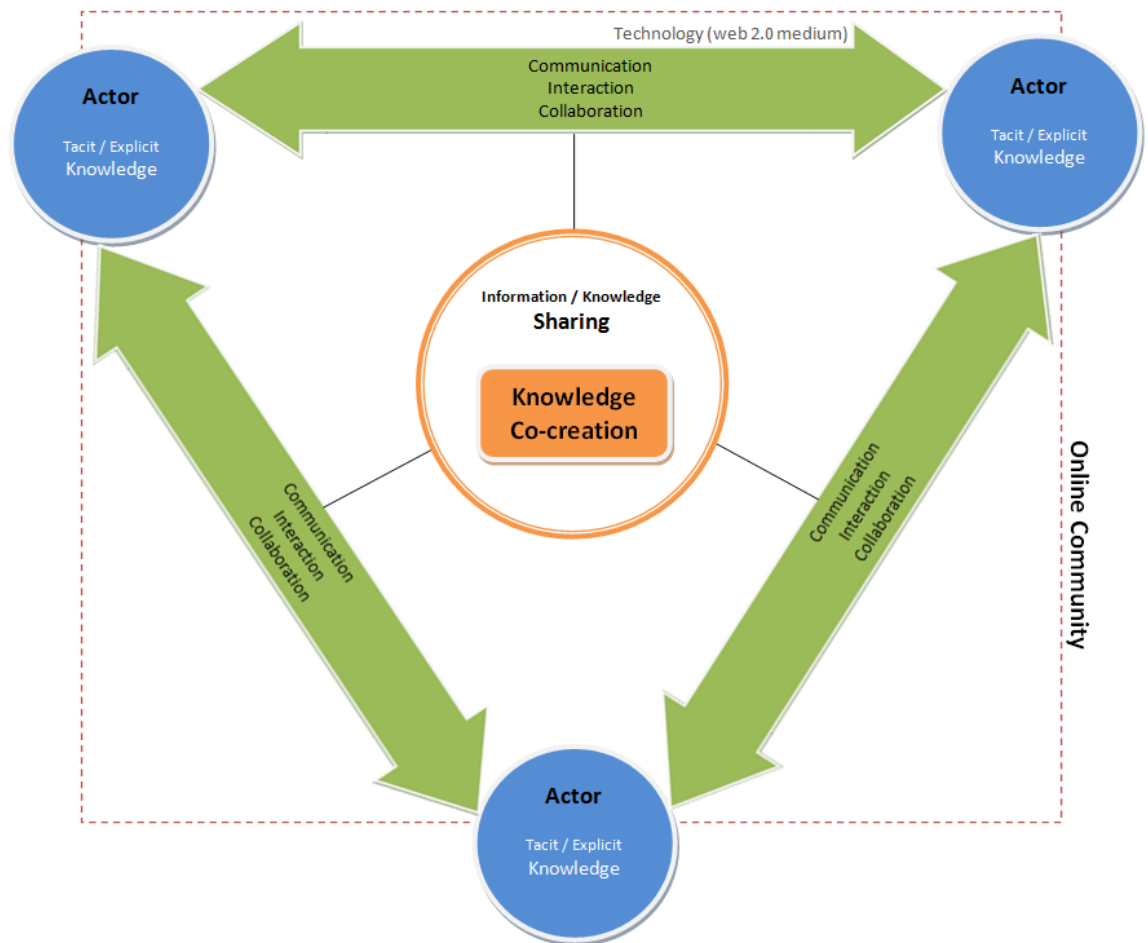
### 5.1 Introduction

This section will use the principles set by Klein and Myers (1999) for conducting and evaluating interpretive research, to investigate knowledge co-creation. The case study, which is called Plings will be used as a practical example of an online community where knowledge co-creation takes place. Each of the seven principles (Klein and Myers) will be examined with respect to the fundamental theories and elements highlighted in the conceptual framework from the literature review chapter. Where suitable, examples will be given from Plings to illustrate the connection between theory and practice (the case study).

### 5.2 Initial conceptual framework

It was discussed earlier that the idea of knowledge co-creation in an online community is made up of three main elements: Knowledge, Online community, and the underlying Technology that enables the collaboration and communication of the users of such system. An initial conceptual framework was created from the literature review, which was based on these three elements (see figure 5.1).

The framework illustrates an online community with various actors who communicate, collaborate and interact with one another. These interactions, which use various means of Web 2.0 technology, result in the sharing of information and knowledge. It is from these sharing and communication that co-creation is constructed.



**Figure 5.1:** Initial conceptual framework from literature review

The technology works as an ultimate structure for this system, because if there were no technology there would be no communication and connection between the actors or users. Thus there would be no online community to share knowledge and information, and hence no knowledge co-creation. If the technology was available but there was no community or actors, there would be no communication, and again no co-creation. The knowledge co-creation is a product of the interactions of the users and actors that communicate through technology to form an online community. Therefore the three elements are the very principle concepts that form knowledge co-creation and they need to be at the centre of this research when evaluating the case study using Klein and Myers principles.

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## 5.3 The Hermeneutic Concept

Hermeneutics is the field of study concerned with the philosophy and science of interpretation. It is widely used as a method of understanding and interpreting things, and while nearly everyone uses it, they are most likely not aware of it. Hermeneutics is the ancient Greek word for interpret or interpretive understanding. In simple terms, it is when an individual tries to interpret something for example a sentence, in order to understand it in relation to something he/she already knows. For instance when one looks at a painting, the individual is using hermeneutics to evaluate what he/she likes or dislikes about the painting. This judgement would be based on the individual's information, which comes from previous experiences they have had. Therefore humans are continuously involved in practicing hermeneutics.

Initially hermeneutics was referred to the translation and interpretation of the religious text (i.e. bible). In the 1800s this method of interpretation was broadened to include all of the humanities. "Since then, hermeneutics has become, for many thinkers, the cornerstone of their disciplines, which include anthropology, psychology, the cognitive sciences, the arts, philosophy, and even the natural sciences" (Murray, 1998).

As it became more and more recognized that the natural way of thinking is interpretive, that is, making comparisons, hermeneutics has also come to be seen as a way of interpreting how individuals live their lives. People are continuously interpreting and therefore involved in some form of hermeneutics.

Hermeneutics is based on subjective reasoning and experience. The way a person may interpret certain things depends on many factors including the individual's background, their intellectual level, the context of the subject under study and many more subjective variables. With this view, one can say that hermeneutics is the basis for interpretive studies in general. This also includes interpretive research in Information Systems. "The prevailing use of hermeneutic theory within the IS community falls into one of two perspectives: epistemological or methodological" (Cole and Avison, 2007). Responding to

positivist criticisms of interpretive research, researchers such as Walsham (1995) and Klein & Myers (1999), have tried to explain hermeneutic principles as a means of informing research design. Such discussions encourage the use of hermeneutic principles as criteria against which interpretive research can be evaluated.

## 5.4 Plings

The case study, used as a real-world example where knowledge co-creation takes place, is the called Plings. Figure 5.2 illustrates a simple framework for Plings. The youth organisations that are the governmental or private bodies that actually run youth activities send their data about each activity i.e. its time and place, to Manchester City Council. Substance Ltd. works on behalf of the city council to deliver the project and therefore is coupled together in the framework as one entity. They then put out and announce the information about the activities using various (Web 2.0) technology platforms i.e. Plings website, mobile apps etc. The youth who already use electronic communication devices such as smart phones, laptops and tablets, then use these platforms to find out about activities and then attend.

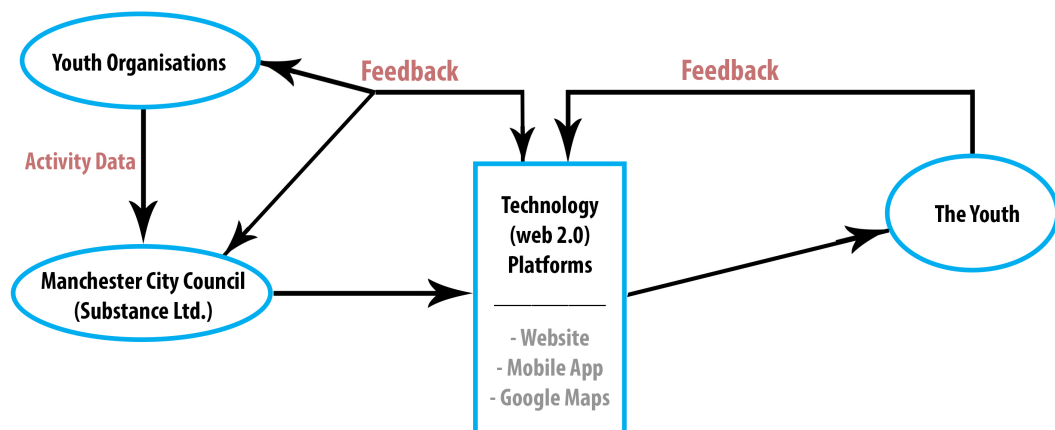


Figure 5.2: Plings framework

Once they have attended the activities, they can provide feedback on them, their venue and organisers using the web 2.0 technology platforms. They will use the platforms as an

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online tool to communicate and collaborate with each other. The city council, Substance Ltd., youth organisations and activity providers can also access these forms of online communities and platforms to read about feedbacks and comments from the youth. They can also respond to feedbacks but more importantly, they can take on-board the feedback and improve or amend their services.

## **5.5 Klein and Myers principles**

In 1999 Heinz Klein and Michael Myers wrote a paper entitled “A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems”. The paper, which was published in the MIS Quarterly journal that year, looked at the conduct and evaluation of interpretive research in information systems. Klein and Myers who based their idea of interpretive research on Walsham’s paper (1995), go on to introduce a set of –seven- principles for the conduct and evaluation of interpretive field studies. These set of principles are now referred to as Klein and Myers set of principles. These principles, which are derived primarily from anthropology, phenomenology and hermeneutics, provide a fair and appropriate criteria for assessing the validity and reliability of interpretive studies in IS research (Cardoso and Ramos, 2012).

Klein and Myers themselves believe that researchers should not apply their principles mechanistically but try to reflect on how and if they are useful to any particular project. Despite this, they firmly believe that their proposed principles are consistent with a considerable part of the philosophical base of literature on interpretivism. The set of principles are for researchers who accept and take philosophical hermeneutics as a foundation for interpretive research. Since hermeneutics is one of the major directions of interpretive philosophy, Klein and Myers believe that researchers can now defend their work by appealing to these principles that are firmly grounded in its philosophy. Using the principles also mean that interpretive researchers would not need to spend considerable

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time deriving the theoretical foundations for their research from diverse literature sources (Klein and Myers, 1999).

This research will therefore use the Klein and Myers principles as an established contemporary methodology to carry out interpretive research, which is inline with the hermeneutic philosophical paradigms of research into knowledge. It is however important for the researcher to bear a critical view of things when applying these principles and really test and see which ones apply to the research case study and which ones do not, and the reasons behind it. The following section looks at each principle and how it relates to the research and case study.

### 5.5.1 Hermeneutic Circle

It is believed that humans are constantly involved in hermeneutics and interpretations, whether they know it or not. One of the most recognized types of hermeneutics is *Dialectical Hermeneutics*, which originated from a German philosopher called Hans-George Gadamer. The term *Dialectical* is used which means back and forth, like a conversation. Gadamer believed that the process of how one understands is like a conversation.

In simple terms for example when Jack reads a sentence, in order for him to understand the meaning of it he would need to know what the meaning of each word is. But sometimes he may not know what the exact meaning of a word is unless he looks at the sentence as a whole. Words need a context in order to mean something. Words by themselves may have definitions, but they are not meaningful until they are put together into sentences. For example, the word 'line' has a general definition, but think about the different meanings the word takes in the following sentences:

- Get to the back of the line, buddy.
- The Bears defensive line needs a lot of help this year.
- And that line drive is going to be caught!
- He has always bought into the party line. (Political party)
- The telephone lines are down.

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- I could not draw a straight line if you paid me.

Here the word line does not take on any meaning until it is used in a sentence (Murray, 1998). At the same time one will not know the meaning of the sentence, until the meaning of each word is known. Therefore the process of understanding the sentence and the words would require constantly moving back and forth between the words and the sentence. This happens every time one reads, whether they realize it or not. This process can also be described as going back and forth between the particulars or parts (the words) and the whole (the sentence). This is what Gadamer means by the hermeneutical circle. It is the back and forth -dialectical- movement between the parts and the whole that leads to understanding (Murray, 1998).

The principle of hermeneutic circle, allows the researcher to understand a complex whole, by iterating between the precursory understanding parts to the whole and from a global understanding of the whole context back to the improved understanding of each part. This iteration between the parts of the system to the whole and back to the parts provides a better understanding of the full system as a whole. As Klein and Myers (1999) state this principle of human understanding is fundamental to all the other principles.

It was also mentioned earlier that hermeneutics itself, is one of the philosophical bases in interpretive research. And as the aim of this research is to conduct a completely interpretive research using a case study, the hermeneutics circle is going to be the underlying principle in this research. This idea goes hand in hand with Klein and Myers' suggestion that the hermeneutic circle principle will be the basis of other principles. This research will be continuously iterating from understanding the whole to the parts of the system in order to understand the notion of knowledge co-creation.

Examining the notion of knowledge co-creation within online communities requires the understanding of each of the parts. The research initially looked at what is referred to as knowledge. It was stated that knowledge resides in human interpretations of information.



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These human interpretations are affected by the experience of the individual, its social surrounding and historical context. They are built and developed by the individual's interaction, collaboration and communications with other human beings. One can label them as an individual's social interactions. Now, based on each person's experience and understanding, the knowledge within each individual varies. An individual can take his or her own understanding of what a particular knowledge is, while another can take a slightly different view using the same information. The difference is formed based on each individual's experience.

In this research co-creation is referred to as the *group construction of something* (the 'something' in this research is knowledge). How does a group of individuals construct or create something together, one may ask. The co-creation takes place when various actors or users collaborate and interact about a topic. It is from their interaction and sharing of information and knowledge that they create and co-create new knowledge and understanding of things. It is important to note that the co-created knowledge will not necessarily be the same for all of them. This would vary depending on their previous experiences, social and technical understandings. The only reason that turns this knowledge creation into *co-creation* is the fact that it is initiated and shaped while the actors and users are interacting, communicating and collaborating with each other. This shaping of an individual's mind about certain knowledge, through the process of group communication and collaboration is what generates what is referred to as co-creation.

Communities are defined in different ways by researchers of various disciplines. However for the sake of clarity, this research needs to base its description of an online community on certain boundaries. This will help in providing a clear idea of a concept (community), which has been defined on a huge scale and range of disciplines. The term online community (in this research) is referred to a group of people who: have a shared interest or common goal, are governed by a set of policies and guidelines (whether tacit assumptions or explicit rules), use a form of electronic communication medium i.e. the Internet, to communicate and collaborate.

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As the literature suggested, nowadays one can find many different types of online communities, however for the sake of clarity, as long as they share the above characteristics, they are labelled as an online community. What is important here is that there is a platform for users and actors to communicate and collaborate through. How they do that, is not of major concern at present as it is the communication, which is the important factor. The technology plays the role of the facilitator and exists to connect users together.

Now that an understanding of each part of the whole system under investigation is delivered, one needs to step back and look at the overall understanding of the whole: knowledge co-creation in online communities. It seems that the co-creation here, goes hand in hand with the idea of a community. As stated earlier co-creation is the group creation of some sort. The group here refers to the community and its members who happen to be connected virtually. The technology enables their collaboration and communication, and the result of their interaction is the co-creation of knowledge. This co-creation often takes place unintentionally and without the individuals actually realising it. Perhaps it can be said that the co-creation occurs as long as the collaboration exists. Once the actors or members of a community stop talking (communicating) to one another, there would be no sharing of information or knowledge, hence, no co-creation.

### **5.5.2 Contextualisation**

The principle of contextualisation requires that the subject matter be set in its social and historical context so that the intended audience can see how the current situation under investigation emerged. There seems to be a difference between the positivist approach and interpretive approach to contextualization. Interpretive researchers seek to understand a moving target. They believe that relationship between people, organizations and technology are not fixed but constantly changing. While positivists study the way the organization has been in the past, but then presume patterns observed in the past will repeat themselves (Klein and Myers, 1999). The principle of contextualisation will now be

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examined in this research where in the next section it will try to look at the case study context and how they relate to the research's original concepts.

Knowledge co-creation has been around since people started communicating and collaborating. The difference is that initially it was based on a physical interaction i.e. a gathering of friends talking and communicating at a birthday party. The advancement of technology has now made this possible in many different ways, as it has gone beyond physical boundaries. If before one had to be sat next to another person to communicate and share information and knowledge, they are no longer constrained by geographical locality. In a way the technology has worked as a catalyst for knowledge co-creation. Thanks to online communication and collaboration, this co-creation of knowledge takes place a lot more frequently and in an easier manner. One is now connected to millions of users through countless mediums and communication tools, at the comfort of wherever he/she is, using his/her smart phone or tablet. The Internet, which has connected millions worldwide, is the backbone of this structure as it is the connecting underlay. Various means of technology facilitates this communication and this has resulted in a more efficient co-creation. This is due to the fact that individuals no longer needed to be in physical proximity of each other to interact and communicate. Everything is done online now. It also means that there are more opportunities for knowledge co-creation as there are more instances of communication taking place at the same time. Co-creation takes place so often that people are not aware of it and probably do not acknowledge it taking place. This should not be a problem as co-creation can still take place unintentionally.

Online communication and interaction has also been revolutionised from its early Web 1.0 form, where information was fed through one way via static websites. Early stages of online communities were forums. Users would leave asynchronous messages and reply to one another's posts. This was a turning point in co-creation as groups of users were able to communicate on one platform. They could read and reply to other users. This was enhancing their way of collaboration. These advancements have now reached a stage where users can share contents like pictures and videos about their experiences and social

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life almost instantly. This type of rich content can be accessed by their friends and people in their network, where they could respond and engage in further collaboration. The evolution of the underlying technology in communication, means staying in touch and collaborating is now at the grace of an individual's fingertips. This makes the communication factor more frequent as for example you no longer need to physically be at your PC and logging into the system before you can share information, therefore resulting in more simultaneous communications. Therefore the co-creation concept and the three main elements of technology, online community and knowledge, can be summarised in the following way. The technology works as a facilitator to the system and connects users and actors of the system to form an online community. The interactions between the actors and users will create information and knowledge sharing. This will eventually create a platform that results in the co-creation of knowledge.

In the case of Plings, substance Ltd. (on behalf of Manchester city council) has created various technological platforms that the youth can use to gather information about useful events. These platforms come in various forms i.e. a website, mobile app, widgets and other web 2.0 technologies. The idea is to provide the activity information in as many ways as possible through the use of various technology platforms, in order to make the information easily available to the youth. Once the youth start attending activities, they would then come back to these platforms and have some sort of input. This input can be in the form of uploading pictures and videos from an activity, leaving comments and ratings etc. Like other web 2.0 platforms, here the users create the content.

Once the technology has created a platform for users to connect to each other, the users will form what is described as an online community. It was explained earlier how nowadays there are so many different types of online communities. However this research will base its definition of an online community on the notion of community from Bruckman (Preece, 2005). It is important to base the research on grounds, which are clear and though not firmly specific, but with boundaries. Therefore in this research the term online community, is a group of people with the following characteristics:

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Technically Online – use some sort of electronic telecommunication medium (i.e. the Internet or Intranet), not necessarily as their only means of interaction, but as their main source of communication.

Shared interest or common goal – need to have some form of common goal, purpose or at least mutual interest.

Policies and rules – when they are part of a community they should be obeying certain rules (be it tacit assumptions or explicit), protocols or guidelines that guide people's interactions.

When this is projected on the Plings case, it can be seen that the youth who are communicating will first of all be communicating through the online platform, hence are technically online. Secondly they have a shared interest and goal that is to find out about youth activities in Manchester and provide feedback or share their experience in some form or another. And lastly, will be abiding certain rules and policies that substance Ltd or Manchester city council will put in place for their communication. Although most of these types of policies and rules are tacit and generally the same on most social networking websites. It is therefore concluded that the youth who use these technological platforms to communicate and provide feedback will form an online community.

Now that the concept of technology and online community in Plings has been looked at, it is time to look at knowledge. What is the knowledge referred to in this study? As it was explained earlier the knowledge this research is referring to comes from experience of an individual, which stems from his/her social interactions. In terms of Plings, before reaching the co-creation stage, the actors and users of the online community (Plings) will be sharing information and knowledge. This will be in the form of uploaded content like photos, videos, comments and feedbacks. A conversation or other forms of communication is then initiated between the users, which create further content. This can simply be replies to a

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picture of an activity that one of them may have attended and uploaded. They will share their thoughts and opinions from what they have experienced. This would be the sharing of information and knowledge. It is after this stage of exchange of information and knowledge that co-creation starts to happen.

The interactions and communications between the actors create an atmosphere for the co-creation of knowledge. The users of the system will be involved in the co-creation of what this research labels as knowledge. Knowledge is subjective and therefore each actor may take a different understanding on the communication and exchanged content, depending on a lot of factors including their experiences and social interactions. This does not matter, as knowledge co-creation does not mean everyone will reach a unified opinion about a certain topic through engaging in conversation and collaboration online. Each actor may reach a completely different understanding of the knowledge from the same conversation or communication, and it can still be labelled as co-creation.

In order to make this clear, an example is given in Plings. This can be a typical instance in the Plings context. John and Mark attend a football session on Friday evening at the Sugden Sport Centre, run by Ardwick youth club. At the end of their session Mark takes a group photo and he later uploads the photo onto the Plings website and tags John and the event organiser running the session. John's friends see the uploaded picture in their news feed and engage in a conversation about the event. Martin (who is John's friend) comments asking where and when it was and also if the guys thought the session was any good. The conversation develops and both John and Mark have a bit of a different view on things. Mark believed that the pitch was too slippery due to the rain. The conversation moves on and Martin realises that the organiser who was running the session is an old physical education (PE) teacher he had at high school. They carry on discussing how 'cool' he used to be and how everyone used to enjoy their PE sessions with him.

As can be seen from a very simple communication online, which was initiated by an uploaded picture, a sequence of sharing information and knowledge takes place.

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Conversations are further developed and people get involved on a social networking basis. People who know each other in real life or are friends online will see notifications of some sort and can get involved in the collaboration. The youth are actually co-creating knowledge through their communications and collaborations. In this example for instance, topics like the pitch quality, football coach, and overall experience of the event are discussed and probably argued. The result of what each individual takes away or develops and reaches as a consequence of the interaction is called co-created knowledge. This is because no matter what the actual finding is for each individual, it is created (probably in their mind) as a result of the collaboration and interaction with other youth (which can be labelled as actors and users). Previous stage of this co-creation of knowledge is the sharing of information and knowledge.

### **5.5.3 Interaction between researcher and subjects**

The principle of interaction between researcher and the subject requires reflection on how the research materials (or data) are socially constructed through interactions of the researcher and participants (being researched). As the research here is of an observational nature, there are no interactions between the researcher and the participants who are the users and actors within Plings (the case study). Knowledge co-creation is studied without any data collection and interaction between the researcher and users of the case study, and therefore this principle does not seem to be applicable to this type of research.

### **5.5.4 Abstraction and Generalisation**

The principle of abstraction and generalisation is about relating particulars (as described in principle of contextualization) to abstract categories. Unique instances can be related to ideas and concepts that apply to multiple situations. Although interpretive research believes in the importance of analysing unique social instances and is suspicious of claims that human affairs are governed by natural positivistic laws that are culturally independent; it is widely accepted that interpretive research has a philosophical basis for abstraction and generalization (Klein and Myers, 1999). "Therefore, intrinsic to interpretive research is the attempt to relate particulars as may be described under the principle of contextualization to very abstract categories; unique instances can be related

to ideas and concepts that apply to multiple situations”(Klein and Myers, 1999). This does not mean simply testing theories in a direct manner like positivistic approach, in order to ‘falsify’ them. Nevertheless it is important that theoretical abstractions and generalizations should be carefully related to the field study details as they were experienced and/or collected by the researcher. This is so readers can follow how the researcher arrived at his or her theoretical insights. It also means the researcher can relate general concepts to existing and maybe even new theories which can then be applied to other case studies.

One needs to look back at the main general concepts and theories from the literature and see how they relate to the research case study. This process of generalising and abstracting concepts and relating them to the theories within the main three elements (online community, knowledge, and technology), allows the research to use the single case study of Plings to be linked with established theories. As a result the outcomes, which are related to concepts and theory, can be useful for future similar cases.

