Factors that Affect Knowledge Sharing in Communities of Practice (CoPs): A content analysis

Christie C. Cooper

Trinity Washington University

I have adhered to the Trinity Washington University policy regarding academic honesty in completing this assignment.

Submitted to Dr. Kelley Wood on behalf of the faculty of the School of Professional Studies in partial fulfillment of the degree requirements for the Master's of Science Administration in Human Resource Management and Federal Program Management.

Fall 2011

Abstract

Communities of Practice (CoPs) provide a platform for employee's to share professional knowledge and gain knowledge for professional development. However, if knowledge is not shared within a CoP, employee development cannot take place. The purpose of this study was to identify the factors that affect knowledge sharing in CoPs as a tool for employee development. Many researchers have studied CoPs and knowledge sharing, producing a great amount of literature; however, various studies identify different factors that influence knowledge sharing and few studies have approached the concept from a human resource and training and development viewpoint. The content analysis synthesizes the existing literature on CoPs and produces a conceptual framework explaining the factors, their interactions, and the effects on knowledge sharing in CoPs and employee development. From the findings of this study, practitioners will be able to develop a CoP as an employee development strategy that incorporates the factors identified through the content analysis to facilitate knowledge sharing and contribute to employee development.

Keywords: andragogy, communities of practice, employee development, knowledge sharing, motivation, organizational culture, tacit knowledge

Acknowledgements and Dedication

I would like to thank Dr. Kelley Wood, my Capstone professor, for his guidance in leading us through this journey and the time he committed to making sure we grasped the concepts involved in conducting scholarly research.

I would also like to acknowledge my fellow Capstone classmate, Krystle Lewis, for taking the time to explain what I did not understand, listen when I was stressed out, and provide feedback on my thesis.

I would like to dedicate this thesis to my parents, who always made me feel like I could accomplish anything and provided me with the necessary resources to do so.

Table of Contents

List of Tables

List of Figures

Introduction

Communities of Practice (CoPs) are a group of people who share a common goal, expertise, interests, or knowledge (Koh, Young-Gul, & Butler, 2007; Liu, Liang, Rajagopalan, & Sambamurthy, 2011; Nesheim, Olsen, & Tobiassen, 2011). CoPs facilitate knowledge sharing within an organization but also provide learning and development (Allan & Lewis, 2006; Bogenrieder & Nooteboom, 2004; Jucevičienė & Leonavičienė, 2007; Lopez-Cabrales, Pérez-Luño & Cabrera, 2009). As a method of knowledge sharing and tool for employee development, human resource (HR) and training and development (T&D) practitioners can implement CoPs to engage employees in self-directed development and contribution of knowledge to the workplace (Jucevičienė & Leonavičienė, 2007).

Although CoPs facilitate knowledge sharing and development, the effectiveness of the CoP relies on the input from community members and the usefulness of the information (Koh et al., 2007). Active participation is essential in developing employees through CoPs and if the design of a CoP does not facilitate knowledge exchange, it could fail to enhance employee's knowledge and skills. Therefore, when designing a CoP, it should employ the appropriate factors and strategies to facilitate knowledge sharing (Bogenrieder & Nooteboom, 2004).

Statement of the Problem

Employees can view knowledge sharing as a threat to job promotion and upward mobility (Bogenrieder & Nooteboom, 2004). CoPs are designed to facilitate knowledge sharing and provide a platform for the exchange of ideas, best practices, expertise, and experience. The existing literature identifies several factors that can affect and influence knowledge sharing within CoPs, however, the great amount of literature on different factors and different research approaches toward CoPs and knowledge sharing has not been synthesized to produce a conceptual framework explaining the interaction and affect each factor has on each other. A

framework that explains how each factor identified affects knowledge sharing through a content analysis, will inform practitioners on how to design CoPs for employee development and knowledge sharing effectiveness.