Online Community	Knowledge	Technology
Social presence theory	Objective & Subjective Knowledge	Web 2.0 concepts
Social exchange theory	Constructivist learning theories	
Social capital	Tacit & Explicit Knowledge	
Social network theory	Nonaka’s Knowledge creation model	

**Table 5.1:** Concepts related to each of the main three elements within knowledge co-creation in online communities

Table 5.1 illustrates a summary of all the general theories and abstract concepts related to our three elements within knowledge co-creation.

#### **5.5.4.1 Concepts within Online Communities**

Within online communities there are four theories that were relevant to this research; social presence theory, social exchange theory, social capital, and social network theory.

##### **5.5.4.1.1 Social Presence**

Social presence theory is the ability of the members of a community to project themselves socially and emotionally as real people in the community. How this is represented varies



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from platform to platform and depends on the technological aspects that help put the online community together. According to social presence theory, communication is effective if the communication medium has the appropriate social presence required for the level of interpersonal involvement required for a task. For example the face-to-face medium is considered to have the most social presence, while written, text-based communication probably has the least. In a way, social presence is the state of presence between communicators using a communication medium. For example some mediums like a video call has a stronger social presence than for example a voice call.

Social presence would be an important theory that will effect knowledge co-creation, as it directly impacts the communication and collaboration aspect within an online community. If a user is restricted in representing himself/herself online due to technological limitations, it will negatively impact his/her communications. Within Plings, the users and actors will have various means of socially presenting themselves. The web 2.0 technology, which is the underlying structure of the community, allows the users to have a profile for themselves that would have information about them, like any other social media platforms (i.e. Facebook). This will give them a sense of identity. Other users would have the same and they can communicate with each other via messages, audio and video clips. This provides a rich social presence within Plings and results in the increase of social interaction. An increase in social interaction means more communication and collaboration and thus indirectly results in an increased chance of co-creation.

#### **5.5.4.1.2 Social Exchange**

Social exchange theory claims that people will contribute not because of benefits from incentives per se, but because of benefits resulting from what is received in return, or future reciprocity (Bearman, 1997). People make contributions as long as others are believed to reciprocate. Social exchange theory suggests that individuals engage in social interaction based on an expectation that it will lead in some way to social rewards such as approval, status, and respect. This is probably more evident in online communities as the users may not have any other means of interaction other than the virtual form. Therefore they would require something in return or exchange of what they have put in. Users invest

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time and energy in online communities and at the same time expect some return in terms of direct or in-direct benefits.

It would be extremely difficult for a user to continuously add content and share information and knowledge with a community, if there was no reciprocal benefit for him/her. For example would a user of a social networking website add content i.e. in the form of uploading a picture, video, comment, note etc. if they were to receive no feedback (in any form i.e. likes or comments)? Maybe for a short period of time, but eventually they would be demotivated to contribute further. They need to be gaining something in return, if they are to continue sharing information and knowledge. Anything they gain in return for their contribution will complete this system of social exchange. Although with social media, it can get quite complicated at times. For example the reciprocity will not always be in the form of a replying comment or media file. It can be simply getting more views or likes or followers. This suggests that one potential way an individual can benefit from active participation is the perception that participation enhances his or her personal reputation in the network. Building reputation is considered a strong motivator for active participation (Donath, 1999). In any case there is an exchange of some sort. Some form of give and take. And this is what keeps the community alive. This is probably the main motivation factor behind online communities. Therefore social exchange theory suggests that the key to increasing user contribution is to increase other user's contributions.

In the case of Plings the users have a similar concept and their collaboration and interactions are based on a reciprocal basis and exchange of benefits. A user that leaves a comment about an activity expects some form of reply or feedback or rating from others. Social exchange theory states that people will contribute because of benefits resulting from what is received in return. For example when John attends an activity and rates the activity and his experience, he does that in the hope that his rating is recognised by the youth organiser. If he has given a low rating, it is a message to the organisers that some things were not right or probably need improving. This feedback can be vital and may go to an extent where the organisers of the event will make improvements to what they can

to achieve a higher rating by the youth in future. After a while John may see improvements in the way that the activity is run. This is the returned benefit John has gained through his feedback and in exchange for his input. Although this is a very simple example of social exchange theory, but other less noticeable reciprocity takes place in social interactions, where users will be looking for more of a moral return to their input for example social recognition or status. As a whole the concept of social exchange may not play as strong role as it may play in a solely social media platform in comparison to Plings, but it is still essential to the livelihood of the community, and therefore essential to Plings' existence.

#### 5.5.4.1.3 Social Network

Social Network Theory is the study of how people, organizations or groups interact with others inside their network. The term network refers to a set of objects, or nodes, and a mapping or description of the relationship between the objects. In the case of social networks, the objects refer to people or groups of people. In Plings, this refers to users or actors within the system. These can be the youth for example.



**Figure 5.3:** illustrating a sample social networking model<sup>11</sup>

Figure 5.3 shows how an actor is socially connected to various other actors. The connection here can be for example people who know each other through work. You can

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<sup>11</sup> Picture courtesy of tekoblin.com. (<http://www.tekoblin.com/2012/11/29/the-power-of-inter-connectivity/>)

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see that the figure in red in the middle is connected either directly or indirectly to all the other actors in the picture. The direct connections are people who are linked to him with a straight line. These can be people he works with at his company. Other actors connected to his colleagues will be their friends and friends of friends. They would know him through his direct friends thus forming a network of people. Some may not even know him but just know his friends. But they would still be part of his social network, as they know someone who knows him.

The connections between each node or actor, is called relationships or ties. It is interesting to look at interactions between each of the members of the network. Why do the individuals interact, how do they interact and what is the level of closeness (usually referred to as connectedness) between group members? Although, there are many types of relationships, including reciprocal, directional and others, each of the types can be reduced to either a strong tie or a weak tie. To simplify this, one can say strong ties are close enough for the actor to probably have their phone number, whereas weak ties would be surprised if the actor called them.

When Plings is looked at from a social networking perspective it can be seen that there would be a lot of weak ties involved. For example, between the youth who attend the same activity at the same youth club. They form a network but with weak ties. These can in fact later on turn into stronger ties as actors make friends and become closer. Their online social interactions though, will mostly consist of weak ties to start with, as they will not know the majority of the users. It is varying degrees of closeness, or connectedness that determine the value of that node to the network.

One of the elements within social networking is the element of trust. When an actor knows another actor, it creates a certain amount of trust and the stronger the relationship between the two; the more trust is likely to be present. Trust can play an important part in information and knowledge sharing, as one tends to interact and share information with closer tied people and nodes. This may be due to the fact that people, who have stronger

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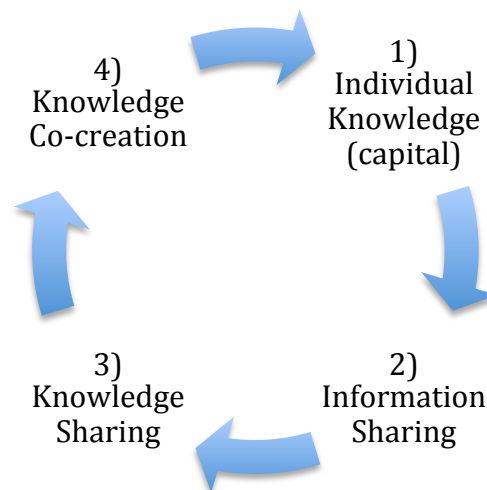
ties with each other and are closer together in the network, usually have more common factors. A lot of the time it is the shared interests that form stronger bonds between people and creates stronger communities. For example maybe two French teenagers who are both 14 and enjoy rock music and live in the Cheadle area are more likely to become close friends. They share the following common factors: same age, same nationality and therefore same first language, same taste of music, and living in the same area. All these are factors that can turn their social network connection into a strong one.

In Plings the youth use the web 2.0 platforms provided by the Manchester city council to communicate with each other, leave feedback and share information and their knowledge. Most of the social network connections on there will be weak ties which can get stronger as they communicate and interact. The concept of social networking here is what links Plings together. The youth form an online community based on the activities they attend and gradually build their social network. The stronger the social network the more chance of interaction and collaboration. This will lead to more information and knowledge sharing and hence more co-creation.

#### **5.5.4.1.4 Social Capital**

The concept of social capital existed ever since small communities formed and humans interacted with the expectation of reciprocation and trust. The idea is that the brainpower of a few people put together is greater than one of them on their own. If each person or individual has a certain amount of knowledge or information and it is called his/her capital; then a collective capital of a group of people within a community is greater than any of those individuals. Therefore the social capital idea means the more people become part of various communities, groups and networks, the higher their chance of greater social capital. Here the issue of trust plays a key role in people's cooperation and communication. Trust eases cooperation. The more people trust others and the more they feel that others trust them, the greater the likelihood of cooperation among these people (Blanchard and Horan, 1998). People who belong to more than one community or organisation create weak social ties between groups, or some refers to as 'bridging' social capital.

In the case of Plings when users start using the system to collaborate and form communities as part of the over all bigger Plings community, they are creating the social capital concept. Their social interactions and communications allow them to share their knowledge and their individual capital, and form a social capital within the Plings community. This will then pave the way for the co-creation of knowledge. It can be said that the co-created knowledge that is individual to some extent, adds more capital to the system. Figure 5.4 illustrates how an individual joins the online community with his personal capital and knowledge. He then shares his information and knowledge with other members. From this interaction and collaboration each individual gains its own version of a co-created knowledge.



**Figure 5.4:** Social capital increase by communications within the online community

For example what Jack could learn and gain from an experience that Mary has had in an event might be different to what Ahmed has learnt and understood. This is based on their past experiences and a lot of other factors and basically their own hermeneutical understandings. Both Jack and Ahmed have been involved in co-creation, but what they have co-created differs. This would then be a form of individual knowledge and capital, which then goes back in the loop of sharing information and knowledge as the individual continues to interact in the online community.

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The concept of social capital theory applies to every community whether it is online or not. It is the people and actors within the community that bring in the initial capital. The capital can be each person's knowledge and understandings. For instance actor A and B's capital put together is always greater than the one of actor A or actor B on their own. Actor A, B and C's capital is greater than A and B put together. Therefore it can be seen that the bigger the community, the bigger the social capital potential. The technology that connects people and brings this social capital together would be a key element of this system. Whether the potential of the social capital within a community can be used to its maximum capacity in order to help co-create more knowledge is something that relies on a lot of factors. One for example would be the technology, as it is the technology that would allow a smooth and fluent communication between the actors who have formed the social capital.

#### **5.5.4.2 Concepts related to Knowledge**

General concepts relating to knowledge and knowledge creation need to be examined. By highlighting examples of these concepts and relating them to the case study, Klein and Myers' principle of Abstraction and Generalisation is being applied.

##### **5.5.4.2.1 Objective and Subjective Knowledge**

Objective knowledge refers to something that is independent of an individual's personal preference, interpretation, belief or opinion. For example,  $2+3=5$  is the case whether or not one agrees or feels any different on the matter. On the contrary something is subjective when it depends on personal preference, interpretation, belief or opinion. For example, "Chicken-peperoni pizza is the most delicious Pizzas ever!" This statement is the case because an individual has this opinion, and not because it is the case independent of that individual's personal opinion. In other words that may not be the case for someone else who does not like chicken. Therefore it is subjective and opinion based. With regards to Plings, the objective knowledge is referred to as information. For example the Thursday night football started 15 minutes late at 8.15, instead of 8.00pm. This is regarded as objective knowledge and a user who has shared this information on the Plings website,

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has shared information. As discussed earlier one of the first stages of knowledge co-creation is information sharing.

A user (youth) may also continue to comment saying although the activity started a bit late; but it was very enjoyable and rates it with a five star feedback. This would be subjective knowledge as others may not feel the same and it cannot be proven.

#### **5.5.4.2.2 Constructivist Learning**

When looking at community knowledge sharing and creation, the learning aspects also need to be examined. One of the main learning theories is called *Constructivist Learning Theory*. According to this theory, it is believed that a learner's ability to learn; greatly relies on what he/she already knows and understands. These are of course dependant upon his experiences and how he understands existing knowledge. Social constructivism, which is one of the two widely accepted constructivist learning theories, is the most accepted theory associated with online learning (Kanuka and Anderson, 2007). The theory suggests that knowledge is generated through social intercourse, and it is through this interaction that one gradually accumulates advances in his or her levels of knowing. Therefore knowledge creation is based on our social experiences and interactions with others. This is an abstract concept that knowledge co-creation is based on.

When exploring the notion of knowledge creation and co-creation in a virtual environment, one can see similarities that allow it to be generalised in certain situations. For example when users communicate through a social media platform, they can upload pictures and videos and tag their friends. The people who are tagged will then get notified of the uploaded picture or video. They can then write a comment about this. Their friends would also see the picture or video and can also have some form of input. The interaction between these users, which was initiated by sharing information, then becomes sharing knowledge. Users can create their own tacit knowledge from these interactions, based on their social and historical background and experiences. They are then likely to have some input into the created discussion, which would create more knowledge for others. Before they realise what is happening, they are co-creating. This cycle goes on. The concept of



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this scenario can be generalised and one can see patterns emerging from other similar situations that result in co-creation of knowledge.

#### **5.5.4.2.3 Explicit and Tacit Knowledge**

Explicit knowledge is knowledge that can be expressed and easily communicated and shared. It is formal and systematic. It is articulated knowledge, expressed and recorded as words, numbers, codes, mathematical and scientific formulae. Explicit knowledge is easy to communicate, store, and distribute for example the knowledge found in books, databases, memos, notes, documents, on the web, and other visual and oral means. Explicit knowledge in the Plings case study setting would be information that users can easily share. For example the best route to get to the Ardwick youth club from Manchester city centre. This bit of information can easily be shared and stored by actors using the Plings platform.

Tacit knowledge on the other hand, is not so easily expressed. It is highly personal, hard to formalize and difficult to communicate to others. It may also be impossible to capture. A challenge would be to identify which elements of tacit knowledge can be captured and made explicit—while accepting that some tacit knowledge just cannot be captured. Tacit knowledge is sometimes referred to as know-how and refers to intuitive, hard to define knowledge that is largely experience based. Because of this, tacit knowledge is often context dependent and personal in nature. It is hard to communicate and deeply rooted in action, commitment, and involvement (Frost, 2010). In Plings, tacit knowledge is found in the minds of human stakeholders i.e. the youth who are the actors. It includes cultural beliefs, values, attitudes, mental models, etc. as well as skills, capabilities and expertise. A significant part of the co-created knowledge would be in the form of tacit knowledge as it would be the effect of communication and collaboration on the individual's inner mind first. Then it can show reflections in a more explicit form. In other words the individual will hermeneutically understand and interpret the incoming knowledge and information. This is a process that takes place in the persons mind. Other beings cannot see or access that and therefore it is labelled as tacit.

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The concept of tacit and explicit knowledge become very important especially when looking at the knowledge creating model by Nonaka and Takeuchi (1995).

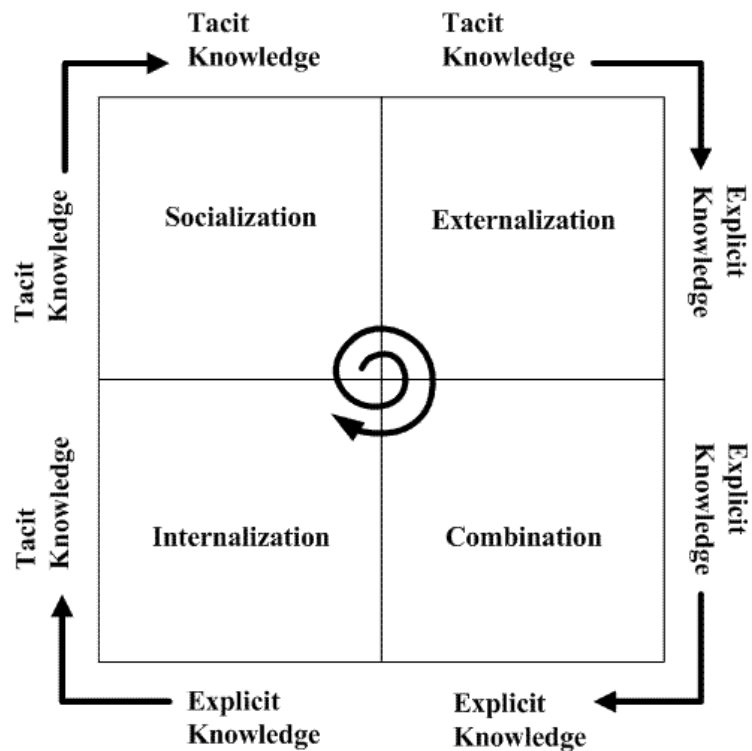
#### **5.5.4.2.4 Nonaka's Knowledge creating model**

Back in 1995, Nonaka and Takeuchi came up with the concept of the SECI matrix of knowledge conversion. This theory of organizational knowledge creation developed by Nonaka and his colleagues originated in studies of information creation in innovating companies.

Four modes of knowledge conversion were identified (Figure 5.5): tacit to tacit (Socialization); tacit to explicit (Externalization); explicit to explicit (Combination), and explicit to tacit (Internalization). After Internalization the process continues at a new 'level', hence the metaphor of a 'spiral' of knowledge creation often referred to as the SECI model (Nonaka and Takeuchi, 1995).

The creation of knowledge is a continuous process of dynamic interactions between tacit and explicit knowledge. It is believed that knowledge creation takes place as the knowledge is converted from tacit to explicit and back to tacit in a spiral loop form. The four modes of knowledge conversion interact in the spiral of knowledge creation. The spiral becomes larger in scale as it moves up through organizational levels, and can trigger new spirals of knowledge creation (Nonaka and Takeuchi, 1995). Each of the four stages are described below.

**Socialization:** Sharing tacit knowledge through face-to-face communication or shared experience. Tacit knowledge is converted into tacit knowledge during discussions, meetings. This means time has to be spent together so that knowledge can be acquired through physical proximity. An example is an apprenticeship.



**Figure 5.5:** Nonaka's SECI model (1995)

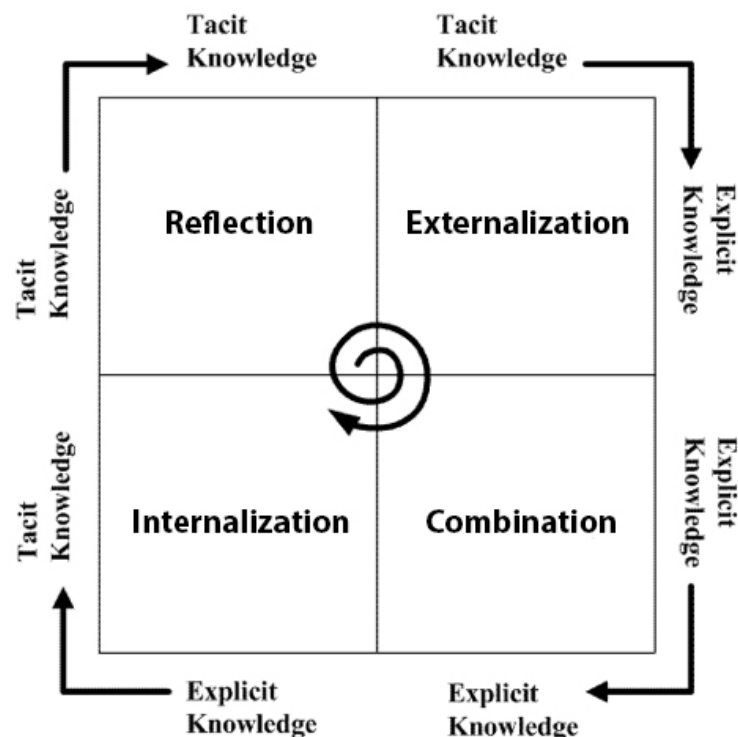
**Externalization:** Developing concepts, which embed the combined tacit knowledge and which enable its communication. The expression of tacit knowledge is in fact its conversion to explicit knowledge and to be able to do this figurative language and visuals are essential. Therefore basically tacit knowledge is converted into explicit knowledge and outlined in i.e. documents and manuals etc.

**Combination:** Combination of various elements of explicit knowledge into (maybe a) more complex sets of explicit knowledge for example building a prototype.

**Internalization:** Explicit knowledge is converted into tacit knowledge by individuals. This is closely linked to learning by doing; the explicit knowledge becomes part of the individual's knowledge base (e.g. mental model) and becomes an asset for the organization.

Nonaka's model was created based on studies of Japanese organizations. As it is clear from the above descriptions, these mainly include organizations where the knowledge is being created through a physical community rather than an online community. Therefore the model needs to be adjusted or re-designed to meet the requirements of an online environment. Although the same concepts of SECI may be applied, but one cannot say that the model as it is, would be applicable in a virtual setting. For example the socialization takes place through interactions of a physical proximity i.e. interactions in a classroom or a meeting. Such a medium is not available online, unless in very specific situations for example an online videoconference. Or the externalization would involve developing concepts and putting down what is in the mind as an explicit form of knowledge i.e. document or manual.

Nonaka's knowledge creation model needs to be altered to reflect the online community environment rather than the physical organization. Figure 5.6 demonstrates a modified version of the knowledge creation model, called the RECI model.



**Figure 5.6:** The proposed RECI knowledge creation model for online communities

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The process starts by a Reflection or cognition, which takes place inside the individuals mind. This would be in the form of tacit knowledge. Reflection is referred to the stage where the user reflects about something like a certain phenomenon or event instance, in his own mind. This is the thinking process by the individual. It is mainly in this stage that the user hermeneutically interprets things around him and reflects in his own mind.

In a way the next stage is a mixture of Socialization and Externalization. This is where the tacit knowledge turns into explicit knowledge. After reflecting, the online community user will start to use the technology to communicate with others. This communication and collaboration is socialization side. It also indirectly refers to the act of socialising that takes place in online communities. Externalisation refers to the act of putting what is in the users mind into a form of explicit entity. This can be a feedback, comment or an uploaded material or even rating an event in Plings. As soon as the user ads content via the technological platform that is provided, he/she is entering the externalization phase. Here the tacit knowledge, which resided in the individuals mind, turns into explicit knowledge, which would be a physical contribution and input in the online community.

The Combination phase would be quite similar to Nonaka's description of this section for organizational knowledge creation. Here the explicit knowledge is turned into other forms of explicit knowledge, sometimes more complex. For example in Plings; information about a youth club's activities in 2012 and the youth's feedbacks, which were put online, could be turned into an interactive timeline of events for that particular year, to illustrate them in a more clear and easy to follow manner. Here the knowledge was already explicit, and it has just changed forms.

The last stage would be Internalization, which again would be similar to Nonaka's idea of the conversion of the newly created explicit knowledge into the individual's tacit knowledge. In this phase the user within the community will learn from the shared information and knowledge that was explicitly displayed in the community. They will evaluate and make their mind up about things. Therefore the external knowledge turns

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into tacit knowledge again. From this stage the knowledge creation process goes back to its starting phase of reflection, where the individual will reflect on the newly created knowledge. This would however be on a different level. This is because the individual has learnt more through the collaboration and communications, since his knowledge creation process started and therefore is at a higher level (refer to the spiral effect of the model).

Using the concepts in knowledge and knowledge creation, and matching them with the same concepts in our case study (Plings), allows one to better understand the setting and context of co-creation.

### **5.5.4.3 Concepts within the Technology**

It was discussed earlier that the main technology behind online communities nowadays is Web 2.0. Dawson (2007) describes seven characteristics of the web 2.0 concept as: Participation, Standards, Decentralization, Openness, Modularity, User Control and Identity. These concepts will now be examined with regards to Plings.

#### **5.5.4.3.1 Participation**

Every aspect of Web 2.0 is driven by participation. In fact it is one of the drivers of the Web 2.0 concept as it is mainly based on people's input. The same holds true for Plings as it is mainly based on the participation of the users (youth) who use the system. They are the ones who upload content and feedback. The participation of the youth has a direct link with their communication and collaboration, which affects knowledge co-creation.

#### **5.5.4.3.2 Standards**

It is of great importance that the Web 2.0 platform consists of sets of standards. Common interfaces for accessing content and applications are the glue that allow integration across the many elements of the emergent web. These standards are like a set of measurements that are applied to various applications, so they match and are able to communicate with each other. These standards can also be seen in Plings as the system is accessible on

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various different mediums. For example there are the website, the mobile app, the widget and integration plugins for social media platforms like Facebook.

#### **5.5.4.3.3      Decentralization**

One of the ideas of web 2.0 is that it is decentralized in its architecture, participation, and usage. This was actually one of the ideas behind Plings as the council wanted to make the activity data available through various mediums. And in other words make the information more accessible via different platforms.

#### **5.5.4.3.4      Openness**

One of the features of web 2.0 is its openness. This gives transparent access to their applications and content. This is also the case with Plings as other media can get access to the activity feeds to display their contents. This feature makes the system user friendly and adaptable to other web 2.0 systems.

#### **5.5.4.3.5      Modularity**

In a way Plings uses various youth organisations' information and components to form a mashup style of service. These can be updated and edited by each activity provider but the final product looks like one system that is in fact made up of smaller modules.

#### **5.5.4.3.6      User Control**

One of the main objectives of Web 2.0 is for users to control the content they create, the data captured about their web activities, and their identity. Although in Plings, the initial data about activities is provided by Manchester city council as one source, but in fact it is the users and the youth who will control and contribute to the rest of the content. User contribution will be in the form of ratings, likes, comments, discussions, uploaded media etc.

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#### **5.5.4.3.7 Identity**

Identity is an important part of web 2.0. This means the users of such systems need to be able to create an identity for themselves online. This ties in with the social presence theory in online communities. In Plings this identity is provided by giving each user a profile, after they have registered. This would contain their personal information, similar to other social media profiles. It allows each user to have an idea of what the other user is like.

Overall generalising and abstracting the concepts within Plings and linking them with concepts and theories from the main three elements within this research allows us to relate what happens in practice to the theoretical ideas behind it. This can help the understanding of critical ideas behind the process of co-creation of knowledge.

### **5.5.5 Dialogical Reasoning**

Dialogical Reasoning requires the researcher to make as transparent as possible (and state) its –historical- fundamental philosophical beliefs and assumptions. This will give the reader a clear idea of where the researcher is coming from in terms of ideas i.e. what type of philosophical roots he/she accepts or what type of interpretive approach is being taken. It is in a way, the declaring of the prejudice or prejudgments of the researcher. It provides a description for a lens through which the researcher will construct, document and organize field data. Dialogical reasoning also allows the researcher to compare research findings with its preconceptions and see if they support it or not. Sometimes these preconceptions may need to be modified or abandoned altogether (Rowlands, 2005).

The research takes a qualitative approach rather than a quantitative one, as knowledge co-creation needs in-depth analysis of the context and social interactions. It is based on an interpretive epistemology, as it does not intend to prove or disprove a hypothesis. It is more about trying to identify, explain, and understand how all the factors in the particular social setting (online community) work. Following Klein and Myers (1999), the underpinning assumption for this interpretive research is that knowledge is gained, or at



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least filtered, through social constructions such as language, consciousness, and shared meanings (Rowlands, 2005).

This principle requires some form of reflection at the end of the research in order to see what the findings are and how they are different to our initial preconceptions. Therefore it will be touched upon at the end of the discussion chapter.

### **5.5.6 Multiple Interpretations**

The principle of Multiple interpretations looks at the conflicting interpretations of the participants of the case study, which is based on their social context and experience. This may mean that each participant or stakeholder has a different idea of what they are trying to find out or how. The researcher needs to know about these multiple interpretations. It requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all describe the same tell incident, but from their own perspective.

In our case study of Plings, which is used as an example of an online community where knowledge co-creation takes place; one can point out various stakeholders that due to their background and experience may have their own idea of what they want from the system.

The research is assuming that none of the participants or stakeholders are aware of the so called “knowledge co-creation” which is taking place. Or at least they do not call it that. Lets distinguish who these stakeholders are and see what their idea of Plings is. It would also be interesting to see what each think of the concepts of online community, the technology, and knowledge co-creation.

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#### **5.5.6.1 Government**

The government's idea of what they want from Plings, is that they required a system to be put in place in order to allow the youth of various cities and towns in England to get involved in *positive* activities throughout their spare time. This would eventually keep them busy and hopefully out of hanging around in streets and evidently causing trouble. The government is not really concerned about how this is achieved or whether it is through creating an online community or not, or even if it results in any kind of co-creation. They are mainly concerned about getting the youth off the streets so that they could use their time doing something positive. As a result they could be developing their personal skills and using their potential in a positive manner.

#### **5.5.6.2 Manchester City Council**

The council's aim was initially to take a lead in the government's initiative of positive activity for the youth, and probably to attract funding for the cause from suitable governmental body. They may have also had the idea of keeping the youth busy with activities and take them away from just hanging in streets and causing trouble. The council had no vision with regards to creating an online community or co-creating knowledge of any sort. They would however have been interested in sharing information about each event and putting this forward to the youth. In doing so they wanted to use the latest technology, which could be trendy and popular with the youth and would in a way attract them towards using it.

#### **5.5.6.3 Substance Ltd.**

The company called Substance Ltd. was the technical arm of this government initiative for the Manchester area, which was taken on board by Manchester city council. Their role was to create the technology behind delivering the service. Substance's interpretation of the system could have been a technical data collection and delivery service that allowed the youth to find out about positive activities in the Manchester area, through various communication mediums. They would look at the structure from a social and also a

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technical system's perspective. They would be aware that they are creating an online community for users to communicate and collaborate about activities. In terms of technology, Substance Ltd. would be at the heart of technically creating the system and maintaining it. They would intentionally create an online community environment and use the relevant communication, feedback and collaboration tools to allow the users to connect to each other and use the system to not only find out about activities but also to interact with one another. They were aware of the power of web 2.0 technology and its capabilities and insisted on using the popular concept to make Plings popular with the youth. Their idea was to take these services to the youth. Therefore a lot of the developed technology was based around adaptation to Web 2.0 services that were already being used by the youth.

#### **5.5.6.4 Youth groups and activity providers**

These are the organisations that actually run these positive activities. Some are private and some are government/council funded. They would look at the Plings project as a platform that provides them the opportunity to advertise their activities to the target audience (the youth and their parents/carers). In an ideal situation, they would take into account the feedback by the youth on their activities and services and can reflect on it, and therefore improve their services. They recognise a sense of community as they communicate with the youth through either replying to their feedback and posts or actually uploading content of their activities. In terms of technology, they use it to feed through their activity data and to collaborate with the users. This may be a challenge for some of them as they are used to more traditional ways of advertising their events i.e. flyers and posters, rather than web 2.0. They have no vision of knowledge co-creation, rather just information sharing.

#### **5.5.6.5 Youth (13-19 year olds)**

The young people and youth population, who are the main stakeholders of Plings, are direct users of the system. They will use the data and information to find out about positive activities, which are run in various areas in Manchester. They will also

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communicate with each other using different Plings platforms. Their interpretation of Plings would be an information delivery tool that states what activity is taking place at which location. It would also, in the best of cases, be a communication tool that will allow them to communicate with other youth who use the service. Therefore the youth can possibly see Plings as a community. In terms of the technology side of things they would be familiar with them as it has a lot of social media capabilities that most of them already use. They would use the technology to communicate and collaborate through the Plings system. The youth would not be aware that they are co-creating knowledge but rather sharing information and feedback.

#### **5.5.6.6 Parents**

The parents would have similar interpretations from Plings as the youth would have, with the difference that they will not take part in the actual activity. For example they would be as interested as the youth in finding out where the activity is taking place and when. Maybe they would need to drop their teenagers off and pick them up again. Or they may just wish to know where exactly their youth is, at certain times. They may for example wish to check reviews by other users of a youth club (or organisation) before they allow their youth to attend. They would not be part of the online community, although they would probably be aware of it as their child is using the system. It is more likely that parents be actually more in favour of their youth using the Plings system as compared to other social media platforms. This is because Plings is associated with actually doing engaging in physical activity. The parents would use the technology to find out about events themselves, but they would not be communicating and taking part in the online community like the youth would. In terms of knowledge, the vast majority of them will not look at Plings as a place where knowledge is created.

Table 5.2 summarises the interpretations of each of the stakeholders with regards to the Plings system and other concepts within this research.

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Overall one can see how various stakeholders in the case study can have a different interpretation of the system. This will effect how they use the system and can sometimes cause confusion. For example a parent or a young person using the Plings system to find out and attend an activity, may get confused and think that the activities are being run by the Manchester council under the name Plings. They may wish to for example complain about an issue to the council. Although the council is one of the main stakeholders of the system, however they are not responsible for the delivery of the service. They have simply gathered the information about the activity and with the help of Substance Ltd made this information available to the youth using a number of mediums. As one can appreciate, these types of interpretations may cause confusion for the different stakeholders involved.

Users of any service can have different interpretations and views of how and why they are using the service. Plings is no different. This is not necessarily a negative issue as it may be the case that co-creation works better when it is done unintentionally and more naturally, rather than forming a community to intentionally communicate for knowledge creation and co-creation purposes. The same applies to Plings. Users may use the platform for different purposes. One may use it just to find out about positive activity around his place of residence, while another user may use it as more of a social networking tool, staying in touch with people he had met at an activity. One may use it simply as a feedback tool to try and voice his concern about certain problems and issues at some youth organisations. In an extreme negative case, the system can be used by criminals or paedophiles to find out about the locations of the youth. This is where more serious issues than co-creation need attention. Although as clear as it may seem, it is outside the scope of this research.

Concept	Plings	Online Community	Knowledge and Co-creation	Technology
<b>Stakeholders</b>				
<b>Government</b>	<ul style="list-style-type: none"> <li>Youth get involved in positive activity</li> <li>Keep youth off streets</li> <li>Keep youth out of trouble</li> <li>Youth skills development</li> </ul>	<ul style="list-style-type: none"> <li>Not interested if online community is created or not</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>Have no intention of co-creating knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Not interested in what technology is used</li> </ul>
<b>Manchester City Council</b>	<ul style="list-style-type: none"> <li>Take lead in government initiative</li> <li>Attract funding</li> <li>Keep youth out of trouble</li> <li>Youth skills development</li> </ul>	<ul style="list-style-type: none"> <li>No vision of creating an online community</li> <li>Not concerned with creating it</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>No intention of co-creating knowledge</li> <li>Aimed at sharing event information with youth</li> </ul>	<ul style="list-style-type: none"> <li>Wanted to use the latest technology</li> <li>Use technology that is attractive for youth</li> </ul>
<b>Substance Ltd.</b>	<ul style="list-style-type: none"> <li>Design and implement the Plings system</li> <li>Collect information from youth organisations and make it accessible to youth</li> <li>Implement a popular system for youth</li> </ul>	<ul style="list-style-type: none"> <li>Intentionally creating an online community environment</li> <li>Allowing users to communicate &amp; interact</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>Aware of sharing information and knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Data collection and delivery system</li> <li>Using already popular web 2.0 services</li> <li>With attention to social issues</li> </ul>
<b>Youth groups and activity providers</b>	<ul style="list-style-type: none"> <li>Platform to advertise their activities</li> <li>A system that allows feedback from participants</li> </ul>	<ul style="list-style-type: none"> <li>Recognise the sense of community</li> <li>Communicate and interact with the youth</li> <li>Take advantage of the feedback system</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>Aware of sharing information and to some extent knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Maybe difficulty in using the system initially</li> <li>Use to transfer activity data to plings system</li> <li>Use as a means of communicating with youth</li> </ul>
<b>Youth (13 – 19 year olds)</b>	<ul style="list-style-type: none"> <li>Main stakeholders</li> <li>Use to find out about activities</li> <li>Use it as a communication tool</li> </ul>	<ul style="list-style-type: none"> <li>May not see plings as a community but will use it as one</li> <li>Use it as a feedback tool</li> <li>Use it as a socialising platform with friends</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>Aware of sharing information</li> <li>Rarely aware of sharing knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Familiar with range of technology</li> <li>Used to find out about activities</li> <li>Used for communication and collaboration purposes</li> </ul>
<b>Parents</b>	<ul style="list-style-type: none"> <li>Find out about activities</li> <li>Get reviews and feedback about activity organisers</li> </ul>	<ul style="list-style-type: none"> <li>Can see a form of online community</li> <li>Not part of the community</li> </ul>	<ul style="list-style-type: none"> <li>Not aware of co-creation</li> <li>Not involved in sharing information or knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Familiar with the technology</li> <li>Use technology to find activity details (where, by who)</li> </ul>

Table 5.2: Describing each stakeholder's interpretation and understanding of the concepts within the research

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Generally none of the above stakeholders will be looking at the system from this research's perspective. This is due to the fact that they are not looking at the knowledge co-creation within this process of data collection/sharing, communication and collaboration. It is the researcher who is looking for the notion of knowledge co-creation in the system and therefore it can be concluded that the co-creation referred to in this work is an unintentional by-product of the Plings systems that most likely is not appreciated by the stakeholders. It is clear that 'knowledge co-creation' was not on the minds of the government, the council or Substance Ltd. Their intentions and goals were obviously different. This means that even the research interpretations of the researcher can be different from the people involved in the case study research, and thus support the methodological approach that this research has taken, in opting out of collecting any form of data in its traditional sense.

### **5.5.7 Suspicion**

The principle of suspicion requires the researcher to be sensitive and careful of bias and systematic distortions in the narratives collected from the participants. This principle does not seem to have much relevancy to this type of exclusively interpretive research as no data collection as such has been carried out. The participants have not had any direct feedback or survey, as the research is an observatory interpretive case study. Therefore one cannot show sensitivity to distortions in direct narrations from the participants.

Nevertheless even on a research method of this type, one may still be able to reflect on this principle. On a deeper inspection of this principle it can be seen that the idea of how Plings functions was initially provided by Substance Ltd. Although the case study is hypothetical to some extent there has been some input from Substance Ltd. who is the technological arm behind the Plings system. The input was an overview of how the Plings system works as an overall structure (refer to chapter four, Plings case study). As a researcher taking on board Klein and Myers' principle of suspicion to a deeper level, it needs to be mentioned that suspicion can be considered about the input from Substance Ltd. In other words looking at the way in which the information provided by the company can be inaccurate or misleading. In this research this would not make a great deal of

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impact as Plings (the case study) is not being studied, rather the concept of co-creation is. And also Substance would have no interest in providing misleading information anyway.

On another level the researcher should also be suspicious about his own judgements and bias, which ties in with the *dialogical reasoning* principle. Saying this, as part of the case study about Plings is hypothetical in this research, it can be claimed that this principle would not have much affect, as the impact on the findings is not reflected.

## 5.6 Summary

This chapter used the Klein and Myers' principles to explore and analyse knowledge co-creation in the Plings case study. The interpretation and analysis was based on the initial conceptual framework. It was stated that the underlying epistemology of this research is hermeneutics as it is deeply connected with interpretivism and understanding of knowledge. The seven principles were then evaluated based on the main three elements of the research, which were online communities, knowledge and technology. Where appropriate examples from the Plings case study were given in order to relate from theory to practice.

Depending on the principle and its context, some of the principles (like abstraction and generalisation) were considerably more extensively studied than others. This depended on how related the principle was to other concepts and ideas. The evaluation also found that some of the principles like the principle of *interactions between the researcher and the subject*, and the principle of *suspicion* would not apply to this type of research, as there was no data collection and interaction between the researcher and individuals in the case study.



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## CHAPTER SIX: DISCUSSION

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### 6.1 Introduction

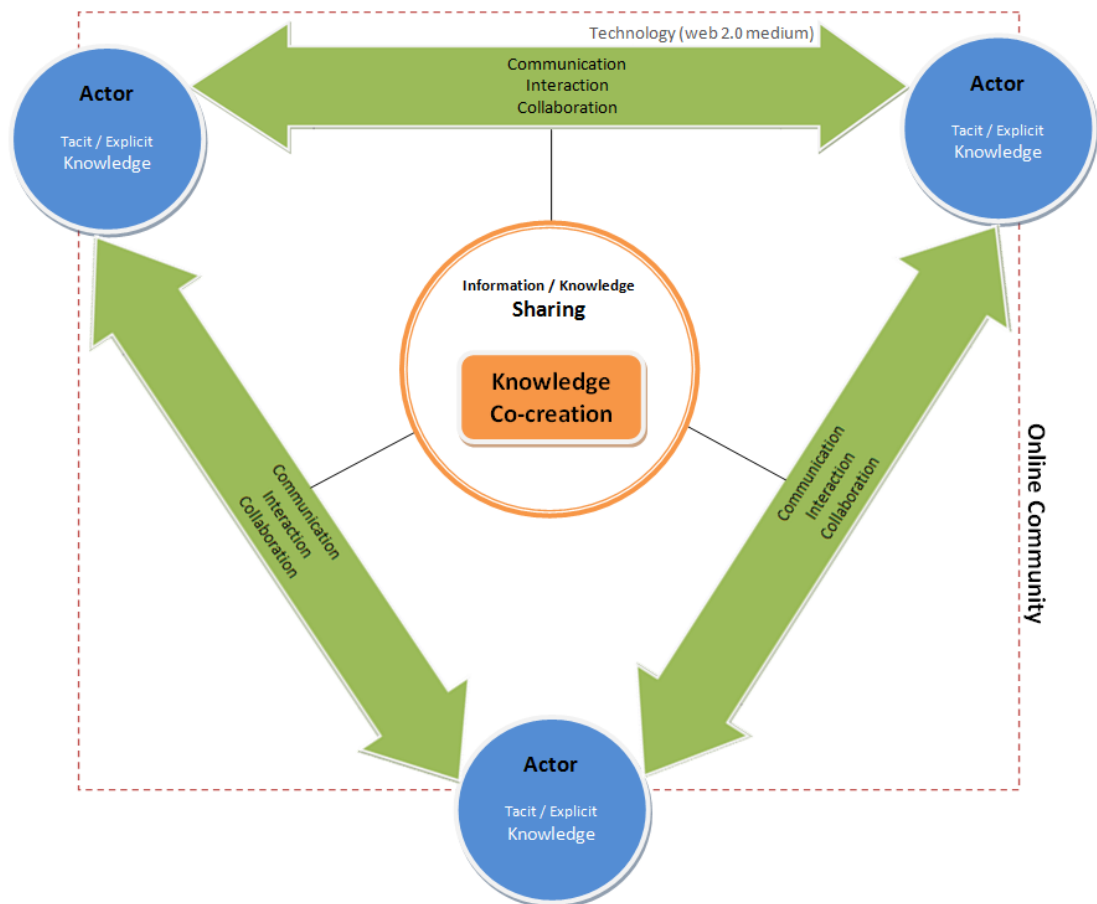
This chapter will look at the main discussion in this research, in order to answer the main research questions. The initial conceptual framework will be revisited and amended according to the discussions and findings of the research. Looking at the knowledge creation model, the research will introduce a more detailed conceptual framework of knowledge co-creation, within an online community. It will then look at the knowledge co-creation phenomenon and raise possible characteristics and guidelines for the design and implementation of knowledge co-creation in online communities. At the end of the chapter, the concept of an online community will be reviewed again in accordance with the findings of the study. The chapter will end by explaining the proposed knowledge co-creation hypothesis that can pave the grounds for a possible theory in the field.

### 6.2 Knowledge Co-creation Framework

The research initially came up with the knowledge co-creation conceptual framework, which was based on the triangular elements of knowledge, online community and technology. The framework that can be seen in figure 6.1, illustrates actors within an online community environment that communicate, collaborate and interact with one another using various web 2.0 technologies. For simplicity of illustration, the framework only demonstrates three actors. Obviously this concept needs to be extended to all the users or actors within the online community but that would depend on the number of users and has been deliberately reduced to three for demonstration purposes.

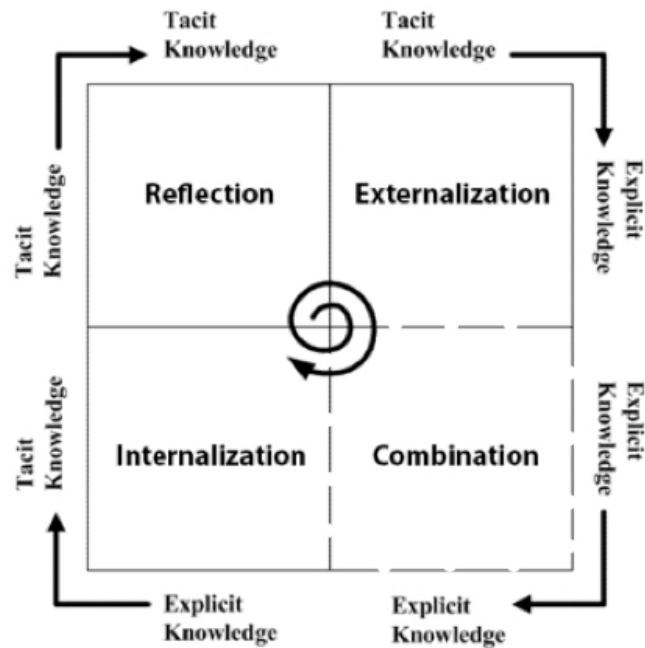
It can be seen that each actor possesses its own tacit and explicit knowledge. The interactions and communications of the actors within the community are in essence the

information and knowledge sharing processes that take place. It was suggested that this would then turn into knowledge creation and co-creation.



**Figure 6.1:** Initial conceptual framework from literature review

The actual process of knowledge creation was examined by looking at Nonaka's (1995) model. This model was modified to meet the online community environment. Figure 6.2 demonstrates the new knowledge creation model for online communities. This model is going to be called the RECI model. This is the model for knowledge creation for each actor within the community. The research here is suggesting the process of knowledge creation is achieved by going through the communication and collaboration phase between the actors.



**Figure 6.2:** Amended RECI Knowledge creation model for online community environments

Each actor comes to the community with a state of mind based on his own ideas and understandings. This is stage one and is called the reflection stage. At this stage everything in the actors mind is tacit as he has his own subjective ideas of things around him.

In the second stage, which is called externalisation, the actor starts communicating and interacting within the online community. This section is half based in the actors' mind and half based in the online community. The former takes the tacit form and the latter is the explicit form of knowledge. Once the actor puts his hermeneutical understanding of things into a physical explicit form i.e. a post or comment, then he has gone through the externalisation phase. This phase includes putting ideas that are solely in the individuals mind into an external form. Information and knowledge sharing starts in this stage. This section of the externalisation phase would take place in the online community, using the technology.

In the combination stage, the knowledge can be transformed into another explicit form i.e. a text comment to a video illustration. This would be completely explicit and within the

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online community. This stage may or may not take place, as the actor may or may not turn one explicit form of knowledge to another. The actor can skip this stage and move onto the Internalisation stage and that is why this section is outlined with dashed lines.

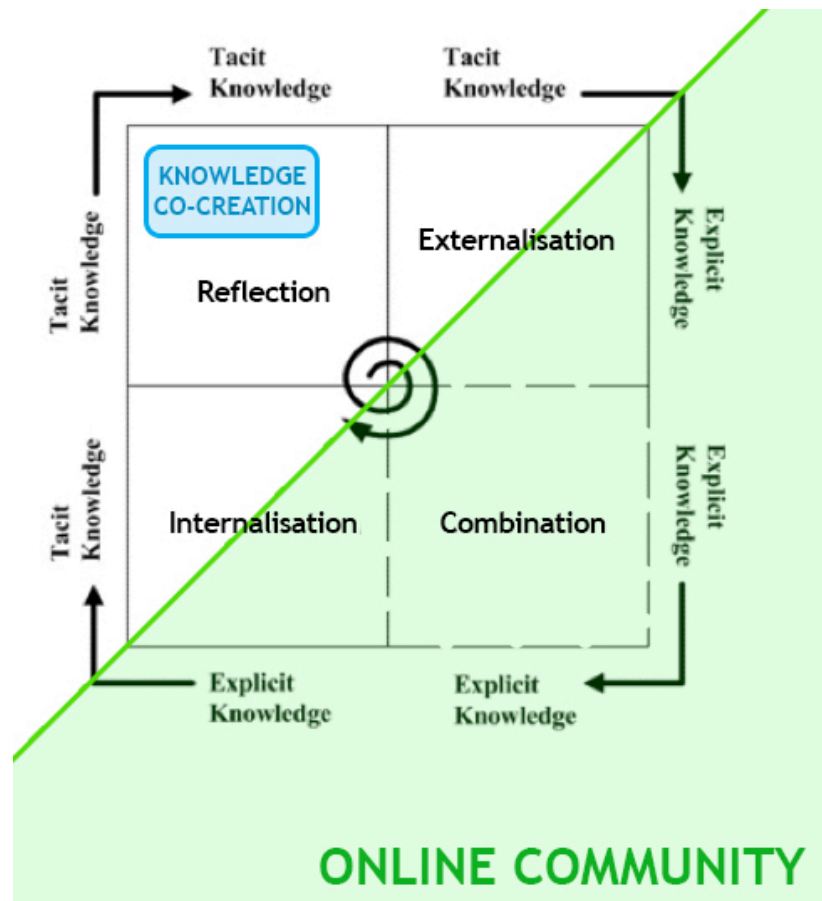
Internalisation is where the explicit knowledge is turned into tacit knowledge. This stage is where the actor is learning from the shared knowledge and information. It is where the explicit knowledge is converted into tacit knowledge ready for hermeneutical reflection that is the next stage. For example, as soon as a youth in Plings reads a comment or feedback, internalisation has taken place. This is because the external knowledge has changed into a tacit form, which is in the actor's mind.