Purpose of the Study

The purpose of this content analysis was to synthesize the existing literature to identify all the factors that prevent knowledge sharing in CoPs and develop a conceptual framework explaining the interaction and impact of each on CoPs, which can be used in a human resource development (HRD) context. Previous research has examined CoPs and the factors that affect knowledge sharing including intrinsic and extrinsic motivation, managerial support, organizational culture, and rewards. Although the research on CoPs, knowledge management, knowledge sharing, and employee development is extensive, the researcher applied an HR and T&D approach to the use of CoPs, as a method for employee development. The literature addressed several factors in different studies, different industries, and using different research strategies; however, through this study, the research was synthesized and a conceptual framework was developed to identify the factors that affect knowledge sharing in CoPs and how CoPs can be effectively designed and implemented for employee development.

Significance of the Study

Through this content analysis, HR and T&D practitioners will have a model that encompasses the multi-factors that affect the design, implementation, and management of CoPs for use as an employee development tool. HRD practitioners play a role in creating learning organizations and fostering learning within the workforce, therefore, their role in designing and implementing CoPs is pertinent to the creation of knowledge sharing and management **(**Jucevičienė & Leonavičienė**,** 2007). The synthesis of literature will identify the numerous factors that affect knowledge sharing in CoPs, which are imperative to know in the development

of a CoP. Knowing what could affect knowledge sharing and being proactive about eliminating barriers that prevent participants from sharing, can increase the effectiveness and success of a CoP for developing employee's knowledge, skills, and abilities (KSAs).

Theory

The theory of tacit knowledge explains the knowledge sharing approach of this study and Knowles' theory of andragogy explains the human resources (HR) and training and development (T&D) approach to the study. Tacit knowledge includes personal knowledge, which is created from personal experiences (Dixon, 2000). Knowles' theory of andragogy explains that adult learning happens through a self-directed and individual learning process (Kessels & Poell, 2004).

Tacit knowledge is what is shared between members in a CoP, rather than explicit knowledge, which is documented and explained through manuals, procedures, and guides (Dixon, 2000). Since tacit knowledge is stored within organizational members and not within organizational documents, tacit knowledge must be captured to be of value to the organization and its members (Howells, 1996). CoPs can capture tacit knowledge through knowledge sharing and exchange between community members.

Knowles' theory of andragogy explains the process of how adults learn, including learning at an individual level rather than an organizational level, and learning guided by the employee themself, rather than through traditional T&D methods targeted at an organizational level (Zmeyov, 1998). CoPs facilitate self-directed learning, where members can learn from personal experiences and seek other's knowledge and experiences to improve personal competence (Jucevičienė & Leonavičienė, 2007). An understanding of the theory of andragogy can guide HR and T&D professionals in ensuring that learning in CoPs is self-directed and not managed or directed by greater organizational influences. Failure to allow community members

to guide and direct the knowledge sharing process can de-motivate members from sharing (Kerno, 2008).

Research Questions

The research questions the researcher answers through the content analysis are:

Research Question 1: What factors affect motivation to share knowledge in CoPs?

Research Question 2: How does each factor affect the development of a CoP and knowledge sharing?

Research Question 3: How does the interaction between the factors affect knowledge sharing in CoPs?

Research Method

The use of a content analysis synthesizes the literature on CoPs to collect data on the factors researchers identify as affecting knowledge sharing in CoPs. Saldaña defines a content analysis as the examination of text and visuals "to analyze their prominent manifest and latent meanings" (Saldaña , 2011, p. 10). The content analysis was conducted by selecting 10 scholarly articles published over the past 10 years based on criteria identified by the researcher. The articles were collected from scholarly databases using keywords to guide the search. After collecting the 10 articles, the articles were first read for a basic understanding of the content, and then analyzed using a first and second cycle coding process to identify categories and themes, in order to analyze the data and then triangulation was conducted to compare the first and second level coding results (Saldaña, 2009).