Once the circle of knowledge transformation has taken place, the actor will be back in the reflection stage but on a higher level (refer to spiral effect of diagram). This is because the state of the mind of the actor is now of a greater value as it has gone through the knowledge transfer stages and has acquired more knowledge. The actor will then reflect on what the input of knowledge has been and on the created knowledge. This is done in a tacit mode as it takes place in the actors mind. The actor will go through a hermeneutical reflection process to understand and interpret the new knowledge.

The research indicates that the creation and co-creation of knowledge takes place on the second level of this model in the reflection area. It does not happen on the first level because no interaction has taken place. The first level of reflection is when an actor joins a community and has not yet started communicating or collaborating with any other actor. Therefore it is clear that at this level and stage, there is no knowledge creation and co-creation taking place. The term co-creation here is a replacement for the word creation as it is the interactions and communications of a number of actors that create the knowledge, hence being called co-created knowledge.

It was discussed before that the co-creation is different for every actor based on a lot of factors like their intelligence level, experiences, prejudices, background and a lot of other elements that form their hermeneutical understanding. Although people can have very

similar or in some cases the same understanding of an event or phenomenon, it is unlikely that they would have the exact tacit knowledge. Therefore it can be said that each actor's co-created knowledge is unique to himself or herself. This is because it would be their take and understanding of it. This means that co-creation takes part in the individual's mind. It would be their understanding and hermeneutical reasoning, influenced from the communication of others that co-creates the knowledge. This new co-created knowledge will consequently fall into the tacit side of the model. Consequently if we try to put the co-creation into the knowledge evolution model that was proposed, it would give us the following model (figure 6.3).



**Figure 6.3:** An actor's RECI knowledge co-creation model in an online Community

As it can be seen half of the knowledge evolution process takes place in the online community environment. This area is highlighted by the light green shade. In this area knowledge is in an explicit form, which can be easily shared and stored. The blue box in

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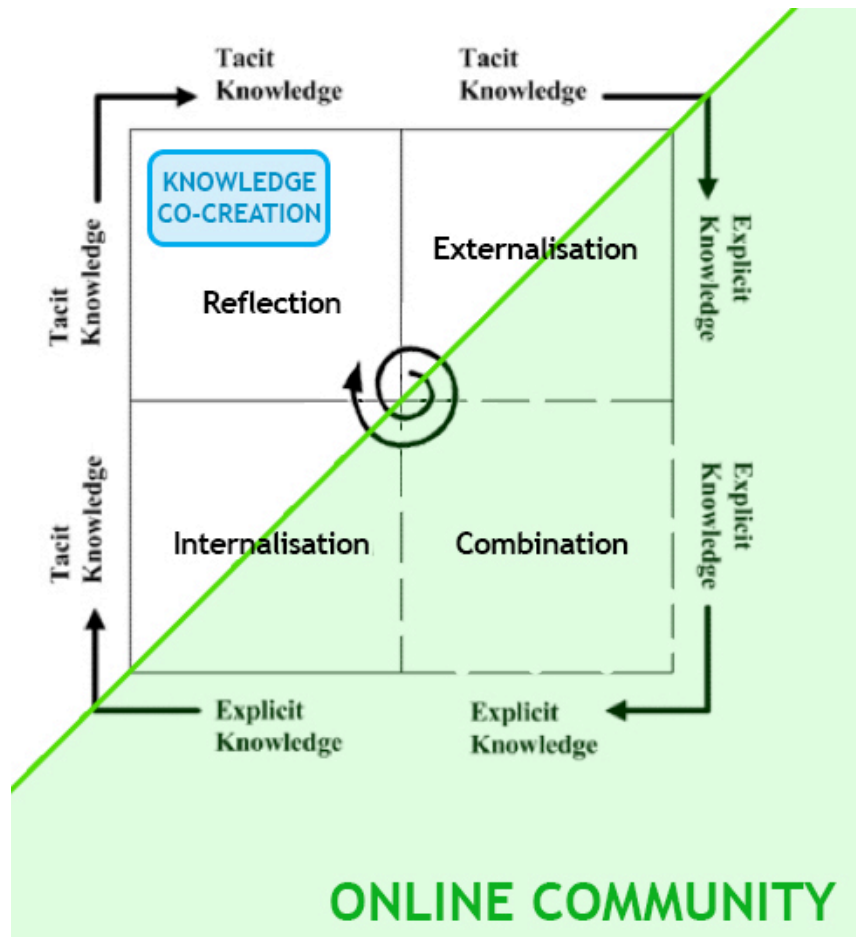
the reflection section is where the knowledge co-creation –which is tacit- takes place. This is because, it is outside of the boundaries of the explicit community that the actor reflects and tries to interpret the knowledge. This is where the thinking takes place and hermeneutical circle allows the actor to understand and reflect on things. The co-creation that has a tacit form must take place in this section.

On a review of the model, it can be noted that there is something not quite right about the illustration because as it stands, the model seems to suggest that the co-creation can happen instantly without any communication through externalisation, combination and internalisation. This is due to the fact that the evolution, as it stands, starts at the reflection phase. It was noted before that the co-creation would only take place after the first cycle has been fulfilled and only on the second level.

If the principle of hermeneutical circle is used to look at the whole system more carefully and then the parts of the system, it seems that in an online community environment the actors are likely to start engaging in communication and collaboration straightaway. For example an actor will start a post or a comment and straightaway put his or her tacit knowledge into a form of explicit knowledge or information. This can be the comment, post, or even uploaded media content. It would be unlikely that the actor starts reflecting before engaging in any form of interaction. It is the interaction that triggers the reflection, and therefore, in an online community it is unlikely that the transformation of knowledge start from the reflection stage. The model may also suggest that co-creation is taking place in the first phase, which again is not true. Thus the model needs to be adjusted to be more accurate.

Figure 6.4 illustrates an amended version of the model where the knowledge evolution process in an online community starts from the externalisation phase. An example from Plings is when a youth (an actor) uses the Plings mobile app to leave a comment about the tennis session he attended earlier on in the day. He shares his information and knowledge, which are in a tacit form and in his mind, by submitting the comment. As soon as the

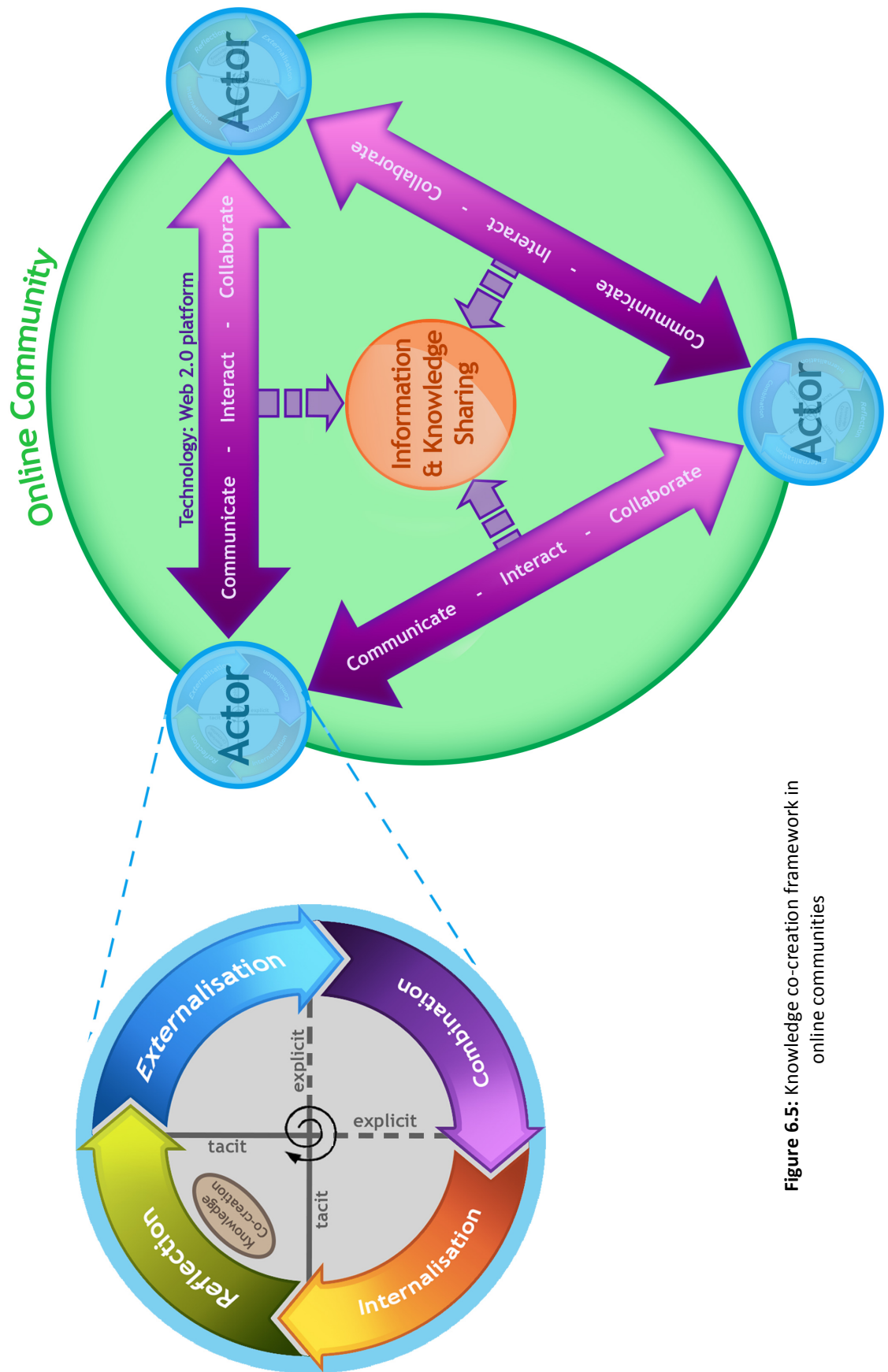
comment is posted, the knowledge is transformed from its tacit form to an explicit form that can be stored and shared. Therefore this would be the externalisation phase and not the reflection stage. The spiral arrow in the middle of the model illustrates this concept.



**Figure 6.4:** Amended RECI knowledge co-creation model in an online Community

The knowledge creation model can be part of the bigger knowledge co-creation framework. Each actor will have his/her own knowledge creation model where they would go through the transformation stages of the RECI<sup>12</sup> model, however they will be part of the bigger knowledge co-creation model. This is illustrated in the knowledge co-creation framework in figure 6.5.

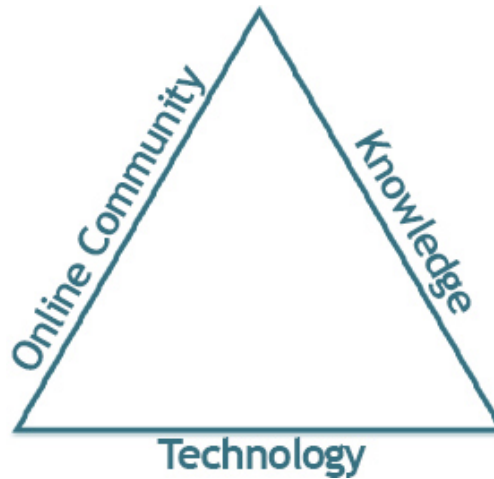
<sup>12</sup> RECI stands for the newly proposed knowledge co-creation model: Reflection, Externalisation, Combination and Internalisation; as opposed to the old SECI.



**Figure 6.5:** Knowledge co-creation framework in online communities



The framework is based on the initial triangular concepts of knowledge, online community and the technology (figure 6.6).



**Figure 6.6:** Triangular concepts of this research

These are found to be the main elements of this research and any investigation has been articulated with these concepts in mind.

The framework (figure 6.5) has the online community at its centre providing the boundary line of where online communication takes place in the community. Examples of three actors are used, which are the users of the online community. In our case of Plings these are mostly the youth. The purple two-way arrows connecting each member or actor are the underlying technology. Therefore each actor is connected through some form of technology, which in this case is web 2.0, to the other actors in the system.

In the case of Plings we can think of each youth having a smart phone or access to a laptop or other electronic device, in order to connect to Plings' online platform. It is through the technology that the actors communicate, interact, and collaborate with one another. From these interactions and communications actors will be engaging in sharing their information and knowledge with one another. This would kind of be the fruit of the communication, collaboration and interaction. However this is not everything. It was explained earlier that each actor would be involved in it's own hermeneutical interpretations all the time that

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he/she is interacting. They are going through the cycles of the knowledge creation model (RECI model). As they interact they go through the externalisation, combination, internalisation and reflection processes continuously changing their tacit knowledge to explicit and back to tacit. This process would be the actors' learning and knowledge transformation process. After every cycle and when the actor has reached the reflection stage, they have co-created knowledge. Even though this is in an individual's mind, this research labels it as co-creation, since it has been influenced and affected by different users and actors. It is the contribution of various actors in the communication that has affected the individual and put him/her in that state of mind. Consequently it is co-creation of knowledge and not creation.

### **6.3 The Reflection phase and the seven principles of interpretive research**

It is interesting to take a closer look at the reflection phase in the new RECI model of knowledge co-creation as this is where the main subject of study –knowledge co-creation– is taking place. In this phase, which knowledge is completely in its tacit form, the actor reflects and is undergoing hermeneutical analysis of the information and knowledge, which is co-created as a result of the interactions. In a way the actor is interpreting and understanding. Whatever happens in the reflection phase, matches our description of tacit knowledge. It is about cognition, recognising, understanding, reflecting, thinking, assuming, interpreting, reasoning and other similar processes. All of these developments are within the individual's mind. When an actor in the community sees for example a video clip. As he is watching it he goes through the internalisation phase. Therefore the clip, which is classified as explicit knowledge is turning into tacit knowledge. The actor is then quickly within the reflection phase as he is trying to understand the clip and interpret it. This process which takes place in the actors mind is reflection and therefore from tacit to tacit. For example when Andy watches a clip about how to install the Plings app on his

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iphone, he is remembering, recognising and understanding the procedure, which is similar to another app that he had installed the previous week. This is reflection. It is the transformation of tacit to tacit knowledge.

So how does the actor's process of interpretation and reflection take place? What stages would the actor go through to interpret and reach co-creation of knowledge? To find suitable answers for these questions, it is important to look back at this overall research to review the investigation about the Klein and Myers principles of interpretation. By applying the interpretive principles to the case study, it has become apparent that the interpretation process of an individual can also reflect the set of principles in order to understand and interpret knowledge. These principles help to not only conduct but also evaluate interpretive research. This investigation is proposing that the seven principles set out by Klein and Myers for interpretive studies are in fact applicable to the reflection process in the proposed knowledge co-creation model.

As a result, this research is therefore suggesting that in order for the actor to contemplate and cogitate about the shared information and knowledge in the reflection phase, he/she will be going through a phase of interpretation by unintentionally or intentionally using all or some of the seven principles to interpret the information and knowledge around himself/herself. The following section explains how this can take place. However to better understand this concept, an example of knowledge co-creation from Plings will be provided first.

### **6.3.1 Knowledge co-creation: A Plings example**

Knowledge co-creation takes place in online communities every day and through every interaction and communication. Here is a possible simple scenario from the Plings case study that can help understand this context better:

*16-year-old Lisa and her friends attended the aerobics activity in Sugden sports centre in central Manchester. The event was run by a youth organisation called 'Youth Power'. On her way home, she gets a peperoni*

*pizza from the takeaway in town called 'Prezzo'. She does not enjoy the pizza at all and when she gets out of the takeaway she takes a picture of the takeaway sign. Thinking she has had a bad experience she quickly thinks about sharing this experience with her friends on the Plings platform. Therefore she uploads the picture using her mobile phone device, with the caption: "thumbs up aerobics, thumbs down Prezzo pepperoni. Waste of a fiver!". Her friend Sarah who did not know she too enjoys aerobics likes the picture and leaves a comment saying "...so your into aerobics too?". Lisa replies, "it was my 2<sup>nd</sup> session but I really enjoy it". Gary who is Sarah's friend and also knows Lisa, attaches a picture comment of a slice of pizza with the writing "pepperoni and pineapple is life!". He goes on to comment further saying he had actually eaten a peperoni and pineapple pizza from Prezzo before, which he had really enjoyed.*

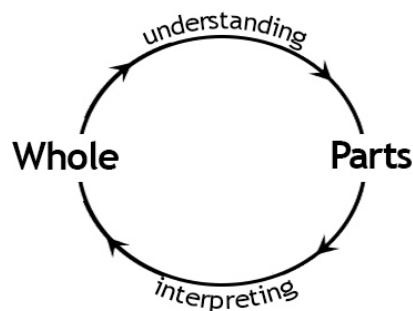
*The conversation continues with other friends commenting. Andrew says "peperoni is yukk anyway" and that chicken mushroom is the only pizza flavour he likes. Tom on the other hand, who knows Lisa for a long time since primary school, believes Lisa is too picky with her food. From their past shared experience, he knows every time Lisa eats out, she picks on something and makes a negative comment. So he doesn't really take her comment about the pizza seriously. Instead he is more interested in the aerobics session, and he asks when and where is the activity taking place. Luise, who is Lisa's elder sister comments "Where is that place exactly? I didn't knew Prezzo had a branch in town". Rose sends a link to a video that shows secret filming of a salami and pepperoni factory in Sheffield. The video illustrates how peperoni and salami are made from what would normally be considered as 'inedible animal parts' and with very poor hygiene practice. The communications carry on further.*

Here users collaborated and communicated through the Plings platform. To relate this scenario to the discussion in this research, one needs to look at the scenario through the knowledge co-creation framework. The users and youth in the system represent the

actors. The interaction and collaboration co-creates the knowledge, however as it was established earlier this co-created knowledge is different for each actor. This is because the co-creation that takes place is in a tacit form. For example from the scenario above, one can see that Sarah has learnt that Lisa too enjoys aerobics, while Luise learns that there is a Prezzo branch in Manchester city centre. Meanwhile everyone has learnt that the peperoni pizza at Prezzo costs £5. At the same time Tom is thinking that Lisa is 'at it again', complaining about food. It is clear that Knowledge here is subjective and in the actors minds. The way each actor interprets and understands the knowledge or information depends on the individual's experiences, pre-suppositions, and projections of his or her personal values and expectations. It also depends on the process that goes on in the individual's mind. This process is called reflection and can consist of the seven principles of Klein and Myers.

### 6.3.2 Hermeneutical circle

It was explained before that people use hermeneutical circle daily without even realising they are using. This process refers to the idea that one's understanding of a situation as a whole is established by reference to the individual parts and one's understanding of each part, by reference to the whole and the iteration between these two. Figure 6.7 demonstrates a simple diagram of hermeneutical circle. Therefore for the individual to understand and interpret in the reflection phase, they would go through the hermeneutical circle.



**Figure 6.7:** Hermeneutical circle diagram

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In the sample scenario given earlier on, Lisa's other friends will need to hermeneutically assess the knowledge she has shared with them. Although this, kind of happens instantly and in a matter of seconds, it still goes through the hermeneutical circle. Lisa states:

*"Thumbs up aerobics, thumbs down Prezzo pepperoni. Waste of a fiver!"*

One would not know what 'Prezzo' is if they do not look at the whole sentence or the picture. Or maybe the exact meaning of 'Waste' would be ambiguous if was looked at on its own. Therefore this quick iteration of hermeneutical circle between the part and whole gives understanding and meaning to the shared knowledge. This principle is usually done instantly, without much effort by the individual.

### **6.3.3 Contextualisation**

Context is a critical element in interpretation and understanding. Any piece of information or knowledge one receives needs to be seen and evaluated in its correct context otherwise it can lead to misjudgement and misunderstandings. This principle is essential in the actor's reflection process. In most cases it is the context that gives meaning and understanding to entities. For instance, in the example provided earlier, *thumbs up* may take a different meaning if it is used in a different context. Or the word *peperoni* may not necessarily mean a peperoni pizza if it is used in a different context. Therefore contextualisation can be regarded as essential to the hermeneutical nature of knowledge co-creation.

### **6.3.4 Interaction between researcher and the subject**

The principle of interaction between the researcher and the subject refers to the social construction of material or data through the interaction between the researcher and participants. In this case it would be the actor who is interpreting the information and the subject of interpretation. The manner in which they interact is important in the understanding process. For example if Luise had written her comment in capital letters as follows:

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“WHERE IS THAT PLACE EXACTLY?!”

Then maybe other members would have got the impression that she is angry or not in a good mood. Therefore the social manner in which knowledge is shared and gathered, in the interaction between the actor and the knowledge sharer, can affect the actors understanding and evidently the co-created knowledge.

### **6.3.5 Abstraction and generalisation**

This principle needs the actor to relate what he/she understands from the shared knowledge to theoretical and general concepts. This allows the actor to relate to concepts, which he/she already know and can provide valuable links for them to better understand and judge the situation. For example Luise can relate to Lisa’s personal character and concept of trying to keep in good shape thus attending aerobics sessions. At the same time she is aware of the concept of junk food and their proven negative effects on a healthy diet, and can interpret Lisa’s action as contradicting. Without making a judgement on whether such an interpretation is correct or false it is clear that this shows the importance of being able to abstract and generalise the knowledge and information under study with existing concepts and theories.

### **6.3.6 Dialogical reasoning**

This principle requires the actor to reflect on the new knowledge and information he/she has gained with what his/her preconceptions where before receiving that information. This is essential if the actor really wants to learn and is after the truth. It will allow the actor to make fair judgements in future and avoid being dragged into dogmatism. This would be of special importance if the new information and knowledge contradicts the actor’s previous beliefs. If the actor does not show sensitivity to this principle and keeps believing what he/she already does, then he/she is at the danger of being closed minded and unaccepting of the truth. In other words the actor needs to be open minded and where he is proved wrong, be able to accept and correct his stance. This will help the individual to have a fairer hermeneutical understanding of the co-created knowledge. In a

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way this principle is mostly used by people as they gain new knowledge and information, however its level varies in individuals.

### **6.3.7 Multiple interpretations**

The actor will need to be wary of different narrations of one story. He/she needs to understand that different stakeholders may have different accounts of the same story, and thus be open to hear all sides of the story. In the case of the Plings' scenario if the actors who saw Lisa's comment about the pizza not tasting good didn't apply this principle, they would all share the belief that the peperoni pizza does not taste good. However there is another interpretation of the same pizza by Gary, who on the contrary actually enjoyed the peperoni at the same place before. Using this principle in the reflection phase should result in a more accurate and fairer interpretation. As commonly known, every story has (at least) two sides to it, thus this principle is essential to form a more accurate hermeneutical understanding.

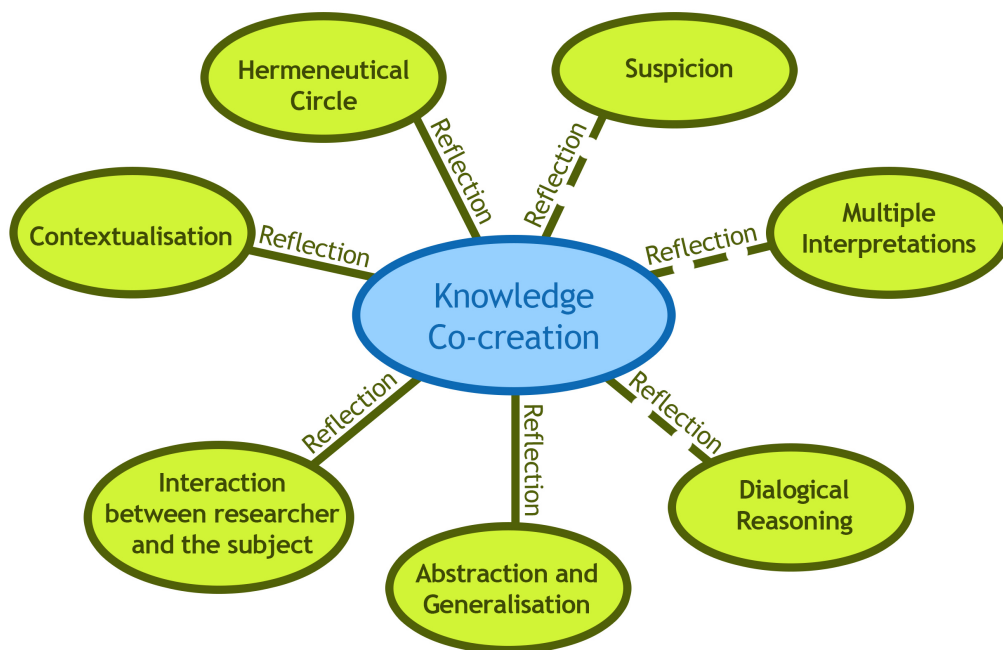
### **6.3.8 Suspicion**

Sensitivity towards possible bias and distortion of the truth in the collected or received information and knowledge is again of utmost importance. One must always be careful about biased information and knowledge in his/her interpretations, as there is a lot of distorted material out there. In the Plings's scenario Tom has kept his suspicion about Lisa's feedback on the pizza due to previous experience. This does not necessarily mean that the pepperoni pizza Lisa had was nice as the matter of debate here is greatly subjective. It also does not mean that it was a bad pizza. However being suspicious of the information Lisa has provided and thinking that it may not be quite accurate; allows Tom to probably be in a better position to judge and interpret that piece of knowledge. Same as the last principle, using the principle of suspicion also takes the researcher closer to a more realistic and fair hermeneutical understanding.

It is important to note that not all of these principles are usually applied when people are interpreting. Figure 6.8 demonstrates the co-creation within the reflection phase of the RECI model. The four principles of Hermeneutical circle, Contextualisation, Interaction

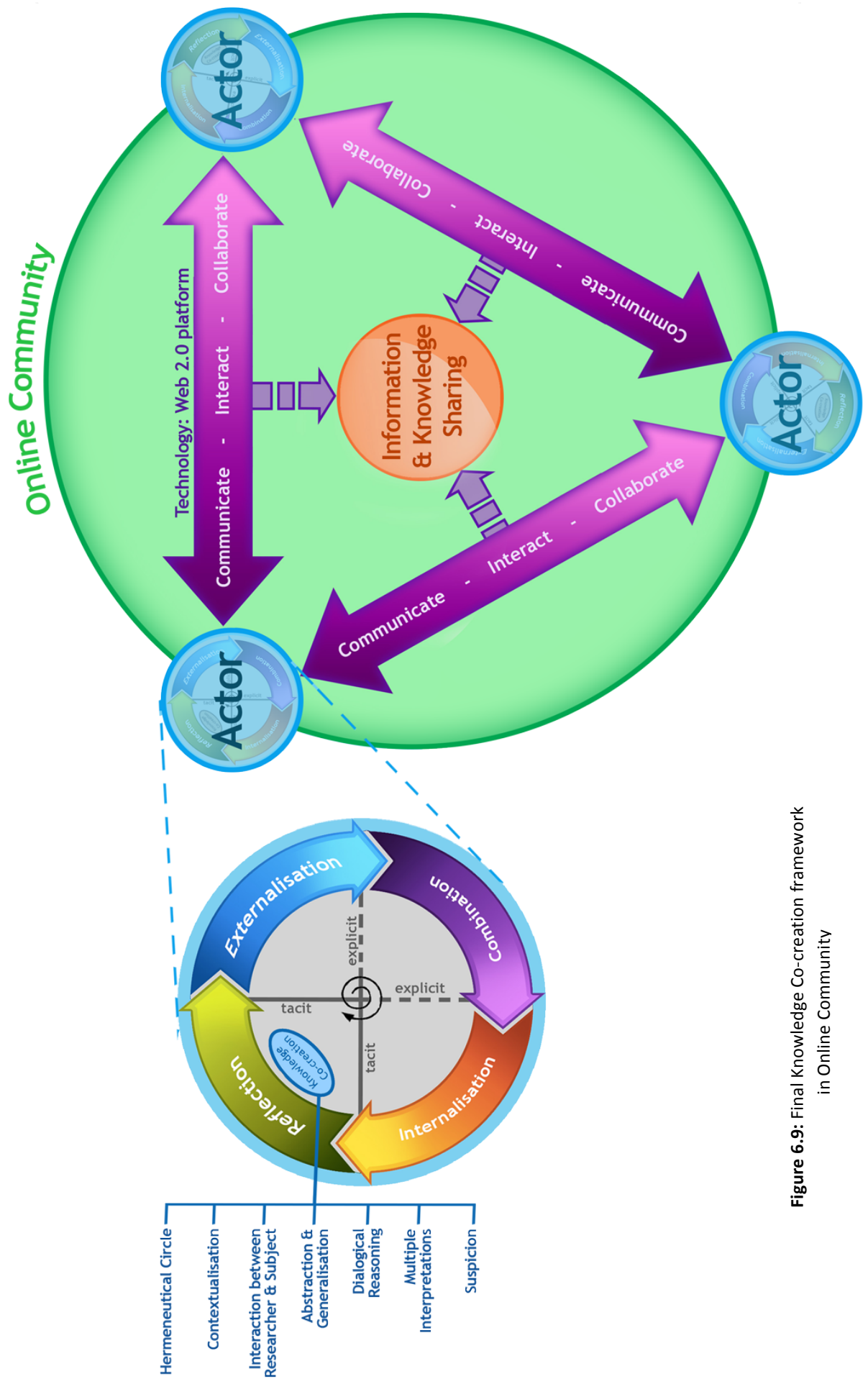


between researchers (actor) and the subject, and Abstraction and Generalisation; are the four principles that most actors will experience straightaway without much attention. The remaining three, which are Dialogical Reasoning, Multiple Interpretations and Suspicion, are however principles that not every actor will reflect on. Lack of attention to these three principles will most likely result in biased interpretations. If these principles were to be reflected in the final knowledge co-creation conceptual framework, it would look like figure 6.9.



**Figure 6.8:** Principles forming knowledge co-creation within the reflection phase of RECI model

Figure 6.10 illustrates an additional complete sketch of the final conceptual framework, including the RECI model of each actor and the seven principles of interpretation within the reflection phase.



**Figure 6.9:** Final Knowledge Co-creation framework in Online Community

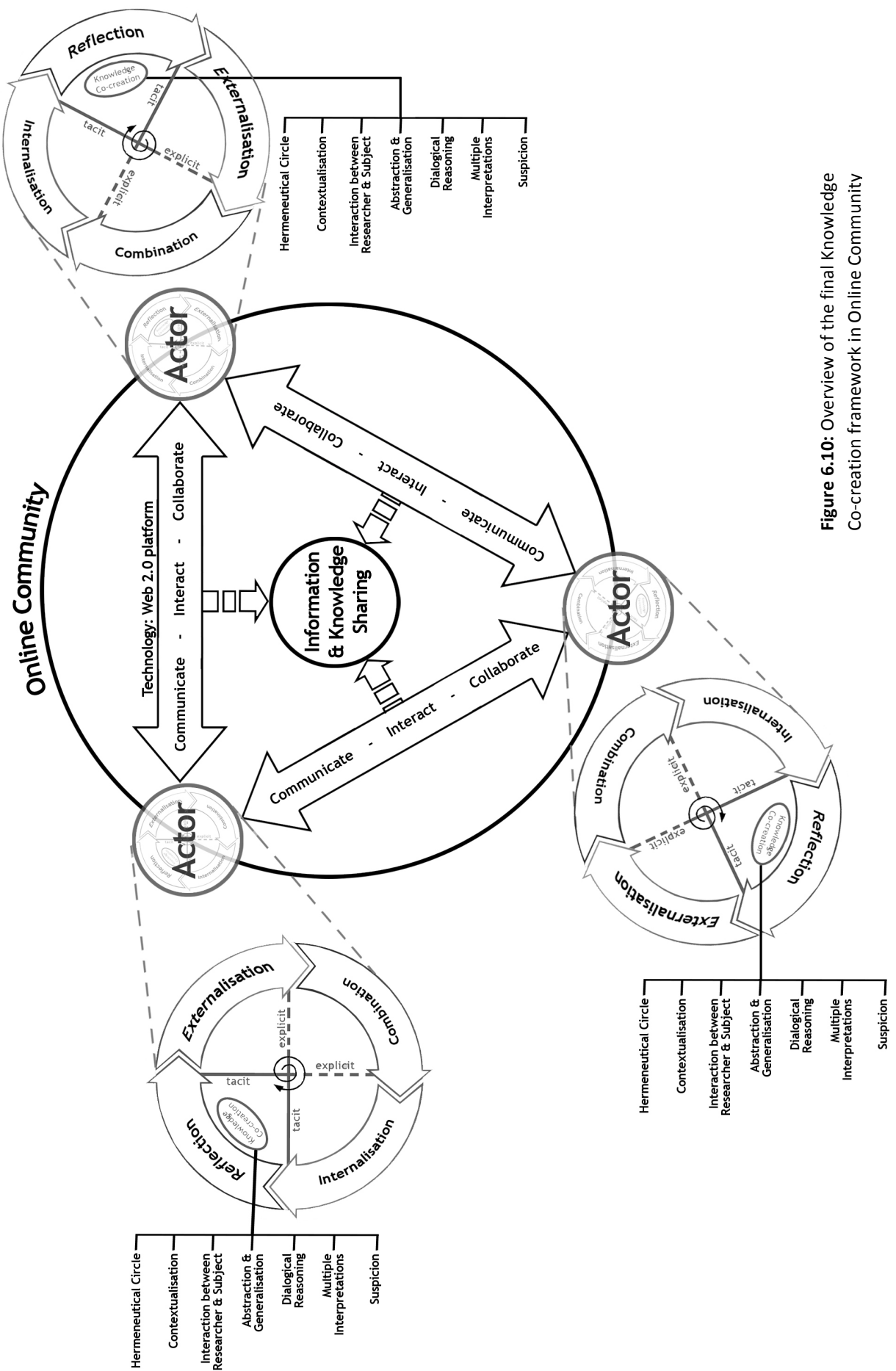
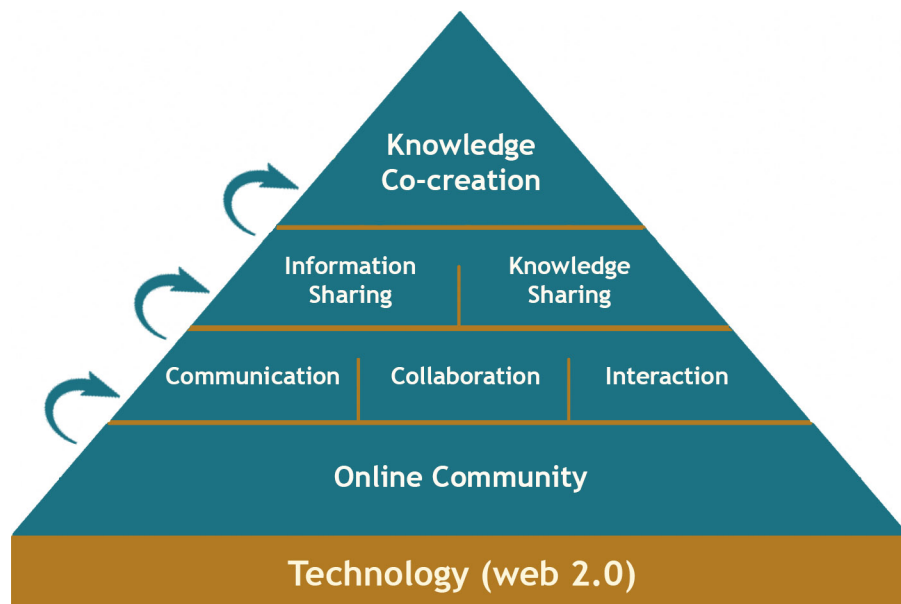


Figure 6.10: Overview of the final Knowledge Co-creation framework in Online Community

## 6.4 Role of Technology in Knowledge Co-creation within Online Communities

One of the interesting sub-questions of this research was to find out what the role of the technology in knowledge co-creation is. After closely examining the notion of co-creation and the example of Plings, it seems pretty obvious that the technology is the base of the whole co-creation system. The structure of the system and process that results in co-creation of knowledge can be illustrated by the use of a pyramid. Figure 6.11 demonstrates how the technology sits at the bottom of the pyramid as the basis and underlying foundation of the co-creation system.



**Figure 6.11:** Pyramid illustration of knowledge co-creation and underlying concepts

It is the technology that allows the users and actors to come together and form an online community. Therefore without the technology there would be no community. Without the community there would be no communication and collaboration. Without the

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collaboration and interactions, there would be no information or knowledge sharing, and hence no knowledge co-creation.

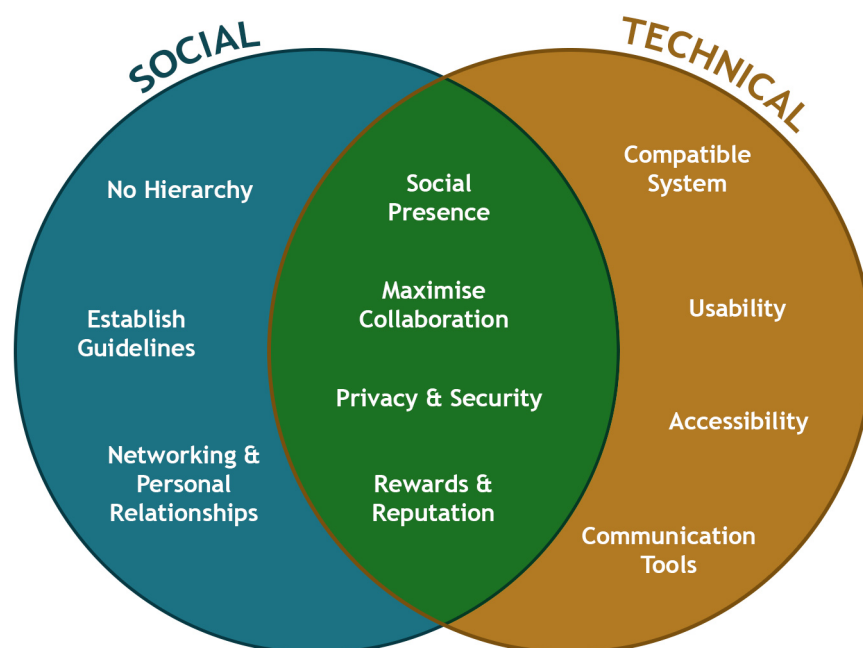
The arrows indicate the flow of the system and its stages. For example having the technology in place leads to an online community, which leads to communication and collaboration, which lead to information and knowledge sharing that finally leads to knowledge co-creation.

Once the technology is in place, it should allow ease of access for its actors. It would allow them to conveniently connect with one another and form the so-called 'online community'. The community is formed by actors, who are connecting with one another to communicate for a shared goal. The actors will use the technology to communicate, collaborate and interact with one another. Once they start interacting they would be sharing their information and knowledge. From this sharing and communications, new knowledge is formed which is called co-creation.

It can be concluded that the technology facilitates the co-creation and any problems within the technology side of things would indirectly have an impact on the co-creation. For example if the uploading facility on the Plings' system stops working, it means that the actors will not be able to upload their videos and pictures, hence not being able to share content. This would result in fewer communications and interactions as users may not like the idea of just writing text comments, therefore the less the interactions, the less chance of co-creation taking place. Not only the technology facilitates co-creation, but it also plays a big role in the efficiency of the knowledge co-creation process. This is due to the fact that the technology is equipping the actors and users within an online community to interact and collaborate. The more equipped they are the easier and faster they can communicate and interact.

## 6.5 Characteristics and guidelines for designing and implementing a knowledge co-creating online community

One of the aims of this research was to try and find out what the phenomenon of knowledge co-creation in online communities is. Understanding this concept and its contexts would then lead us to investigate the possible characteristics and guidelines for designing and implementing such systems. This part of the research will be providing some recommendations for a set of social and technological guidelines and characteristics that is believed would be useful for designing and implementing knowledge co-creating online communities. Figure 6.12 demonstrates these guidelines and characteristics in terms of social and technological categorisations. Some of the characteristics take on a social aspect and some take on a technological aspect, while others address both.



**Figure 6.12:** Social and Technical characteristics and guidelines for designing and implementing a knowledge co-creating online community

The set of characteristics and guidelines have been formed both after analysing and evaluating online communities, the technology and knowledge co-creation. This was

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through the study of the idea of the Plings case study and also the authors own experience of working with other web 2.0 and online community services for over a decade. It is important to note that these guidelines are just recommendations and will not necessarily mean a system abiding by these parameters will definitely result in better or more co-creation of knowledge, but these characteristics should lay the correct foundations for a more efficient knowledge co-creation in an online community. In a way the characteristics and guidelines will stimulate the co-creation of knowledge.

### **6.5.1 Social Presence**

The online community needs to provide the technical means through which each actor or member of the community can represent themselves in the system. This ties in with the social presence theory in online communities and also the identity characteristics of web 2.0 technologies. The members within the community need to be able to show their identity and character in order to communicate with other users. In a community where users do not know anything about other users and they have no means of representing themselves, they will lack trust, as there would be a lot of ambiguity. This can thus result in hindering the communication and collaboration process and therefore obstructing co-creation. The more users can trust and get to know the true likeliness of their peer members, the more they will communicate comfortably. Hence the technology needs to allow for each actor and member to have a social presence in the community. In the case of Plings this would have been the youth profiles for each of the members. Apart from having basic information about the individual, they could also state their hobbies, their school or college, their preferred music etc. and as a result, build a miniature character of themselves in the online community. This would have great impact on further interactions by other members. Obviously the more characteristics they share, the more likely they would like and enjoy the same things and therefore a possibility of more interaction between the two members.

### **6.5.2 No Hierarchy**

It is important the users within an online community, that aim to communicate and collaborate, feel they are treated the same as each other and have the same status in the

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community. In other words each individual would have one profile and user account which is the same as anyone else in the system. This is the case with Plings as every youth will have the same profile and functions at their hands.

This sense of equality and being treated on the same level makes the members feel more confident in the community and therefore trust the system. This would normally result in more communication. It is apparent that individuals are likely to communicate and collaborate more with people they trust. The service that the community is providing should be the same for every member and there should be no for example premium accounts etc. that would separate a group of members from the rest of the community. This should result in a more welcoming community that members would enjoy being part of and therefore use.

### **6.5.3 Maximise Collaboration**

One of the main aims of the knowledge co-creating online community should be to allow maximum collaboration and interaction between the users. This needs to be looked at both from a technical perspective and also a social perspective. For example the system should allow various means of communication between the members in terms of technology. In the case of Plings for example the youth could easily leave comments and reply to other youth's comments. They were able to send messages to groups of friends on the system and form a mini forum of replies. Online group chats were available that would involve a group of youth for example who attended the Tuesday night boxing activity in Didsbury, to gather online and have a live chat session about the activity. The list goes on but these would facilitate more communication between the members, which would indirectly increase knowledge co-creation.

In terms of the social aspect of trying to maximise the communication and collaboration, for example a private message and chat facility would invite the youth to have a one on one chat session in private. This can be appealing to a lot of the youth and invite them to more communication. Therefore not only the system needs to technically facilitate maximising the collaboration, but it also needs to bear in mind how members would be



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invited to collaborate more, from a social perspective. Another example of this can be providing a practical and appealing way for the users to express their mood. For instance, a set of emotional avatars or smilies that the youth can use when they are communicating to express their feelings and emotions at the time. Hence, as a golden rule, anything that maximises collaboration and interaction should be implemented in the online community.

#### **6.5.4 Establish Guidelines**

Setting guidelines is an essential part of any online community. In fact as it was pointed out earlier it is one of the three characteristics of an online community. However it is important for online communities not to set hard rules and allow flexibility for the members to express themselves freely. Sometimes being over cautious and applying heavy moderating, such as approving every post or content, restrains conversations and kills communications. It is more productive to set clear guidelines instead and allow the community to kind of police itself. This can be done by implementing a report and flag system, where the members can report for example use of profanity, slander, breach of privacy, or inappropriate content, to the organisers. In the case of Plings the youth had the option of reporting inappropriate content or comments, which would then have been checked by Substance Ltd. and then removed if need be.

At the same time that guidelines need to be set to monitor and police the online community it is important to allow a degree of flexibility so that the members can express themselves and their ideas. A platform that allows that freedom will be a platform that is open for more communication and collaboration.

#### **6.5.5 Create Networking and Personal Relationships**

One of the feelings that draws in more communication and collaboration is the feeling of more personal relationships. A community that is aiming to maximise interactions between its members, needs to give them the ability to interact on a personal level. This will create networks of people that will be connected to each other through closer more personal relationships. This idea is linked in closely to the idea of social network theory, wisdom of crowd and social capital theory. These theories back the idea that once people

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are connected to each other on a personal level, they would have a stronger tie of network to each other and eventually bring in more capital -knowledge- to the community. In the case of Plings although the main aim of the project was to have a platform for the youth to find out about positive activities in their area, the system also gave them the ability to communicate and socialise on a personal level. This would result in closer network friendships and associations that would encourage more interaction and collaboration. Hence resulting in more knowledge sharing and co-creation.

### **6.5.6 Adhere Privacy and Security**

The members of the community must feel secure when using the system. This means both technically and morally. For example at the same time that the community should encourage social interactions and collaboration, they still need to leave room for members' privacy. At the same time that most of the technology is in favour of sharing and distribution of content, it should also allow members and actors to communicate privately and on a personal level. This may mean in simple terms, allowing options for people to make their shared content like video or pictures private or only available to certain friends or members. As with any social media systems nowadays, privacy is a key factor in creating trust between the providers of an online community and its members. The system also needs to be technically secure in terms of being robust and protected against attacks by hackers and outside infiltrators.

Both of these elements are crucial for the users to feel secure and trust the system. As the trust level increases, so will the confidence in communication therefore resulting in further collaboration.

### **6.5.7 Facilitate Rewards and Reputation Building**

One of the most important motivational aspects within an online community is the reciprocal factor. Members of an online community are the ones who are creating the content of the system. In other words the organization that runs the online community puts together a skeleton and structure of an online community and it is the users that put flesh on it by sharing and adding contents such as comments, video, pictures etc. We

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discussed earlier that the social exchange theory within online communities mean that users expect to acquire something in return for their participation and content providing. Otherwise it would be quite meaningless if they were to just provide content without taking anything in return. One simple way of taking something back would be for them to engage in a conversation and get replies to their messages for example from another user. Their input would be in exchange for a reply by some other member of the community.

One other very popular way is to implement a system where by other users can rate and reward the member who has contributed. This has become very widespread in social networking systems nowadays. Examples of this are 'likes' on Facebook or 'favourites' or 're-tweets' on twitter. It has become an accepted rule that the majority of the youth and people in general enjoy being looked at as a celebrity. They enjoy being popular. This is what is called 'Celebrityism' nowadays and is vastly popular especially amongst young people. They enjoy having a status where a lot of other members follow them, or like their content, or leave feedback for them.

Without going into the details of whether this is positive or negative, one cannot ignore the fact that this feature is very admired and is one of the main reasons why users socially interact and communicate. They like to be heard and they like to have a reputation. They like to be treated as a celebrity with many fans and followers. Hence we can conclude that having these small but effective functions in the online community where members can build their own reputation and get small rewards for their input, can actually greatly increase collaboration and information and knowledge sharing. This was reflected in the Plings case as the youth could give thumbs up or thumbs down at other members' contents and comments or leave feedback on activities they attended. Therefore it is very important to facilitate reputation building and have reward packages in the online community.

### **6.5.8 Build a Compatible System**

One of the main characteristics of web 2.0 technologies is the compatibility issue. It was discussed earlier that web 2.0 has concepts like standards and openness. These

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characteristics make services that use the web 2.0 technology adaptable and compatible with each other and services which are already available. We now see services like Facebook, twitter, instagram, Youtube etc. allow the user to share contents and reach out from one platform to the other. This compatibility makes life easier for the user who has accounts with each of these services and may prefer certain services on each platform. It means the user has the freedom of using whichever platform he/she wishes to share data, making his/her life easier. This links in with the idea of customisation that again, is very popular nowadays particularly with web 2.0 services. The more flexibility and freedom you give to the user in terms of expressing themselves and sharing their information and knowledge, the more likely they will engage in the act.

In terms of compatibility and Plings, it meant that the Plings app and widgets were available to be installed on the users Facebook accounts, allowing them to keep up to date with the activities they had selected on their list of interest in Plings. This would mean that services would compliment each other and work together to enhance the users communication and collaboration experience.