Ethical Considerations

The researcher upheld academic honesty and ethical conduct by complying with Trinity Washington University's academic honesty policy on plagiarism and falsifying research results (Trinity Washington University, 2011). The articles used in this content analysis were cited

using American Psychological Association (APA) style to prevent plagiarism. Each source used in this study has been included in the 'Reference' list, which lists each reference used in this content analysis. Additionally, the researcher submitted an application to the Trinity Washington University Institutional Review Board for approval prior to conducting research. The study did not use human subjects and the integrity of the works cited in this study has been maintained through citation including the author's name, publication date, the work it was published in, and where the researcher retrieved the reference.

Definition of Key Terms

Communities of Practice (CoP): Communities of Practice (CoP) is defined as a group of people who share common interests, goals, or practices and share information and knowledge (Liu et al., 2011).

Knowledge sharing: Bartol & Srivastava define knowledge sharing as "individuals sharing organizationally relevant information, ideas, suggestions, and expertise with one another." (Bartol & Srivastava, 2002, p. 65).

Tacit knowledge: According to Howells, tacit knowledge is "non-codified, disembodied know-how that is acquired via the informal take-up of learned behaviour and procedures" (Howells, 1996, p. 92).

Andragogy: Knowles (1980) defined andragogy as "the art and science of helping adults learn" (as cited in Zmeyov, 1998, p. 105). According to Cotton (2004) Knowles theory emphasized that adult learners are self-directed and are expected to take personal responsibility for his or her actions (para. 5).

Delimitations

This content analysis focuses on factors that have been identified through prior research studies, which affect knowledge sharing in CoPs. The analysis might have expanded to a

knowledge management approach; however, the research problem centers on factors that affect knowledge sharing. Additionally, CoPs are being referred to as an employee development tool in this analysis, but the analysis could look at various types of development including orientation, coaching, mentoring, or job-specific development and the affect CoPs and knowledge sharing have in facilitating these processes.

Limitations of the Study

Due to time constraints, only 10 articles from the past 10 years were analyzed. Expanding the number of articles to analyze prior research would provide greater data for analysis and create a more detailed conceptual framework that encompasses all of the factors identified in the literature. Additionally, due to the time constraints to conduct the content analysis, the researcher could not use other research strategies for analysis such as interviews or observation for a greater analysis or comparison with content analysis data. The researcher was also not able to test the conceptual framework in this study, however future research might test the framework developed in this study through a case study or other qualitative analysis that involves the actual application of the factors identified in this study to CoPs for use as an employee development tool.

Summary

This content analysis of existing literature on various factors that affect knowledge sharing in CoPs sought to develop a conceptual framework synthesizing the literature and explaining interactions and their effects on knowledge sharing in CoPs. The researcher discusses the existing literature on CoPs including tacit knowledge, Knowles' theory of andragogy, organizational culture, and motivational effects on knowledge sharing in CoPs. Through this content analysis, the developed conceptual framework provides practitioners with a model to use when developing and implementing CoPs as an employee development strategy. With the data

collected through the content analysis, the researcher analyzed the data to identify categories and themes, which led to the identification and explanation of factors affecting knowledge sharing in CoPs.

Literature Review

Previous studies have researched Communities of Practice (CoPs) and the effects of extrinsic and intrinsic motivation on knowledge sharing, management's role in effecting motivation to contribute and apply knowledge in CoPs, and the drivers and motivators that stimulate CoPs (Bartol & Srivastava, 2002; Fahey, Vasconcelos, & Ellis, 2007; Liu, Liang, Rajagopalan, & Sambamurthy, 2011; Nesheim, Olsen, & Tobiassen, 2011; Koh, Young-Gul, & Butler, 2007). Existing literature also supports that CoPs are a human resources (HR) and training and development (T&D) function to foster employee development (Jucevičienė & Leonavičienė, 2007; Lopez-Cabrales, Pérez-Luño & Cabrera, 2009). CoPs offer a wealth of knowledge to organizations, but cannot facilitate knowledge sharing or employee development if the community is not designed with consideration of the factors that encourage or discourage knowledge sharing and participation. A review of the literature shows that there are multiple factors that affect motivation to participate in CoPs, however, the factors have not been researched from a HR and T&D approach, to develop a conceptual framework that combines all of these factors to assist practitioners in constructing an effective community to foster employee development.