#### **6.5.9 Easy to Use (Usability)**

As with any information technology system, one of the most important aspects that can effect knowledge co-creation in online communities is the usability of the system. It is clear that even if for instance a system is designed, that can do every possible thing, imaginable to the human mind in terms of communication and interaction, if the user cannot use it, it would just be useless. Therefore from a technical perspective, the system needs to be very straightforward and easy to use. The functions within the various platforms need to allow simple and effortless sharing of information and knowledge. If the sharing process or communication function is not straightforward, it can hinder the knowledge co-creation cycle. Users will be put off communicating if system is difficult to work with. In the case of Plings, the youth could easily upload pictures and videos and communicate with one another.

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### **6.5.10 Easy to Access (Accessibility)**

As important as usability, is accessibility. These two characteristics usually come together and are essential for the success of any system. This characteristic becomes more significant when there is talk of online communities as it ensures that the communication, which is essential to the livelihood of the system, can occur. If the users were having difficulty accessing the system, then their communication would be directly at risk. This is because with online communities, your only means of interaction is the online community system itself. And if you cannot easily access it, then you will not be able to communicate.

In the case of Plings, Substance Ltd. made sure that the Plings platform was accessible through a range of mediums for example via PCs and laptops, smartphones, tablets and other electrical devices. These devices just needed to be connected to the Internet and have the correct app or widget installed then they would have been connected to the Plings service. The various mediums meant that the members of the community had more ways of connecting to their community, and therefore more chance of interacting and collaborating.

### **6.5.11 Range of Communication Tools**

The advances in technology have made a range of online communication tools available. Various tools allow different forms of communication by the users who have their own preferred idea of communicating. Some may prefer a text-based communication. Some may prefer multimedia content and some may prefer a mix. The technology acts as a catalyst and enables the members to communicate and express themselves more freely and frequently using the different tools. For example services like tagging friends in shared content have revolutionised the way members of a community interact.

A successful online community that aims to create and co-create knowledge in a more efficient manner, needs to provide various communication tools and mechanisms in order to attract a wider audience. This could also help the efficiency of the co-creation, as it tends to speed up interactions and collaborations. For example if you compare an online

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community, which is based on a traditional online forum platform, with a social networking community on Facebook, it is clear that communications and collaborations on Facebook can develop more frequently and probably faster. This is because there are a lot more ways to communicate for the members. They don't need to always login to the forum and post a thread or reply to one. They can communicate instantly by uploading a pic they took on their smartphone or just by tagging a friend in a photo or even simply updating their status. There would be a lot more ways to communicate and therefore members would be more likely to communicate. In Plings a range of communication tools were available, which helped the users communicate in diverse ways. Users were able to rate, comment, post pictures/videos and write reviews about activities or activity providers. They would use the same tools to socialise between themselves on a personal level. The range of tools gave them more ways of communicating and interacting, which would positively affect the co-creation process in terms of efficiency and frequency.

It is evident that there are probably a lot of other technical and social issues that could affect knowledge co-creation in a virtual community setting, but here we have tried to highlight the most significant ones.

## **6.6 Reflection on the notion of Online Communities**

The concept of online communities has been looked at in this research from various aspects and the case study Plings has been given as an example of such an entity. At the start of this research, this concept of a community that connects through electronic means was discussed from various viewpoints. The different types of communities were mentioned including communities of practice. Communities of practice 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. They may or may not use online means of communication. Therefore their online forms can be included in our understanding of online communities. One of the characteristics of communities of practice is that they form a community for a specific reason and goal. For instance a community of practice of

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mathematic teachers who work in private schools in the north west of England. They form the community of practice to share experiences and collaborate about teaching techniques through new and innovative electronic technology. They have a definite goal of actually sharing and creating new knowledge. This is quite different to our understanding of knowledge creation and co-creation in the case of Plings. The results of our Plings study showed that none of the stakeholders of the Plings community were actually aware of creating and co-creating knowledge. The co-creation was being accomplished unintentionally. This is in stark contrast with a community of practice, which aims to collaborate and communicate to create and with our understanding co-create knowledge.

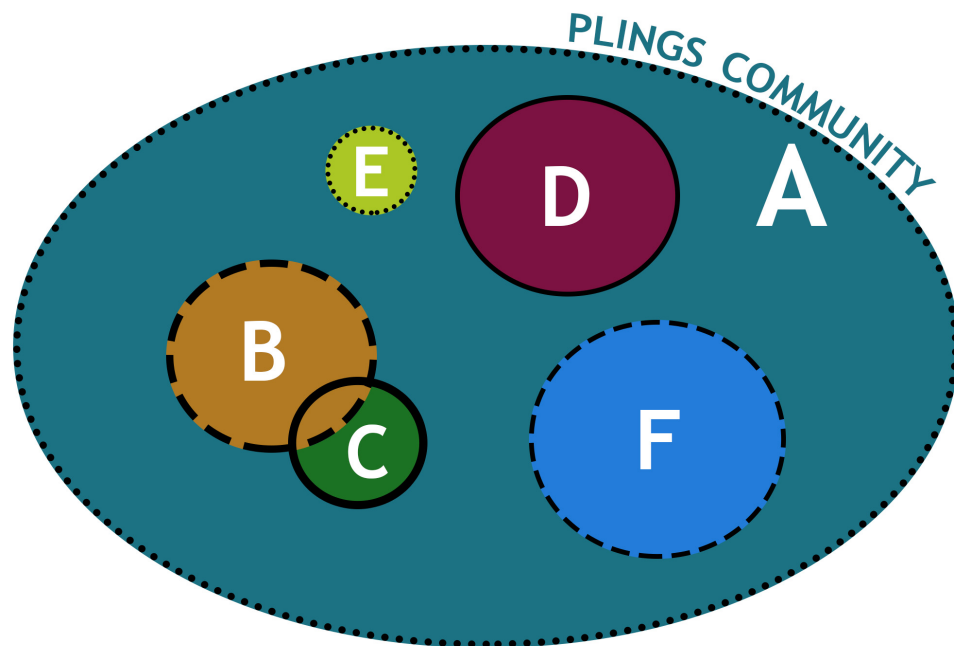
The knowledge that is shared in communities of practice is usually explicit. It is something that can be stored and shared physically. However the co-creation within Plings is tacit. Although even within a community of practice, you will see the notion of tacit co-creation of knowledge that this research has referred to. These types of communities may be considered more efficient knowledge creating communities as they directly aim to share and create knowledge. Nevertheless how successful they are in co-creating knowledge, needs to be investigated.

An online community itself is referred to a group of people, who communicate for a shared purpose, using an electronic means of communication, steered by a set of rules and guidelines. This loose description of an online community is a very broad and open description that can cover many virtual communities. As a reflection on the idea of online communities this research suggests keeping the same three characteristics as a simple description of what an online community is. However from what has become apparent in the course of this research, there are various types of communities that are somewhat quite different to others in terms of their 'communitiness'. This research is going to introduce a new way of labelling online communities based on the strength of their interactions.

An online community can be anything from a very weak community to a very strong community. Whether a community is weak or strong depends on the community ties and communications between its members. For instance can we call the users of Facebook an online community? Yes to a very loose extent. They would form a very weak online community as the majority of the members do not know each other and do not communicate with each other. They still match the description of an online community according to the three characteristics. They use an online electronic means of communication. They are ruled by a set of guidelines and regulations. They have the same purpose, which is to communicate and socialise online. However at the same time they do not seem to be a community as a whole as not all of them communicate with each other. Whether one would call them a community as a whole or not, does not matter. What matters here is that within this massive Facebook community (lets say they are a community for arguments sake), there are smaller and much stronger communities; for example Manchester united fans in California. They tend to be gathered along a more clear topic and tend to communicate with each other more often and even know each other better.

Whether you can label a community strong or weak depends on the interactions and collaborations of its members. In the case of Plings one can say anyone who uses the Plings platform to attend activities in Manchester would be part of the Plings community, but that would be a weak community. As figure 6.13 illustrates there can be communities within communities with various weaknesses and strengths. Here (figure 6.13) each letter represents a community. The strength or weakness of the community is illustrated with the strength of the line around it. For example dotted lines are weak communities and bold solid lines are strong communities.





**Figure 6.13:** Sample Plings community diagram

To give a clearer example we can say community A is the whole of Plings community, which is all of the youth who use Plings. This is a very weak community. Inside it there is for example community F that consists of youth who attend the cross-country activity every Saturdays. They are still a weak community as they don't interact much on the Plings system. Community D can be made up of the youth who attend Thursday night's football at Ardwick Youth club. They have a strong community as they collaborate and socialise more on the Plings platform. Community B can be North Manchester youth who attend aerobic classes. Although they do the same activity, they are not a strong community. Community C are the youth who attend hockey on Wednesday nights and they form a very strong community. As you can see some members who attend aerobics (group B) are also members of the hockey (group C) community. Although the members overlap, they still form a stronger community in another group. The important factor here is the communication and collaboration that determines which online community is strong or weak.

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With the rise of new social media, communities are now more concerned with networks. Depending on how much of a strong connection you have with your network you can actually form a stronger community. It seems that terms like online communities are becoming out of date and are being replaced by social networks and social media. Although their basic concepts and theories still seem to be the same. The communications that this research has been referring to within its online community can also now be called socialising. It is the same concept of users sharing information and knowledge and creating and co-creating new knowledge, however this happens while they are not aware of it. Therefore although in their mind they are socialising and communicating about maybe *not so important things*, they are in fact learning and going through phases of knowledge co-creation, and in this process, the community or network plays a fundamental role.

## **6.7 Hypothesis: Knowledge Co-creation**

This research has tried to study and understand the co-creation of knowledge within online communities. It is believed that knowledge is co-created through interactions and collaborations of members within an online community who communicate using various technologies. This group creation or co-creation -as this research calls it- takes place through a four step transformation of knowledge. Through this transformation the knowledge changes forms from tacit to explicit and back to tacit. It is believed that the co-creation is reached when one cycle of this transition (the RECI model) is completed and within the individual's mind in the form of tacit knowledge. Members of the online community are continuously interpreting and trying to understand the interactions around them through hermeneutics and hermeneutical circle. This is due to the fact that knowledge is a subjective entity and depends on the individual's state of mind, experiences and understanding. Therefore it was concluded that co-creation is different for different members of the community. Depending on their hermeneutical understanding they will have different interpretations of interactions and the knowledge they create. Therefore the actual co-created knowledge is different in each member and

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actor. The process of knowledge co-creation for each member takes place when each individual actually reflects on the seven principles set out by Klein and Myers for interpretive research. It is believed that each individual will go through all or some of the principles, which form the basis of interpretation and understanding within that individual's mind. It is this cycle of going through the seven principles that co-creates the knowledge within its tacit form.

This co-creation is profoundly rooted in social interactions of its users. How they reach this co-creation also relies significantly in the technology and how much power, and flexibility it gives the users to freely express their views, collaborate, interact and share their content (information and knowledge).

At this stage and from the interpretive investigation on the Plings case study, this research is proposing that such a hypothesis exists. Although further tests and research need to be carried out later on to support this hypothesis before it can be presented as the 'knowledge co-creation theory'.

While it seems that this knowledge co-creation hypothesis is applicable to online communities, it can most likely be adaptable to communities that are not online. Though that needs further research and investigation as there are significant differences between an online community and a physical community.

## **6.8 Reflection on the 'Dialogical Reasoning' principle from Klein and Myers**

The dialogical reasoning principle from Klein and Myers requires the researcher to confront his or her preconceptions that guided the original research design with the data that emerged through the research process. This principle was explained in more detail in

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the previous chapter but it was stated that it needed to be revisited at the end of the investigation to reflect on the findings and possible contradictions between the theoretical preconceptions guiding the research design and actual findings.

One easy way of looking at the preconceptions that guided the original research and the findings is to compare the introductory conceptual framework, and compare it with the initial and the final framework. The difference clearly illustrates what the initial idea of knowledge co-creation in online communities was, where and how it developed as a result of this research.

One other thing that may need reflecting on are the three main elements of the research. The following section will reflect on the findings and previous preconceptions about the three main elements of this research, the online community, the technology and knowledge.

### **6.8.1 Online Community**

The understanding of online communities has not changed much as we still believe in the three characteristics that describe an online community, which are: using an electronic means of communication, being run based on a set of guidelines and rules, and that its members are there for a shared reason or purpose. However one thing that might have slightly changed or let's say better understood now is that online communities are greatly dependant on the interactions and communications that take place in them. Communities can be labelled as strong or weak communities depending on the amount of interactions and collaboration between its members. It is believed that the more the interactions, the stronger the community gets and the fewer the interactions, the weaker the community. Also the networking factor plays a big part in the livelihood of an online community. The stronger the relationship and the network between its members, the more chance of collaboration and interaction.

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## 6.8.2 Technology

It was believed that the technology plays a significant role in the co-creation of knowledge, as it is the basis for the online community itself. However the study of Plings showed that not only technology matters in setting up the community, it is also fundamental in the co-creation process as it is the direct tool that users use to communicate and collaborate with each other. The technology needs to provide the users with the correct efficient tools, so that they can share information and knowledge, and thus co-create efficiently.

## 6.8.3 Knowledge

Knowledge has always been a tricky notion to define, although this research set its description on knowledge that is based on experience of an individual in a social context. It was stated that the knowledge that is referred to in this study is the know how which comes from an individual who has had social experience. It was initially believed that the knowledge co-creation in mind, would be created in the online community while people are interacting and communicating. However after looking at hermeneutics and the hermeneutical circle of interpretation, it is quite clear that the co-creation that this research is looking for is a production of tacit to explicit and back to tacit knowledge transformation. Although the actual knowledge co-creation process takes place in each individual's (community member) mind. The knowledge co-creation is also different for each individual as it is based on their hermeneutical interpretation and understanding. Therefore it is extremely unlikely that the co-created knowledge is exactly the same for the members.

The above is a summary of the viewpoints and preconceptions of this research from before the study was under taken to after the findings. It is clear that although not all but some concepts have been reformed and transformed from before to after the completion of the study.

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## 6.9 Summary

This chapter started off by looking at the initial knowledge co-creation framework, which was developed after the literature review. By considering Nonaka's organizational SECI knowledge creation model, it argued that the same model cannot apply in an online community and would require modification to be applicable in a virtual environment. A new RECI model was proposed which included a reflection phase. Using the hermeneutical circle technique, the model was revised a number of times after that and eventually it was claimed that the co-creation would take place in the reflection stage as it would require hermeneutical interpretation which is different for each individual. The reflection phase of the RECI model was further investigated to find out what exactly would cause the tacit co-creation of knowledge in the individual's mind. It was suggested that the same seven principles that were introduced for interpretive research by Klein and Myers, were in fact applicable in the reflection phase. Each individual would go through all or some of the principles in his/her mind in order to interpret the knowledge and thus lead to co-creation. This new addition was added to the framework and a final Knowledge co-creation framework in online communities was introduced.

The role of technology in knowledge co-creation within online communities was discussed. It was concluded that not only the technology is the facilitator and underlying foundation for the online community, but it actually plays a critical role in the efficiency of the knowledge co-creation process within the community. This is done through providing the right tools for the users to interact and collaborate within the community and thus co-create knowledge.

The chapter follows on by introducing a set of eleven social and technical characteristics and guidelines. These characteristics and guidelines are to be used in the design and implementation of knowledge co-creating online communities. A reflection on the notion of online communities is made before moving on to suggest the 'knowledge co-creation' hypothesis. It is suggested that the hypothesis would be converted into the knowledge co-

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creation theory with more empirical research in the future. The chapter comes to a close by a final reflection on the dialogical reasoning principle from Klein and Myers.

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# CHAPTER SEVEN: CONCLUSION

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## 7.1 Introduction

The final chapter of this research endeavours to bring together a summary of the research while highlighting key findings. This study aimed to explore knowledge co-creation in online communities. The approach that was chosen was an interpretive case study with an extensive look at the literature. The findings of this investigation are: a conceptual framework for knowledge co-creation in online communities, a set of desired characteristics and guidelines for implementation and design of knowledge co-creating online communities, reflections on the role of the technology and online community with respect to knowledge co-creation and finally a plausible knowledge co-creation hypothesis that –with further research- can be turned into a theory within online communities literature.

The chapter will then point out the main contributions of the work in terms of theory, methodology and practice. It is significant to note that this type of exploratory and exclusively interpretive research using the Klein and Myers principles, is quite unique in IS research and can therefore be used as a practical research example for future similar investigations.

The limitations and challenges of the work will be covered towards the end of this chapter before finishing off by laying out the possible future research on the subject.



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## 7.2 Summary and findings

This research investigated the new notion of knowledge co-creation in an online community setting. Co-creation was previously used mainly in the business and marketing area and it referred to the collaboration between a company –vendor- and the customer. Co-creation allows and encourages an active involvement from the customer to create a value rich experience. This research aimed at applying the same principle but instead of a company-consumer level, it deployed it in an online community environment where there are many parties involved. The research believes the interaction and communications of the members of an online community could result in what it calls the co-creation of knowledge. Therefore this phenomenon needed to be studied in order to see if it supported the proposed hypothesis.

One of the primary and fundamental components of this research is online community. Online communities are at the centre of knowledge co-creation as they provide the foundation in which knowledge and information sharing takes place, which then leads onto knowledge co-creation. There are various types of online communities ranging from communities of practice, to dating and social networking communities. However there are three characteristics that are common in all of them. Online communities are a group of people who are technically online and communicate through some sort of electronic telecommunication medium, they have a shared interest or common goal, and are governed by a set of policies and rules. This rather loose description sets the boundaries for what this research refers to as an online community. There are some fundamental theories that relate to online communities and they are: social presence theory, social exchange theory, social capital theory, and social network theory. These theories can play a part in knowledge co-creation in online communities and therefore needed be inspected.

The second important element in this research is knowledge. Again there are various ontologies of knowledge but the majority of researchers within the information systems'

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field agree that knowledge is beyond simple data or even information. This research based its notion of knowledge mainly on Hassell's (2007) idea. At the same time that it recognises there are tacit and explicit forms of knowledge; it believes there is no knowledge outside of experience. And experience is mainly based on an individual's communications and interactions in a society. Therefore knowledge is tied with social groups and interactions. An important part of examining knowledge co-creation meant that one had to look at ways knowledge was actually created. Social constructivism, which is one of the most accepted theories associated with online learning, also plays a key role in the co-creation of knowledge. It believes humans generate knowledge through social intercourse and interaction. Nonaka's SECI (1995) model is an accepted concept that explains the knowledge creation process in four steps. The model explains how organizational knowledge is created through the four processes of socialization, externalization, combination and internalization. The SECI model plays a significant part in the proposed knowledge co-creating model of this research.

The advancement of technology has revolutionized communications especially in its online form. At the heart of this transformation lays the interactive Web 2.0 technology, which is now the platform for nearly all online communities. Therefore the focus of the study on technology in this research is web 2.0. Rather than being clearly defined as a set of tools or sites, web 2.0 is more of a concept that refers to sites and resources or developments that have some common characteristics. Seven characteristics are highlighted in Dawson's (2007) work which are: Participation, Standards, Decentralization, Openness, Modularity, User Control, and Identity. It simply means websites have become much more dynamic and interconnected, producing online communities and making it even easier to share information on the Web. Some popular examples of web 2.0 applications and services are Wikis, Blogs, Social bookmarking, Multimedia sharing and Social networking. The technology lays the foundation for online communities, that in our case can co-create knowledge.

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The term co-creation is a term largely used in marketing and business strategy. It refers to sharing innovation and product development with partners outside the corporate boundary, being either customer, suppliers or contractors. The interaction between for example the company and the customer creates co-created value, which can help design and implementation of products that are more customer focused. The same idea behind co-creation in a marketing context can be applied to co-creation within online communities with the difference that instead of a two-way collaboration system between the companies and their customers, it would be many to many collaboration between all the members within a community. The basic principle of co-creation of value stays the same, however in the online community context it is being labeled as co-creation of knowledge or knowledge co-creation. It simply means that the communications and collaborations between the users in an online community is of value.

A conceptual framework was drafted from the findings of the literature on online communities, knowledge, and technology (web 2.0). The initial framework set the foundation for the analysis and discussion chapters later on.

The research takes a qualitative approach to investigating knowledge co-creation. This is due to the fact that knowledge is a subjective entity that depends on how it is interpreted by the user. It cannot be quantified by numbers as it has huge social elements attached to it. In terms of philosophical paradigms it seems that an interpretive approach is the one approach that seems most suitable as it is based on understanding factors in a particular social setting, like an organisation or a community. Positivism generally assumes that reality is objective and bearing in mind knowledge is on the contrary subjective, it meant that it was not the suitable philosophical basis to go for. Critical research would also not be suitable as at this stage the research wanted to find out and explore the topic of co-creation and not adopt a critical stance.

A case study method was chosen, as the theory needed to be linked to practice in order to understand the phenomenon. Plings was the chosen case study, which was run by

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Manchester City Council to provide information about local positive activities to the youth. Plings was used and studied hypothetically in order to find out about how knowledge would be co-created in online communities. Due to the fact that there was no data collection in its classic sense, the study needed some solid foundation in theory in order to be able to philosophically interpret the situation. Klein and Myers' (1999) seven principles for conducting interpretive case study research were used as the basis of this interpretive investigation. This meant that the research was firmly based on a well-established methodology. Although it is still unique in its approach to the interpretive case study as it is solely based on literature and epistemological understandings of the researcher and without any empirical data.

Klein and Myers' seven principles along with the three main elements highlighted earlier by the literature review (online community, knowledge, technology) were used alongside the hypothetical study of the Plings case study to investigate the notion of knowledge co-creation. Due to the fact that the research is deeply rooted in interpretivism, hermeneutical philosophy was used as the basis for conducting and analysing the whole research.

Principle five of Klein and Myers is about dialogical reasoning and requires the researcher to show sensitivity to the theoretical preconceptions guiding the research and the actual findings. By applying this principle, the research will now reflect on the seven principles and how they were affected or altered in this research.

Hermeneutics is a widely used method of understanding and interpreting things and although many people use it daily they are most likely unaware of it. The hermeneutical circle which is the first and most fundamental principle of Klein and Myers allows the researcher to understand a complex whole, by iterating between the precursory understanding of the parts to the whole and from a global understanding of the whole context back to the improved understanding of each part. As Klein and Myers themselves suggested, this principle played a key role in this research and it was the basis of all the

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other principles. It was used throughout the research to interpret and analyse the various aspects of co-creation of knowledge. For example it can be seen in the discussion chapter that the RECI model and the final framework were both revised a number of times, due to the iterations and cycles of hermeneutical understanding.

In the principle of Contextualisation, due to the fact that no empirical data was available, the research concentrated on the context of the main components under study. It looked at the context and social issues surrounding the main three elements of the research: online community, knowledge and technology. Reflections were made with regards to the context of each of these with the Plings case study.

The principle of interaction between researcher and subjects, did not apply to this research, as there was no data collection from any of the participants of Plings. As there were no participants to collect data from, hence there was no interaction between the researcher and them. Due to the specific nature of this research, it was the individual researcher who processed, analysed, evaluated, understood and interpreted everything. Therefore it is concluded that in solely interpretive research that has no means of collecting information or data from any human being, this principle cannot be applied, as there is no social interaction between the researcher and the subjects.

The most significant principle that impacted this research was the abstraction and generalisation principle. This principle required the researcher to relate particulars to abstract categories and theories. Due to the fact that the research is completely interpretive and heavily based on literature, it meant that theories and concepts related to online communities, knowledge and technology which were highlighted before in the literature review needed to be examined with regards to the case study. This principle proved very significant in this type of research as the study is heavily hypothetical and theory based. The understanding of knowledge co-creation in this work is very much tied with using this theory and relating existing theories and concepts within online communities, technology, and knowledge to the scenarios from the case study. As an

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example, one of the main areas that the research focused on was the SECI model by Nonaka (1995), which explained the four stages of knowledge transformation that resulted in knowledge creation. As the model was aimed at knowledge creation in organisations it needed to be modified to match the settings of this research which was an online community environment. Nonaka's model was changed from the socialisation, externalisation, combination and internalisation phases, to reflection, externalisation, combination, and internalisation. This meant that a critical change was made to introduce a phase called reflection and have it replace the old socialisation stage. One reason was that the initial socialisation required users to be in physical proximity of each other, like a classroom. This was not the case in online communities as users would communicate through online means and would not have physical or face-to-face interaction. Another reason was that probably the whole process of interaction and communication online could be a form of socialisation, and it would not be a fair reflection to just restrict it to one phase. This model was called the RECI model and was further developed in the discussion chapter using a hermeneutical circle of interpretation.

The dialogical reasoning principle required the researcher to make transparent its historical philosophical beliefs and assumptions. This was to allow the reader to see where the researcher initiated his ideas from. This principle was later on reflected upon at the end of the discussion chapter, as it required a comparison between the early thoughts of the researcher and the findings at the end of the research. It has become clear that this principle is not as straight forward in this type of research, as compared to a more empirical research. One of the reasons for it is that with an empirical study you have two clear set points, one prior to data collection, and one after data collection and analysis. Therefore you can reflect on your thoughts and understandings in a clear fashion. However when it comes to research like this, where the analysis and evaluation and cycles of hermeneutical understanding is taking place from the start of the study, it is quite difficult to appreciate the before and after points of when the study has been done. It has somewhat of a blurred line. Part of using the principle of dialogical reasoning, is the reflection on Klein and Myers' principles which is being discussed now.

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The principle of multiple interpretations looks at various interpretations and narratives of the same event from various participants and stakeholders. Again this principle is much more straightforward in a field study as you can question different people about the same issue and see what each say. It is much more difficult in a study like this as there is no input or data from participants. This research used the multiple interpretations principle by looking at each of the stakeholders within the case study to try and see what their interpretations of the concept of the research were. The study showed that none of the six stakeholders acknowledged the fact that knowledge creation and co-creation was taking place. This confirmed the idea that the co-creation was occurring unintentionally. It also meant that this social phenomenon, takes place even if intentions and purpose of the stakeholders are completely different. The obvious danger here is that because the researcher has to reach answers and view the situation from various stakeholders, based on his/her understanding of the case study, this has the potential of being biased or unreal. How realistic and true this is, relies on the fairness and power of the researcher to not only be just but at the same time be accurate about his/her evaluation and understanding of the situation.

The last principle was the principle of suspicion, which requires the interpretivist researcher to be sensitive to the narrations and inputs he/she takes from various sources. In a case where the researcher is for example taking interviews or questionnaires, he/she needs to be careful about the bias and different narrations he/she might get from various people. This principle would not apply to similar types of research as this, as they would be exclusively interpretive and no data or information would be collected from any of the subjects (individuals) from within the system. The research would be completely observational and interpretive and would take no direct data from participants. Saying that, one still needs to be careful and sensitive for bias from the sources that provide information to him/her. For example in the case of this research, the idea of how the Plings system works was provided to the researcher by Substance Ltd. and observations of the researcher himself. The researcher needs to be wary of the bias that can be put

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forward in the narration and input by Substance Ltd. Although in this case, substance would have had no benefit in giving false or bias information therefore even if this principle was applied in the way mentioned here, it would not have made any difference in the results.

The main discussion work was on the knowledge co-creation conceptual framework, which was based on the initial framework introduced at the end of the literature review chapter and the newly created RECI model. The model indicated that co-creation would take place in the reflection stage of the knowledge transformation process. This was due to the fact that the co-creation would occur in the individual's mind as he/she are trying to interpret and understand the shared knowledge. This would be in a phase where knowledge is in its tacit form. Therefore the actual process of co-creation would occur outside of the online community, even though it was the interactions and collaborations within the community that stimulated the co-creation in the first place. The model suggests that the process also starts from the externalization phase, as the user who is going to communicate online would straightaway turn the tacit knowledge in his/her mind into explicit by posting media content or a comment.

In a more detailed section on the reflection stage, it was mentioned that because the user is hermeneutically in cycles of interpretations and understanding, it seemed quite appropriate to say the individual actor would himself use the seven principles set out by Klein and Myers to interpret the information and knowledge he/she has gained in the community. This would then lead to the actual co-creation of knowledge as he/she are thinking, reflecting and trying to understand the inputted tacit knowledge. It is clear that the user does not think about these seven principles before applying them. They are done instantly and with very little effort, but they do occur. Also it was established that as the co-creation is a reflection and interpretation process that each individual actor goes through tacitly, the co-created knowledge would therefore be different for each actor. This due to the fact that each interpretation depends on a lot of subjective elements within the actor's mind. To explain this in a more practical way an example of a scenario in



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Plings was provided and then each of the seven principles were discussed with reference to the scenario.

It was concluded that not all of the principles were usually applied when people interpret. Four of the principles were suggested to be the more popular ones that most rational users would undergo to interpret. These were the hermeneutical circle, contextualization, interaction between the researcher and the subject, abstraction and generalization. The remaining three, which included: dialogical reasoning, multiple interpretations and suspicion were thought to be used less than the first four. Lack of using these three principles would most likely result in bias and unfair interpretations. For example one needs to be suspicious and sensitive about where the information or knowledge comes from as the source maybe completely bias and lack of attention to this principle would mean an interpretation that is far away from the truth. The final framework included the seven principles of interpretation and co-creation within the RECI model.

The technology was found to play a fundamental role in the co-creation of knowledge in an online community. The technology is the underlying foundation that the online community is set up on and which allows communication, interaction and collaboration to take place. These lead to information and knowledge sharing, which eventually results in co-creation of knowledge. The technology also plays a vital role in providing communication and collaboration tools for the users of an online community. The more the technology empowers the users to collaborate in different ways, the more likely knowledge co-creation will take place more efficiently.

One of the aims of this research was to find out (if any) characteristics that would help knowledge co-creation in online communities. With the understanding of the co-creation concept and its surrounding theories and ideas, and the way online communities like Plings worked, along with the experience of the researcher in virtual communities and web 2.0, a set of characteristics and guidelines for designing and implementing a knowledge co-creating online community was introduced. The set of eleven characteristics were

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categorized into social and technical guidelines. Some of them however were in need of both a social and a technical approach. These characteristics were highlighted as the most important ones, otherwise there are plenty more elements that can affect knowledge co-creation in online communities. The idea was that these recommendations should aid the co-creation of knowledge in online communities by making it more efficient and effective. Obviously at this stage this is a claim and further research would need to be carried out to support this proposal.

This research provided a few reflections on the actual notion of an online community. It stated that even though the research accepts an online community to be described as having the following characteristics: using some form of online technology to communicate, be guided by a set of rules and regulations and have shared purpose; the strength of the communities vary. It introduced the concept of weak communities for communities where the members do not have strong interactions with one another, and the concept of strong communities who have more robust interactions between its members. The more the actors within an online community interact and communicate the stronger their community would be. Moreover there can be communities within other communities with stronger ties between their members. It was also mentioned that nowadays most communities are concerned about networks and networking. Depending on how much of a strong connection one may have with his/her network, they can actually form a stronger or weaker community.

This investigation concludes by proposing the *knowledge co-creation hypothesis*. It is believed that knowledge is co-created through interactions and collaborations of members within an online community who communicate using various technologies. This co-creation takes place through a four-step transformation of knowledge called the RECI model. This model is based on Nonaka's original SECI model but amended to reflect the online community setting. The knowledge co-creation proposed in this research takes place in the reflection phase of this model while the tacit knowledge is being interpreted and understood by each individual. It is believed that each individual goes through all or

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some of the seven principles of evaluating interpretive research by Klein and Myers. These principles that are believed to be the basis for conducting interpretive research are actually considered to be the exact principles that an individual would reflect on to interpret and understand the knowledge, and hence creating new knowledge. This hypothesis is obviously at its initial stage and with more thorough research can hopefully set the foundations for introducing the knowledge co-creation theory in online communities.

## **7.3 Contributions**

This research has made significant contribution to the field of information systems in terms of theory, practice and methodology. Below a summary of the contribution in each category is set out.

### **7.3.1 To theory**

As a contribution to theory the research introduced a conceptual framework for knowledge co-creation in online communities. The framework, which includes the main elements affecting this phenomenon, looks at the components and their interrelation and the way knowledge co-creation is formed. The framework helps explain this new notion, which prior to this research seemed like a rather vague and complex concept.

Apart from the main conceptual framework, the research introduced a model portraying how social capital and knowledge is passed through a cycle in an online community setting, as the user interacts and communicates. This model helps recognise the different stages and cycles that individual knowledge goes through and how it keeps adding to the social capital within the community. The model is based on the social capital theory in online communities.

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One other notable contribution of this work in terms of theory was the introduction of the RECI model, which is based on Nonaka's SECI knowledge creation model. The model, which later on becomes part of the main framework, is what this research calls, the RECI knowledge co-creation model as it demonstrates the stages and cycles of knowledge before co-creation is reached. Later on the research advances further into dissecting the reflection phase, which is the stage where knowledge co-creation takes place. This provides more detail about the co-creation process and the reflection zone, thus introducing a comprehensive model for knowledge co-creation from the perspective of each actor within the online community.

Another contribution in terms of theory is that the research has established a firm hypothesis for the co-creation of knowledge within online communities. This is the initial stage for a theory in the field. Once enough evidence and further research has been compiled, the theory of 'knowledge co-creation' can be introduced as one of the leading theories in online communities, alongside the famous theories covered earlier on in the literature review, like the social network, the social presence and social capital theories.

The research in general has helped understand the concept of knowledge co-creation in online communities. This work can be considered as a general contribution to the field of research in knowledge creation and co-creation. It will help fill the gap on the lack of research into knowledge creation in the IS discipline.

### **7.3.2 To methodology**

Probably one of the most significant contributions of this investigation is in the methodology part. The study has taken a somewhat unique approach towards interpretive research. Although the case study method was selected, it was decided that a more suitable approach would be to base the investigation solely on interpretive analysis without any data in its classical form. To do this, apart from an in-depth literature study on the topic and surrounding relevant areas, the seven principles of Klein and Myers was chosen to be used as a tool to conduct and analyse the research. Klein and Myers state clearly that the principles are for conducting interpretive *field study*. Obviously this is in

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contrast with the method of this research. As stated previously, this research adopts an exclusively interpretive and exploratory approach to the problem. This is what makes this research distinctive. Here the research is trying to use the seven principles proposed for interpretive field study, to carry out a completely interpretive research without any data collection. From what the author understands as of now no other research has been conducted in such manner. Even though there have been studies previously using the established Klein and Myers principles and based on interpretive case study research, they have all been using one form of data collection at least. Therefore this research is a practical example of conducting interpretive case study research without having any data collection. Any researcher wishing to adapt a similar research method can use this work as a practical example to follow or reflect upon. Of course this method needs to be chosen carefully and for the right research. As it was explained in the methodology chapter, what is being investigated (knowledge in this case) plays a critical role in selecting the research method. The following section is a methodological reflection on the seven principles by Klein and Myers. In a way this is what the researcher has found by conducting the research in this manner. One needs to note that the reflections highlighted below have been affected by the fact that the Klein and Myers' principles are being used in a manner and context not predicted by its authors. Although the research has proven that in fact as a general rule, they can be used to study inclusively interpretive research and still come up with interesting findings.

### **7.3.2.1 Reflection on Klein and Myers principles**

As mentioned earlier one of the main contributions of this research is in terms of methodology. The interpretive research method was based on the seven principles set out by Klein and Myers in 1999. It is important now to reflect on those principles and highlight any findings.

The first reflection that is fairly straightforward about the principles and this study is that not all seven principles could have been applied to this research. The main reason for this is due to the fact that this research has no data collection and is exclusively interpretive in

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nature and practice. Even the case study is hypothetical to some extent. Although Plings actually existed and such a project was run by Manchester city council, the examples and scenarios given in this research are hypothetical and have not actually physically taken place. Therefore no data was collected from any participant. This is what makes this research unique and difficult at the same time. Due to this, principles three and seven (Principle of Interaction Between the Researchers and the Subjects and Principle of Suspicion) were not applicable to the research. In other words there was no interaction between the researcher and the subject as there was no participants involved. There was no interview or survey as there was no one to question directly. Note only the idea of how Plings would work, was investigated as a sample of a knowledge co-creating community. Or in the case of the principle of suspicion, again it refers to sensitivity towards bias in the narrations from participants. Although it can be said that one still needs to be careful and show sensitivity towards the sources where he/she gets their information from. For example in the case of Plings, if substance Ltd. have provided information about how the Plings system should work, the researcher needs to be careful about bias that may be imposed by Substance Ltd. for any reason whatsoever. Although in the case of this research, Substance Ltd. had no interest in providing bias or inaccurate information.

Klein and Myers themselves have even stated that their proposed set of principles should not be applied mechanistically. They state: "It is incumbent upon interpretive scholars to appropriate them and use their own judgement as to their specific application. We do not absolve authors, reviewers, and editors of the effort of working out whether, how, and which of the principles should be applied in any given research project." (Klein and Myers, 1999).

As stated by Klein and Myers themselves, the principle of hermeneutical circle, which is the first principle of the seven, is the most fundamental principle. In fact this principle has been the only principle that has been applied from the start of this investigation and throughout the study. There have been constant circles of hermeneutical interpretations during this research and a good proof of this claim is the fact that the actual proposed RECI

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model had changed a few times until it reached its final version. These circles were done by studying the parts and each stage of the model and then going back out to study the whole concept in the setting of the online co-creating community. It can be stated that based on the findings of this research in terms of methodology, the hermeneutical circle should be part of any interpretive and subjective research.

By looking at the way the principles were used in this research, one can evidently point out that although five of the seven principles have been used and applicable to this research, they vary in the quantity of their reflection. In particular it is clear that the fourth principle (Abstraction and Generalisation), is the most significant in terms of quantified reflection. This section is the longest section of the analysis chapter and the reason for it is that, due to the fact that the research is exclusively interpretive and the concept under study is quite complex, it would have quite a lot of related theories and concepts that were associated with and needed to be examined. This principle has made the most significant contribution towards this research. Concepts in online communities, knowledge creation and technology were all investigated and reflected upon by the Plings case study. This is no surprise as Klein and Myers themselves highlighted the fact that in their study too, principle four had pivotal influence on other principles (Klein and Myers, 1999).

Principles three and five (Principle of Interaction Between the Researchers and the Subjects, and Principle of Dialogical Reasoning) were said to have been weakly reflected on in the three cases that Klein and Myers (1999) looked at in their study. The third principle as explained earlier was not applicable to this research and thus left out. However as a matter of confirmation from an interpretive researcher, the fifth principle, which is dialogical reasoning, seems to be rather difficult to use. One part of the principle requires the researcher to set out his/her historical intellectual basis of the research, which are the fundamental philosophical assumptions. This part is fairly straightforward and is covered in the research methodology of this research too. However the other part of this principle requires the researcher to reflect on the preconceptions of the research and review them against the findings to rule out any that are not supported by the

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findings. The problem is that this will not help the researcher in actually reaching a solution or to get results. It is kind of a principle that requires reflection and not something that would help the researcher actually perform the interpretive research. It is a type of comparison at the end of the study to see what the preconceptions of the research were and how accurately they match the results. The principle is useful to make the researcher reflect on any prejudices that he/she may have had, but not a practical principle to help carry out the interpretive investigation.

As a general observation based on this research it may be that the reason principles three and five are weakly reflected in interpretive studies, is due to the fact that they are difficult to execute and somewhat difficult to comprehend. This is while the other five principles are quite straightforward to follow and use.

One last point about Klein and Myers' paper is that they state: "We readily acknowledge that not all interpretive work is hermeneutic in orientation and therefore we leave the door open for other interpretive researchers to suggest a different set (or sets) of principles." (Klein and Myers, 1999). While this statement is a humble gesture and is inviting of other researchers to make their own contributions and sets of principles, this research strongly believes and has verified –in its own scale- that all interpretive research will involve a degree of hermeneutical interpretation at some stage. As shown in this research any reflection on knowledge will involve subjective and hermeneutical understanding at least in the researcher's mind, if not as a practical principle.

### **7.3.3 To practice**

In terms of contribution to practice, the study has explored the notion of knowledge co-creation, which was a complex concept to understand and analyse. Apart from the conceptual framework set out for knowledge co-creation, the research proposed a set of desired characteristics and guidelines that should aid in the design and implementation of knowledge co-creating online communities. These would be any online community that aim to facilitate and maximise knowledge co-creation. It is important to note that these sets of characteristics are advisory and based on the understanding of the researcher



while conducting this interpretive investigation. They would require further testing in order to be established as firm guidelines in future. In practical terms they can help many online communities in particular, ones with a focus on their knowledge co-creation. They can be used for example in e-learning platforms or online communities of practice. It does not matter whether the community aims to co-create knowledge directly or indirectly, the co-creation will take place, most of the time without the actors even realising it is. The proposed set of social and technical characteristics and guidelines will hopefully set up the right environment for more efficient knowledge creation and co-creation to take place.

Below summarises the contributions of this research more clearly:

**Contribution to theory:**

- RECI model
- Social capital model in online communities
- Conceptual framework for Knowledge co-creation in online communities
- Knowledge co-creation hypothesis

**Contribution to methodology:**

- Practical example of an exclusively interpretive research with no empirical data
- Reflections on Klein and Myers principles:
  - Not all principles are applicable
  - Principles 3 and 7 were not applicable
  - Hermeneutics circle is the key underlying principle
  - Principles vary in their reflection depending on their relevance with the research
  - Principle 4 has the most relevance to this type of research
  - Principle 5 quite difficult to use
  - Principles 3 and 5 seem to be difficult to comprehend and execute
  - Principles 1, 2, 4, 6 and 7 are straightforward

- All interpretive research will require a degree of hermeneutical interpretation at some stage.

**Contribution to practice:**

- Notion of knowledge co-creation is introduced and explained
- Introduction of a set of desired characteristics and guidelines that aid the design and implementation of knowledge co-creating online community.
- They can help e-learning platforms and online communities of practice (and communities with a focus for co-creation)

## **7.4 Limitations and challenges**

As the case with any other research, this work has had its own limitations and issues. The biggest challenge by far has been the fact that, from the researcher's perspective, this research has been unique in the methodology of addressing the problem. An exclusively philosophical and interpretive approach without any form of classical data collection has made this work particularly challenging and at times difficult to continue. This does not automatically create a limitation on the research, as it is still firmly believed that the nature of what is being investigated requires this type of research, however it is very difficult for the researcher to follow through, as there were no other work with the same methodological approach for the work to take guidance from. Although using Klein and Myers' principles to conduct and analyse interpretive research had been done many times before, however they had all been used in conjunction with traditional data collection methods. This characteristic that this research has been solely based on literature, interpretive observation and hypothetical analysis of a case study and argued in a philosophical hermeneutical manner is distinctive and unique.

The nature of knowledge co-creation within online communities had not been investigated before and thus this research is the first of its kind in the field. This meant that the research was at an exploratory stage and needed to find out about the notion of knowledge co-creation and how it would take place. The whole investigation is heavily

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based on hermeneutical interpretations and understanding using hermeneutical circle. Like any interpretation, the results are subjective. These interpretations are mainly processed in the researcher's mind in the form of tacit knowledge and can be challenging to portray explicitly. The completely interpretive approach required a significant amount of self-reflection and thinking, which were not easy to explain and illustrate objectively using models and frameworks. The understandings of an individual or researcher is always changing as more thinking and reflection is involved and as he/she goes through more thinking cycles. Unlike positivist research that can be easily demonstrated and proven, this type of interpretive research is challenging to justify and demonstrate. In a way the research has reached certain findings that are difficult to demonstrate exactly 'how' they were reached. Furthermore due to the nature of the research another researcher can go through the same methodology and find slightly different results. This depends on the researcher's experience and subjective interpretations and understandings.

The Plings case study was used as an example of an online community as the researcher had got involved in the data collection project with the Manchester city council. Due to time constraints and nature of the study only one case study was looked at.

## 7.5 Future Research

This research was an essential initial step in exploring knowledge co-creation in online communities. Since the notion of knowledge co-creation was new in an online community setting, it needed to be interpreted and observed, therefore there was not many suitable research alternatives other than the method this study chose. However to establish the hypothesis of knowledge co-creation, further research needs to be carried out on the subject. This should hopefully lead to the theory of *knowledge co-creation*.

The next suitable step in the research on the topic of knowledge co-creation would be to test the framework in an actual case study and this time use data collection methods like interviews and surveys to directly and indirectly evaluate its accuracy. Ethnographical

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research can also be a suitable continuation of this research, where the framework can be tested and validated in a real life sample of an online community.

The proposed characteristics and guidelines for designing and implementing a knowledge co-creating online community need to be tested and reviewed in an actual online community. Once these are evaluated and validated they can be used for building more efficient future knowledge co-creating online communities.

Overall the findings in this research are based on interpretations and philosophical understandings and are proposals for how knowledge is co-created in online communities and what factors aid this co-creation. These require further research and validation.

## **7.6 Summary**

This chapter has summarised the research and its findings. The fact that the research is an exploratory interpretive case study without any traditional data collection has made this research unique in its own terms. Knowledge co-creation in an online community setting is a new notion that this research has tried to understand and recognise.

The research method has been a hermeneutical interpretive evaluation of knowledge co-creation using Klein and Myers' principles. This means it is significantly subjective and based on interpretations of the researcher. Thus it would need to be validated with future research and investigations.

One of the main contributions of this research has been a conceptual framework for knowledge co-creation in online communities. This has been followed by a set of characteristics and guidelines for design and implementation of knowledge co-creating online communities. In terms of methodology, the research has been unique in its approach as it had based its interpretive investigation on the Klein and Myers' principles, which are firmly based on IS research literature.

# References

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- Akkinen, M. (2005) Conceptual Foundations of Online Communication. *Information Systems Science*. Helsinki: Helsinki School of Economics.
- Alavi, M. & Carlson, P. (1992) A review of MIS research and disciplinary development. *Journal of Management Information Systems*, 8(4), 45-62.
- Allee, V. (1997) 12 Principles of knowledge management *Training & Development*, 51(11), 71-74.
- Anderson, P. (2007) What is Web 2.0? Ideas, technologies and implications for education. JISC Technology and Standards Watch,.
- Apple.com. (2015) App Store Rings in 2015 with New Records.  
<http://www.apple.com/pr/library/2015/01/08App-Store-Rings-in-2015-with-New-Records.html>: Apple Press Info.
- Avison, D., Lau, F., Neilsen, P. A. & Myers, M. D. (1999) Action Research. *Communications of ACM* 42(1), 94-97.
- Axelrod, R. (1984) *The Evolution of Cooperation*. New York: Basic Books.
- Babu, K. (2012) Issues in Knowledge Management. *Issues in Knowledge Management (September 22, 2012)*.
- Baburoglu, O. N. & Ravn, I. (1992) Normative Action Research. *Organization Studies*, 13(1), 19-34.
- Bagshaw, M. (2000) Why knowledge management is here to stay. *Industrial and Commercial Training*, 32(5), 179-182.
- Barrett, M. & Walsham, G. (2004) Making contributions from interpretive case studies: Examining processes of construction and use. *Information Systems Research*. Springer.
- Bartolome, A. (2008) Web 2.0 and New Learning Paradigms. *eLearning Papers*, 8.
- Baskerville, R. (1999) Action Research For Information Systems. In: Haseman, W. & Nazareth, D., eds. *The Fifth Americas Conference on Information Systems*, Milwaukee, Wisconsin. Association for Information Systems, 829-831.
- Baskerville, R. & Wood-Harper, A. T. (1998) Diversity in Information Systems Action Research Methods. *European Journal of Information Systems*, 7(2), 90-107.
- Bassi, L. J. (1997) Harnessing the power of intellectual capital. *Training & Development*, 51(12), 25-30.

- Baxter, P. & Jack, S. (2008) Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*
- Bearman, P. (1997) Generalized exchange *American Journal of Sociology*, 102(5), 1383-1415.
- Blackler, F. (1995) Knowledge, knowledge work and organizations: an overview and interpretation. *Organization Studies*, 16(6), 1021-1046.
- Blanchard, A. & Horan, T. (1998) Virtual communities and social capital. *Social science computer review*, 16(3), 293-307.
- Blau, P. M. (1964) *Exchange and Power in Social Life*. New York: Wiley.
- Boisot, M. (1995) *Information Space: A Framework for Learning in Organizations, Institutions and Culture*. London: Routledge: Thomson Learning
- Brown, J. (1999) *There Goes the Neighbourhood, (world wide web)* [Online]. Salon. Available: [http://www.salon.com/21st/feature/1999/01/cov\\_19feature.html](http://www.salon.com/21st/feature/1999/01/cov_19feature.html) [Accessed].
- Bryman, A. (2004) *Social Research Methods (2nd edition)*. Oxford: Oxford University Press.
- Bryman, A. (2006) Integrating quantitative and qualitative research: how is it done? *Qualitative Research*, 6(1), 97-113.
- Cardoso, A. & Ramos, I. (2012) Looking at the Past to Enrich the Future: A Reflection on Klein and Myers' Quality Criteria for Interpretive Research. *Electronic Journal of Business Research Methods*, 10(2).
- Checkland, P. & Holwell, S. (1998) *Information, Systems, and information Systems: Making sense of the field*. Chichester: Wiley.
- Choo, C. W. (1998) *The Knowing Organization*. Oxford: Oxford University Press.
- Choo, C. W. (2001) Environmental scanning as information seeking and organizational learning. *Information Research*, 7(1).
- Cole, M. & Avison, D. (2007) The potential of hermeneutics in information systems research. *European Journal of Information Systems*, 16(6), 820-833.
- Collins, H. (1993) The structure of knowledge. *Social Research*, 60, 95-116.
- Cremonini, L. (2006) *Web 2.0 Map* [Online]. <http://www.wikipedia.org/>. Available: [http://en.wikipedia.org/wiki/File:Web\\_2.0\\_Map.svg](http://en.wikipedia.org/wiki/File:Web_2.0_Map.svg) [Accessed 15 May 2009].
- Creswell, D. J. W. (2003) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* Sage Publications.
- Damasio, A. R. (2000) *Descartes' Error: Emotion, Reason and the Human Brain*. New York: Quill.