Communities of Practice (CoPs)

The definition of CoPs have common meaning among researchers, which includes interaction, support, collaboration, and shared interest, goals, and practices, (Koh et al., 2007; Liu et. al, 2011; Zboralski, 2009). Wenger suggests that communities that formed to share practices and learn collectively, have existed since the beginning of history and provides examples including tribal communities gathering around a campfire, medieval guilds, and street gangs (Wenger, 2000, p. 229). Although communities are not new concepts, the concept of

CoPs in the scholarly world, specifically related to knowledge sharing in organizations, have only been discussed a little over the past decade (Zboralski, 2009, p. 91).

Unlike the formal organizational structures including units, teams, and departments, CoPs are informal networks, usually created through voluntary participation (Ardichvili, Page & Wentling, 2003; Kerno, 2008; Zboralski, 2009). Kerno identified CoPs as "informal associations of people who, over time, share information about a practical activity" (Kerno, 2008, p. 23). CoPs are conducted in various methods including brown-bag sessions, formal and informal meetings, guest speakers, problem-solving sessions, and virtual communities (Allan & Lewis, 2006; Ardichvili et al., 2003; Lank, Randell-Khan, Rosenbaum, & Tate, 2008; Wenger, 2000). Hemmasi & Csanda identify document sharing, conference calls, web conferences, and e-mails also as tools to facilitate CoP activities (Hemmasi & Csanda, 2009, p. 264). Koh et al. defines virtual communities as a "group of people interacting predominately in cyberspace for their own common interests, relationship building, transactions, and fantasies" (Koh et al., 2007, p.70). The same concept of a CoP applies in virtual or online communities, but these types of CoPs are housed on the internet or an intranet and allow knowledge exchange without boundaries of time or location (Ardichvili et al., 2003). Regardless of an employee's location in the world or their limitations of time during the workday, a virtual CoP can be accessed from anywhere at any time. Virtual CoPs are an asset to multinational organizations where personnel is dispersed at different locations (Ardichvili, et al., 2003).

Hemmasi and Csanda identify the characteristics that identify groups as CoPs, which include: 1) members share a common interest, 2) relationships develop among members that facilitate knowledge sharing, and 3) a shared practice among members is developed based on the shared experiences, stories, and knowledge in the community (Hemmasi & Csanda, 2009, p.

262). CoPs can focus on hobbies, professional learning, or best practices (Büchel & Raub, 2002). The focus of this study looks at professional learning and best practices CoPs.

Knowledge Sharing. According to Goldstein (1993), knowledge is an "adequate understanding of facts, concepts, and their relationship, and the basic foundation of information a person needs to perform a task" (as cited in Bartol & Srivastava, 2002, p. 65). Knowledge sharing is exchanging information, ideas, suggestions, and experiences with one another (Bartol & Srivastava, 2002). Within organizational CoPs the interaction, support, and collaboration that takes place is initiated by knowledge sharing. Bogenrieder & Nooteboom (2004) define knowledge sharing as learning through adopting the knowledge of others. Both knowledge and the sharing of knowledge are drivers of a CoP. If a CoP is a group of people who exchange knowledge, according to Bartol and Srivastava's (2002) definition, knowledge sharing must take place to be effective.

The management of the knowledge shared within an organization allows organizations to capture, share, and store internal knowledge (Hemmasi & Csanda, 2009, p. 262). CoPs serve as a tool to carry out these functions. According to Bartol & Srivastava, with the importance of knowledge sharing placed in organizations and the focus of developing learning organizations, the focus should be on tools that enhance knowledge sharing (Bartol & Srivastava, 2002, p. 64).