- Davenport, T. H. & Prusak, L. (1998) *Working Knowledge*. Boston, Massachusetts: Harvard Business School Press.
- Davis, C. & Goodman, H. (2014) Virtual Communities of Practice in Social Group Work Education. *Social Work With Groups*, 37(1), 85-95.
- Dawson, R. (2007) *Launching the Web 2.0 Framework* [Online]. Future Exploration Network Available:  
[http://www.rossdawsonblog.com/weblog/archives/2007/05/launching\\_the\\_w.html](http://www.rossdawsonblog.com/weblog/archives/2007/05/launching_the_w.html)  
[Accessed 20 May 2009].
- Digitalbuzzblog.com. (2010) *Facebook: Facts & Figures For 2010* [Online].  
<http://www.digitalbuzzblog.com/facebook-statistics-facts-figures-for-2010/>:  
digitalbuzzblog.com. [Accessed 21st May 2010].
- Doctorow, C., Dornfest, R., Johnson, S., Powers, S., Trott, B., Trott, M.,. (2002) *Essential Blogging*: O'Reilly.
- Donath, J. S. (1999) Identity and deception in the virtual community. *Communities in cyberspace*, 1996, 29-59.
- Dreyfus, H. (2001) *On the Internet: Thinking in Action*. New York: Routledge.
- Ebersbach, A., Glaser, M., Heigl, R.,. (2006) *Wiki: Web Collaboration* New York: Springer Berlin Heidelberg.
- Efimova, L. (2004) Discovering the iceberg of knowledge work: A weblog case. OKLC.
- Emerson, R. M. (1976) Social exchange theory. *Annual Review of Sociology*, 2, 335-361.
- Emory, M. C. (2007) Changing paradigms: managed learning environments and Web 2.0. *Campus-Wide Information Systems*, 24(3), 152-161.
- Ethier, J. (2003) *Current Research in Social Network Theory* [Online]. <http://www.ccs.neu.edu>.  
[Accessed 28/07/07 2007].
- Facebook.com. (2009) *Statistics* [Online]. <http://www.facebook.com/press/info.php?statistics>:  
Press Room. [Accessed 23rd May 2009].
- Faraj, S., Jarvenpaa, S. L. & Majchrzak, A. (2011) Knowledge collaboration in online communities. *Organization science*, 22(5), 1224-1239.
- Ferragina, E. (2010) Social Capital and Equality: Tocqueville's Legacy. Rethinking social capital in relation with income inequalities. *The Tocqueville Review*, Vol. XXXI.
- Fischer, G. & Ostwald, J. (2001) Knowledge management: problems, promises, realities, and challenges. *IEEE Intelligent systems*, 16(1), 60-72.
- Fletcher, J. R. (2003) The Role of Email 'Conversations' in Organizational Knowledge Creation. *ANZCA03: Designing Communication for Diversity* Brisbane.

- Flyvbjerg, B. (2006) Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219-245.
- Frost, A. (2010) *The Different Types of Knowledge* [Online]. Available: <http://www.knowledge-management-tools.net/different-types-of-knowledge.html> [Accessed 8th September 2014].
- Frydenberg, M. (2008a) *Earthquake Maps and Spinning Photos: What is a Mashup?* [Online]. Waltham,. Available: <http://www.mis-laboratory.com/Faculty/Mashup.pdf> [Accessed 23 May 2009].
- Frydenberg, M. (2008b) *Web 2.0 Tools for Knowledge Management* [Online]. <http://kmspace.blogspot.co.uk/2008/04/web-20-tools-for-knowledge-management.html>: KM Space. [Accessed 25th June 2011].
- Garrison, D. R., Anderson, T.,. (2003) *E-learning in the 21st Century*. London: RoutledgeFalmer.
- Garrison, D. R., Anderson, T., Archer, W. (2000) Critical inquiry in a text-based enviroment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 1-19.
- Gergen, K. (1997) Social saturation and the populated self. In: Hawisher, G. E. & Selfe, C. L. (eds.) *Literacy, technology and society: Confronting the issues*. Upper Saddle River, New Jersey: Prentice Hall.
- Granovetter, M. (1973) The strength of weak ties. *American Journal of Sociology*, 78(6), 1360-1380.
- Gregor, S. (2006) The nature of theory in information systems. *Mis Quarterly*, 611-642.
- H.M.Treasury. (2007) Aiming high for young people: a ten year strategy for positive activities. In: Families, D. f. C. S. a. (ed.). London: HM Treasury.
- Hamman, R. B. (1999) *Computer networks linking network communities: Effects of AOL use upon pre-existing communities* [Online]. socio.demon.co.uk/. Available: <http://www.socio.demon.co.uk/cybersociety/> [Accessed 10th July 2005].
- Harvey, L. J. & Myers, M. D. (1995) Scholarship and practice: the contribution of ethnographic research methods to bridging the gap. *Information Technology & People*, 8(3), 13-27.
- Hassell, L. (2007) A continental philosophy perspective on knowledge management. *Information Systems Journal*, 17, 185–195.
- Haythornthwaite, C., Wellman, B. (1998) Work, friendship and media in use for information exchange in a networked organization. *Journal of the American Study for Information Science*, 49(12), 1101-1114.
- Hildreth, P. M., Kimble, C.,. (2002) The duality of knowledge. *Information Research*, 8(1).
- Jonassen, D. H. (1991) Evaluating constructivistic learning. *Educational Technology*, 28(11), 13-16.



- Jones, Q. (1997) Virtual-communities, virtual-settlements and cyber-archaeology: A theoretical outline. *Journal of Computer Mediated Communications*, 3(3).
- Jones, S. E. (1999) *Doing Internet Research. Critical Issues and Methods for Examining the Net*. Thousand Oaks: Sage Publications.
- Kadushin, C. (2003) *A Short Introduction to Social Networks: A Non-Technical Elementary Primer* [Online]. <http://www.haifa.ac.il>. [Accessed].
- Kant, I. (1965) *Critique of Pure Reason*. New York: St Martin's Press.
- Kanuka, H. & Anderson, T. (2007) Online social interchange, discord, and knowledge construction. *International Journal of E-Learning & Distance Education*, 13(1), 57-74.
- Kanuka, H., Anderson, T. (1998) Online Social Interchange, Discord, and Knowledge Construction. *Journal of Distance Education*.
- Kaplan, B. & Maxwell, J. A. (1994) Qualitative Research Methods for Evaluating Computer Information Systems. In: Anderson, J. G., Aydin, C.E., Jay, S.J. (ed.) *Evaluating Health Care Information Systems: Methods and Applications*. Thousand Oaks, CA: Sage Publications.
- Katz, M. (1998) Learning focus: Knowledge management. *People Dynamics*, 16(6).
- Kavanaugh, A., Carroll, J. M., Rosson, M. B., Zin, T. T., and Reese, D. D. (2005) Community networks: Where offline communities meet online. *Journal of Computer-Mediated Communication*, 10(4).
- Klein, H. K. & Myers, M. D. (1999) A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS quarterly*, 67-93.
- kmconnection.com. (2007) *What is Knowledge ... and How Can You Manage it?* [Online]. The Knowledge Management Connection. Available: <http://www.kmconnection.com/What is knowledge.htm> [Accessed 9th March 2009].
- Koenig, M. E. D. (2012) *What is KM? Knowledge Management Explained* [Online]. <http://www.kmworld.com/Articles/Editorial/What-Is-.../What-is-KM-Knowledge-Management-Explained-82405.aspx>: kmworld.com. [Accessed 26 November 2014].
- Kollock, P. (1998) The economies on online cooperation: Gifts and public goods in cyberspace. In: Smith, M. A. & Kollock, p. (eds.) *Communities in Cyberspace*. London: Routledge.
- Lakoff, G., Nunez, R.E. (2000) *Where Mathematics Comes from: How the Embodied Mind Brings Mathematics into Being*. New York: Basic Books.
- Lamb, B. (2004) Wide Open Spaces: Wikis, Ready or Not. *Educause Review*, 39(5), 36-48.
- Lee, A. S. (1989) Case studies as natural experiments. *Human Relations*, 42(2), 117-137.

- Lee, A. S. & Baskerville, R. L. (2003) Generalizing generalizability in information systems research. *Information systems research*, 14(3), 221-243.
- Lewis, I. M. (1985) *Social Anthropology in Perspective*. Cambridge: Cambridge University Press.
- Maier, R. (2007) *Knowledge management systems: Information and communication technologies for knowledge management*: Springer Science & Business Media.
- Martensson, M. (2000) A critical review of knowledge management as a tool. *Journal of Knowledge Management*, 4(3), 204-216.
- Martin, P. Y. & Turner, B. A. (1986) Grounded Theory and Organizational Research. *The Journal of Applied Behavioral Science*, 22(2), 141-157.
- McDermott, R. (1999) Why information technology inspired but cannot deliver knowledge management. *California Management Review*, 41, 103-117.
- McFadyen, M. A. & Cannella, A. A. (2004) Social capital and knowledge creation: Diminishing returns of the number and strength of exchange relationships. *Academy of Management Journal*, 47(5), 735-746.
- Miles, M. B. & Huberman, A. M. (1994) *Qualitative data analysis : an expanded sourcebook* (2nd edition ed.). CA: Thousand Oaks : Sage Publications.
- Millen, D., Feinberg, J., Kerr, B.,. (2005) Social Bookmarking in the enterprise. *ACM Queue* [Online]. Available:  
<http://www.acmqueue.com/modules.php?name=Content&pa=showpage&pid=344>  
 [Accessed 22 May 2009].
- Mitchell, R. & Boyle, B. (2010) Knowledge creation measurement methods. *Journal of Knowledge Management*, 14(1), 67-82.
- Murray, K. A. (1998) Hermeneutics (Herman Who?). *Sauk Valley Community College*, 12.
- Myers, M. D. (1997) Qualitative Research in Information Systems. *MIS Quarterly*, 21(2), 241-242.
- Myers, M. D. (2013) *Qualitative research in business and management* (13th ed.): Sage.
- Myers, M. D. & Avison, D. E. (2002) *Qualitative Research in Information Systems: A Reader. Introducing Qualitative Methods Series*. London: Sage Publications.
- Nelson, J. (2008) *Glossary of New Media and Online Outreach Terminology* [Online]. The Hatcher Group. Available: <http://thehatchergroup.wordpress.com/2008/05/08/glossary-of-new-media-terminology/> [Accessed 23 May 2009].
- Nonaka, I. (1994) A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford: Oxford University Press.

- Nonaka, I., Toyama R.,. (2003) The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*, 1, 2-10.
- Nonaka, I., Von Krogh, G. & Voelpel, S. (2006) Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization studies*, 27(8), 1179-1208.
- O'hEocha, C., Wang, X. & Conboy, K. (2012) Evaluate an applied focus group approach using Klein & Myers principles. *Information Systems Journal*, 22(3), 235-256.
- O'Reilly, T. (2007) What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *Communications & Strategies*, 1(First Quarter), 17-37.
- Oates, B. J. (2006) *Researching Information Systems and Computing*. London: Sage Publication.
- Orlikowski, W. J. (1993) CASE tools as organizational change: Investigating incremental and radical changes in systems development. *MIS quarterly*, 309-340.
- Orlikowski, W. J. & Baroudi, J. J. (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, 2, 1-28.
- OxfordDictionary. (2015) knowledge - definition of knowledge in English from the Oxford dictionary. *Oxford Dictionary*. [http://www.oxforddictionaries.com/definition/english/knowledge:](http://www.oxforddictionaries.com/definition/english/knowledge) Oxforddictionaries.com.
- Polanyi, M. (1958) *Personal Knowledge (Corrected Edition)*. London: Routledge.
- Polanyi, M. (1966) *The Tacit Dimension*. New York: DoubleDay
- Porter, C. E. (2004) A typology of virtual communities: A multi - disciplinary foundation for future research. *Journal of Computer - Mediated Communication*, 10(1), 00-00.
- Prahalad, C. K. & Ramaswamy, V. (2000) Co-opting customer competence. *Harvard business review*, 78(1), 79-90.
- Prahalad, C. K. & Ramaswamy, V. (2013) *The future of competition: Co-creating unique value with customers*: Harvard Business Press.
- Preece, J. (2000a) *Online Communities: Designing Usability, Supporting Sociability*. Chichester: John Wiley and Sons Ltd
- Preece, J. (2000b) Shaping Communities: Empathy, Hostility, Lurking, Participation. *In: Shaping the Network Society: The Future of the Public Sphere in Cyberspace*, 2000b Seattle. 25-34.
- Preece, J. & Maloney-Krichmar, D. (2003) Online Communities: Focusing on sociability and usability. *In: Jacko, J. & A. Sears (eds.) Handbook of Human-Computer Interaction*. Mahwah: NJ: Lawrence Erlbaum Associates Inc. Publishers.
- Preece, J., Maloney-Krichmar, D. & Abras, C. (2003) History of online communities. *Encyclopedia of community*, 3, 1023-1027.

- Preece, J., Maloney-Krichmar, D. (2005) Online communities: Design, theory, and practice. *Journal of Computer-Mediated Communication*, 10(4).
- Prosch, H. (1986) *Michael Polanyi: A Critical Exposition*. Albany: State University of New York Press.
- Putnam, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.
- Putnam, R. D. (1995a) Bowling alone: America's declining social capital. *Journal of Democracy*, 6, 65-78.
- Putnam, R. D. (1995b) Tuning in, tuning out: The strange disappearance of social capital in America. *Political Science and Politics*, 28, 664-683.
- Rampen, W. (2009) My Personal Definition of Business with Customer Value Co-creation. Available: [http://www.customerthink.com/blog/my\\_personal\\_definition\\_of\\_business\\_with\\_customer\\_value\\_co\\_creation](http://www.customerthink.com/blog/my_personal_definition_of_business_with_customer_value_co_creation) [Accessed 18 May 2009].
- Rapoport, R. N. (1970) Three Dilemmas in Action Research: With Special Reference to the Tavistock Experience. *Human Relations*, 23(6), 499-513.
- Rheingold, H. (1994) A slice of life in my virtual community. In: Harasim, L. M. (ed.) *Global Networks: Computers and International Communication*. Cambridge: MIT press.
- Rheingold, H. (2008) Virtual communities-exchanging ideas through computer bulletin boards. *Journal For Virtual Worlds Research*, 1(1).
- Rice, J. (2005) *What is co-creation?* [Online]. Corante. Available: [http://brandshift.corante.com/archives/2005/02/09/what\\_is\\_cocreation.php](http://brandshift.corante.com/archives/2005/02/09/what_is_cocreation.php) [Accessed 14 May 2010].
- Rice, R., Katz, J., Acord, S., Dasgupta, K., Kalpana, D. (2004) Personal mediated communication and the concept of community in theory and practice. In: Kalbfleisch, P. (ed.) *Communication and Community: Communication* Mahwah, NJ: Lawrence Erlbaum Publishers.
- Ridings, C. M., Gefen, D. (2004) Virtual Community Attraction: Why People Hang Out Online. *Journal of Computer-Mediated Communication* 10(1).
- Riley, B. (1998) You are entering the Age of the mind & Thoughts on the knowledge society. *Australian Library Journal*, 47(2), 145-156.
- Roelof, P. (1999) Questions in knowledge management defining and conceptualizing a phenomenon. *Journal of Knowledge Management*, 3(2), 94-109.
- Rollett, H., Lux, M., Strohmaier, M., Dosinger, G., Touchtermann, K.,. (2007) The Web 2.0 way of Learning with Technologies. *International Journal of Learning Technology*, 3(1), 87-107.
- Rovai, A. (2002) Building Sense of Community at a Distance. *International Review of Research in Open and Distance Learning*, 3(1).

- Rowlands, B. H. (2005) Grounded in practice: Using interpretive research to build theory. *The Electronic Journal of Business Research Methodology*, 3(1), 81-92.
- Schrammel, J., Köffel, C. & Tscheligi, M. (Year) How much do you tell?: information disclosure behaviour indifferent types of online communities. *In: Proceedings of the fourth international conference on Communities and technologies*, 2009. ACM, 275-284.
- Schutt, R. K. (2011) *Investigating the social world: The process and practice of research*: Sage Publications.
- Schutz, A. (1967) *The phenomenology of the social world*. Evanston: Northwestern University Press
- Shariq, S. Z. (1998) Sense making and artifacts: an exploration into the role of tools in knowledge management. *Journal of Knowledge Management*, 2(2), 10-19.
- Sharratt, M., Usoro, A.,. (2003) Understanding Knowledge-Sharing in Online Communities of Practice. *Electronic Journal on Knowledge Management*, 1(2), 187-196.
- So, J. C. & Bolloju, N. (2005) Explaining the intentions to share and reuse knowledge in the context of IT service operations. *Journal of Knowledge Management*, 9(6), 30-41.
- Sponder, J. C. (1996) Organizational knowledge, learning and memory: three concepts in search of a theory. *Journal of Organizational Change Management*, 9(1), 63-78.
- Sponder, J. C. (1998) Pluralist epistemology and the knowledge-based theory of the firm. *Organization*, 5(2), 233-256.
- Statista. (2015) *Facebook: figures of monthly active users 2014* | Statistic [Online]. <http://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>: Statista.com. [Accessed 7th January 2015].
- Stenmark, D. (2001) Leveraging Tacit Organisational Knowledge. *Journal of Management Information Systems*, 17(3), 9-24.
- Stenmark, D. (2002) Information vs Knowledge: The Role of Intranets in Knowledge Management. *35th hawaii International Conference on System Sciences*. Hawaii.
- Stewart, T. A. (1997) *Intellectual Capital: The New Wealth of Organizations*. New York: Doubleday.
- Steyn, G. M. (2003) Creating knowledge through management education: a case study of human resource management. *Education*, 18, 514.
- Straub, D., Gefen, D. & Boudreau M. (2004) *The ISWorld Quantitative, Positivist Research Methods Website* [Online]. Dennis Galletta. Available: <http://www.dstraub.cis.gsu.edu:88/quant/> [Accessed 15/07/07 2007].
- Stvilia, B., Twidale, M., Gasser, L., Smith, C.,. (2005) Information quality discussions in Wikipedia. *International Conference on Knowledge Management* Kuala Lumpur, Malaysia.

- Substance. (2008) PLINGS: places to go, things to do. Manchester: Substance Cooperation Ltd.
- Sveiby, K. E. (1997) *The New Organizational Wealth: managing & measuring knowledge based assets*. San Francisco: Berret-Koehler.
- Tang, C. (2008a) *Co-creation Theory - INSIGHT Article* [Online]. <http://www.icpas.org/hc-insight.aspx?id=6456>: icpas.org. [Accessed 24 Jan 2015].
- Tang, C. (2008b) Co-creation Theory: Brainstorm, innovate and create the ultimate customer experience. *Insight Magazine*. Chicago: Illinois CPA Society.
- Tashakkori, A. a. T. (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage.
- Todd, R. J. (1999) Knowledge management: Utilising the knowledge capital of a learning community. *Access*, 13(3), 11-14.
- Trauth, E. M. (2000) *Qualitative research in international settings: Issues and trends*: IGI Global.
- Tsoukas, H. (1996) The firm as a distributed knowledge system: a constructionist approach. *Strategic Management Journal*, 17, 11-25.
- Tuomi, I. (2000) Data is more than knowledge: implications of the reversed knowledge hierarchy for knowledge management and organizational memory. *Journal of Management Information Systems*, 16(3), 103-117.
- Un, C. A. & Cuervo - Cazurra, A. (2004) Strategies for Knowledge Creation in Firms\*. *British Journal of Management*, 15(S1), S27-S41.
- Urquhart, C. (2000) An encounter with grounded theory: tackling the practical and philosophical issues. *Qualitative research in IS: Issues and trends*, 104-140.
- Urquhart, C. & Fernandez, W. (2006) Grounded theory method: the researcher as blank slate and other myths.
- Vaughan, S. & Dornan, T. (2014) Communities of Practice. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society*.
- Venkatesh, V., Brown, S. A. & Bala, H. (2013) Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *Mis Quarterly*, 37(1), 21-54.
- Von Krogh, G. (2012) How does social software change knowledge management? Toward a strategic research agenda. *The Journal of Strategic Information Systems*, 21(2), 154-164.
- Von Krogh, G., Roos, J., Klein, D. . (1998) *Knowing in firms: Understanding, anaging and measuring knowledge*. London: Sage Publications Ltd.
- Vygotsky, L. (1978) *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

- Walsham, G. (1995) Interpretive case studies in IS research: nature and method. *European Journal of information systems*, 4(2), 74-81.
- Walsham, G. (2006) Doing interpretive research. *European journal of information systems*, 15(3), 320-330.
- Wegrif, R. (1998) The social dimension of asynchronous learning networks. *Journal of Asynchronous Learning Networks*, 2(1).
- Wellman, J. B. (1982) Studying personal communities. In: Lin, P. M. N. (ed.) *Social structure and network analysis*. Beverly Hills: Sage.
- Wellman, J. B. (1997) An electronic group is virtually a social network. In: Kiesler, S. (ed.) *Culture of the Internet*. Mahwah, NJ: Lawrence Erlbaum.
- Wellman, J. B., Gulia, M. (1999) Virtual communities as communities: Net surfers don't ride alone. In: Smith, M., Kollock, P. (ed.) *Communities in Cyberspace*. Berkeley: Routledge.
- Wenger, E. (2009) Communities of practice. *Communities*, 22, 57.
- Wenger, E. (2011) Communities of practice: A brief introduction.
- Wenger, E., Snyder, W. (2000) Communities of Practice: The organizational frontier. *Harvard Business Review*.
- Whittaker, S., Issacs, E., O'Day, V. (1997) Widening the net. Workshop report on the theory and practice of physical and network communities. *SIGCHI Bulletin*, 29(23), 27-30.
- wikipedia. (2014) *Co-creation* [Online]. <http://en.wikipedia.org/wiki/Co-creation>: wikipedia.org. [Accessed 1st November 2014].
- Wikipedia.org. (2009) *Web 2.0* [Online]. Available: [http://en.wikipedia.org/wiki/Web\\_2.0](http://en.wikipedia.org/wiki/Web_2.0) [Accessed 15 May 2009].
- Wilcox, D. (2004) *Creating online communities in towns, villages and virtual spaces* [Online]. partnerships.org.uk. Available: <http://www.partnerships.org.uk/community/index.htm> [Accessed 14/07/07 2007].
- Wilson, T. D. (2002) The nonsense of "knowledge management". *Information Research*, 8(1).
- Woolley, S. R., Butler, M. H. & Wampler, K. S. (2000) Unraveling change in therapy: Three different process research methodologies. *American Journal of Family Therapy*, 28(4), 311-327.
- Yan, L., Yang, J. & Weijun, W. (2008) Using web 2.0 for knowledge management in higher education. In: *Proceedings of the 2008 International Symposium on Knowledge Acquisition and Modeling*. IEEE, 419-423.
- Yau, J. W. (2003) Unpublished Thesis: Defining Knowledge Work - A British and Hispanic Cross-Cultural Study. York: Dept of Computer Science, University of York.

- Yin, R. K. (2013) *Case Study Research, Design and Methods* (Vol. 5). Newbury Park: Sage Publications.
- Young, G. (1997) *Adult development, therapy, and culture: A postmodern synthesis*. New York: Plenum Press.
- Zakon, R. H. (2006) *Hobbes' Internet Timeline v8.2* [Online]. Zakon Group LLC. Available: <http://www.zakon.org/robert/internet/timeline/> [Accessed 07/05/07 2007].
- Zhang, J., Ackerman, M. S. & Adamic, L. (2007) Expertise networks in online communities: structure and algorithms. In: *Proceedings of the 16th international conference on World Wide Web*, ACM, 221-230.