Theory of Tacit Knowledge

In order to understand the sharing of knowledge in CoPs, an understanding of the types of knowledge should be developed. Knowledge is both tacit and explicit (Gladstone, 2000; von Krogh, Ichijo, & Nonaka, 2000). According to Gladstone, tacit knowledge is held in individuals and explicit knowledge is held in documents such as reports, equations, and specifications (Gladstone, 2000, p. 62). For example, newcomers to a professional field might refer to a training manual, standard operating procedures, user guides, or other documented procedures or

policies to build knowledge and apply skill, which would be explicit. A more experienced professional in a field uses his or her personal knowledge to perform tasks and projects, which is tacit knowledge (Dixon, 2000). Michael Polanyi is cited as first developing the concept of tacit knowledge, and described it as knowing more than you can tell (Ray, 2009). According to Brown and Duguid, there is a difference between what people think is involved in a process and what people actually do in a process (Brown & Duguid, 2000, p. 74). Standard Operating Procedures, manuals, and other documented procedures can tell someone how to do something, but does not provide enough detail to inform the learner of how to troubleshoot if something goes wrong in a process or what the best approach is in performing a process. CoPs gather the knowledge that is not documented, stored within the minds of organizational members, and creates the knowledge flow that can foster and enhance learning (Zboralski, 2009).

According to von Krogh et al. tacit knowledge is "…tied to the senses, skills in bodily movement, individual perception, physical experiences, rules of thumb, and intuition" (von Krogh et al., 2000, p. 6). The personal knowledge von Krogh et al. refers to is stored in individual employees, which is gained through work experiences and practices (Howells, 1996). von Krogh et al. postulates that knowledge creation starts with sharing tacit knowledge, which supports the usage of CoPs as a method to share and exchange the tacit knowledge of employees (von Krogh et al., 2000). Since knowledge is stored in individuals, it is important to have a method that transfers tacit knowledge, especially because it can easily be lost through attrition. Additionally, capturing tacit knowledge through a knowledge sharing method such as a CoP prevents knowledge from being forgotten (Howells, 1996). von Krogh et al. further supports this by postulating that tacit knowledge is shared in microcommunities of knowledge where people work together to create knowledge (von Krogh et al., 2000, p. 14).

Knowles' Theory of Andragogy

Knowles' theory of andragogy forms the human resource development basis around employee development through CoPs. Approaching CoPs as a developmental tool without explaining training and development theory and human resource development's role does not build the business case for using a CoP as a strategy for employee development. Therefore, adult learning theory and human resource development's role in fostering learning within organizations must be understood.

The basis of andragogy is self-directed and individual learning (Kessels & Poell, 2004, p. 149). Cotton suggests that if training programs do not consider adult learning theories, training objectives risk not being met (Cotton, 2004, p. 23). In organizations where knowledge sharing is promoted and encouraged, CoP objectives cannot be met unless the role of the adult learner in the organization is considered. Human Resource Management (HRM) practices play a key role in increasing knowledge through employee development and influencing employees toward the desired behavior of learning (Lopez-Cabrales, Pérez-Luño & Cabrera, 2009, p. 489).

As explained in the publication *Training*, which is geared toward training and development professionals, Lee suggests that the foundations of self-directed learning and CoPs can be attributed to Malcolm Knowles, who is regarded as the "Father of adult learning" (Lee, 1998, p. 48). Although he is not the originator of adult learning theory, Knowles developed the foundation for andragogy as an adult learning theory (Zmeyov, 1998, p. 105). Lee displays how Knowles theory plays a central role in the training and development world and because he is considered to be the foundation of adult learning, the development of CoPs could not be implemented without considering adult learning theory.

According to Knowles' theory of andragogy, adults are self-directed and autonomous, goal-oriented, and orientated towards relevance (Cotton, 2004). From Knowles theory, Cotton

(2004) suggests that because adult learners are self-directed, they should be involved in the learning process and facilitate learning. Jucevičienė & Leonavičienė postulates that world class organizations encourage self-directed learning and encourages employees to make and implement their own personal development (Jucevičienė & Leonavičienė, 2007, p. 571). CoPs allow practitioners to involve organizational members in facilitating the learning and the development process. Because the inputs into the communities are driven by members, individuals control the knowledge facilitation and exchange. Cotton (2004) also suggests that adult learners are goal-oriented and orientated towards relevance. In CoPs, if a community does not relate to an individual's goals, interests, or job, participation is not likely to take place. An example of this is illustrated by Kerno, who explains that Engineers are most comfortable in an environment with like-minded individuals who are not afraid of being innovative and creating something new (Kerno, 2008, p. 22). Based on Kerno's (2008) explanation, it is evident that if communities are not developed with people who share common knowledge, interest, and goals, disengagement of community members can occur or turn away members from participating. This suggests that CoPs must be designed to meet the needs of individuals across the organization in different careers and performing different jobs in order to facilitate self-directed learning.

CoPs facilitate self-directed learning, as group members lead the group and facilitate learning (Hemmasi & Csanda, 2009). According to Kessels and Poell, "To enable knowledge productivity, the work environment should transform into a conducive learning environment" (Kessels & Poell, 2004, p.147). CoPs can serve as a learning environment to produce knowledge and facilitate the exchange of knowledge and learning through sharing experiences, best practices, and solutions to problems. According to Kessels and Poell, human resource

development practitioners need to consider the theory of andragogy in designing self-directed, individual learning, which CoPs can facilitate (Kessels & Poell, 2004, p.147).

Intrinsic and Extrinsic Motivation

In order for knowledge sharing to happen, employees must be motivated to share. Researchers have studied intrinsic and extrinsic motivation and its effect on CoPs and knowledge sharing (Bartol & Srivastava, 2002; Liu et al., 2011; Milne, 2007). According to Ryan and Deci (2000), intrinsic motivation involves the innate enjoyment and satisfaction of performing an activity over other consequences (as cited in Liu et al., 2011, p. 4). Extrinsic motivation is influenced by external rewards including monetary incentives, which is triggered by a certain action or behavior (Bartol & Srivastava, 2002; Liu et al., 2011). Fahey, Vasconcelos, and Ellis (2007) use the terms hard and soft rewards. According to Fahey et al., hard rewards include increased pay, stock options, or gift cards and soft rewards include personal satisfaction and enhanced reputation (Fahey et al., 2007, p.188).

CoPs provide intrinsic motivation through personal development, career growth, and development of status within a community. In a study of healthcare workers participation in virtual learning communities, Allan and Lewis identified motivational reasons to participate in a community including improving work practices, career mobility, and personal development (Allan & Lewis, 2006, p. 374). CoP members are motivated to share because they view knowledge as benefiting the "greater good" of the organization and it provides members with the opportunity to establish themselves as experts and engage in mentoring (Ardichvili et al., 2003, p. 69).

Liu et al. (2011) studied the interaction between external and internal rewards and the effect external rewards have on intrinsic motivation using the motivation crowding theory. The motivation crowding theory proposes that external rewards can weaken intrinsic motivation,

which means external rewards would crowd out intrinsic motivation (Liu et al., 2011). In Liu's et al. (2011) review of literature, it was discovered that there are contrasting views of using rewards to motivate knowledge sharing. Fahey et al. (2007) discovered that rewards could cause conflict between CoP members who participate because of the intrinsic value and those who participate for extrinsic rewards. In their study of a global online community, Fahey et al. observed that members who were intrinsically motivated were bitter and scornful towards those who were motivated through external rewards offered by the organization and postings to the online community were centered more on how to receive rewards rather than sharing practical knowledge (Fahey et. al, 2007, pp. 191-192). Some researchers argue that rewards have a negative impact on knowledge sharing and other researchers argue that they do not have an effect on knowledge sharing (Liu et al., 2011). Liu et al. (2011) propose that the differing of views is because of motivation crowding.

Organizational Culture

Understanding motivation to participate in CoPs and why rewards should be considered, links to the culture that exists within organizations, which can prevent employees from wanting to share. One of the common practices within organizations was to hoard knowledge (Milne, 2007). Employees would keep expertise, knowledge, and experiences to themselves to protect their careers and stay competitive. Additionally, fear can exist in organizations, causing employees to view knowledge sharing as a threat to salary, career growth, or work assignments if an employee's reputation is decreased by the knowledge that is shared or sought in a CoP (Bogenrieder and Nooteboom, 2004). According to Milne, "People reasoned that if knowledge provides the organisation's source of competitive edge, then it also provides the individual's competitive edge within the organisation" (Milne, 2007, p. 28).

Hemmasi and Csanda hypothesized that member trust is one element of a CoP that can impact community satisfaction and that higher levels of trust produce greater participation, sharing, and satisfaction within a community (Hemmasi & Csanda, 2009, p. 268). Aside from a CoP, with any other activity, if someone feels his or her safety is threatened; it is likely that the person would not engage in the activity. According to Bogenrieder and Nooteboom, psychological safety can be threatened if a member feels that reaching out for help in a CoP would affect his or her reputation and acceptance by others, therefore, exposing a weakness to other organizational members (Bogenrieder and Nooteboom, 2004, p. 293).

Creating an organizational culture that supports knowledge sharing is essential to the effectiveness of communities. Organizations need to send a message that sharing knowledge is advantageous to both the individual and community instead of harmful (Chalhoub, 2009, p. 29). One way organizations can foster an organizational culture that supports knowledge sharing is acknowledging that every person is a knowledge worker and has knowledge to share and transfer to other organizational members (James, 2003). CoPs should not be exclusive or discredit the knowledge of community members, which would lead to a lack of trust and safety. CoPs should be open to anyone who has information to share and should link the more experienced members of an organization to the newer, less experienced members (Kerno, 2008).

Managerial support. A culture where knowledge sharing is welcome, encouraged, and supported by management will facilitate learning and development (Milne, 2007). Support for knowledge sharing can be originated on an organizational level, but managerial support can also affect members from sharing knowledge in CoPs. According to Kerno, when managers attempt to direct CoP activities instead of allowing self-directed learning, the community can become non-existant and de-motivate members from sharing knowledge (Kerno, 2008, p. 24).

Another problem is management's lack of understanding of CoPs and knowledge management. According to Büchel and Raub, managers view CoPs as a fad in knowledge management, which provides little benefit to the organization (Büchel & Raub, 2002, p. 587). If managers lack understanding or support of CoPs, employee's psychological safety may be threatened for fear that participation can result in retaliation. Additionally, if managers do not allow employees time to participate and share knowledge in CoPs, employees will be deprived of participating in CoP events if it is time and location bound such as brown-bag lunches or problem-solving sessions. In order to provide support to employees to encourage participation, managers can contribute resources such as the technological platforms to develop CoPs, financial resource to develop and implement CoPs or host events and travel to community events and conferences (Büchel & Raub, 2002, p. 591).

Other Related Research

Researchers have studied CoPs using a knowledge management approach and by assessing factors including rewards, motivation, technological infrastructure, innovation, managerial support, and knowledge creation (Bartol & Srivastava, 2002; Brown & Duguid, 2000; Büchel & Raub, 2002; Howells, 1996; Koh et al., 2007; Milne, 2007). The review of literature has shown that there is great amount of research available that link CoPs, knowledge sharing, and employee development. Prior research approaches include literature reviews and analyses, qualitative and quantitative case studies, and testing existing theories of motivation and knowledge.

Although the literature identifies various factors that can influence knowledge sharing in a CoP, there is not a synthesis of literature that links each factor together and explains how each factor interacts and impacts knowledge sharing in CoPs. Additionally, there have been human resource management (HRM) approaches to the process of learning in organizations (Jucevičienė

& Leonavičienė, 2007; Lopez-Cabrales et al., 2009). If HRM and T&D practitioners are responsible for the knowledge development of an organizations human capital, practitioners should understand how knowledge sharing, which leads to development can be affected (Kessels & Poell, 2004, p. 146). Using a content analysis approach will allow the researcher to synthesize the literature and identify different factors that affect knowledge sharing and their impact on knowledge sharing. A conceptual framework will further develop an understanding for HR & T&D professionals of what impacts knowledge sharing in CoPs and what should be considered when designing and implementing CoPs in organizations as an employee development tool.

Theoretical Construct

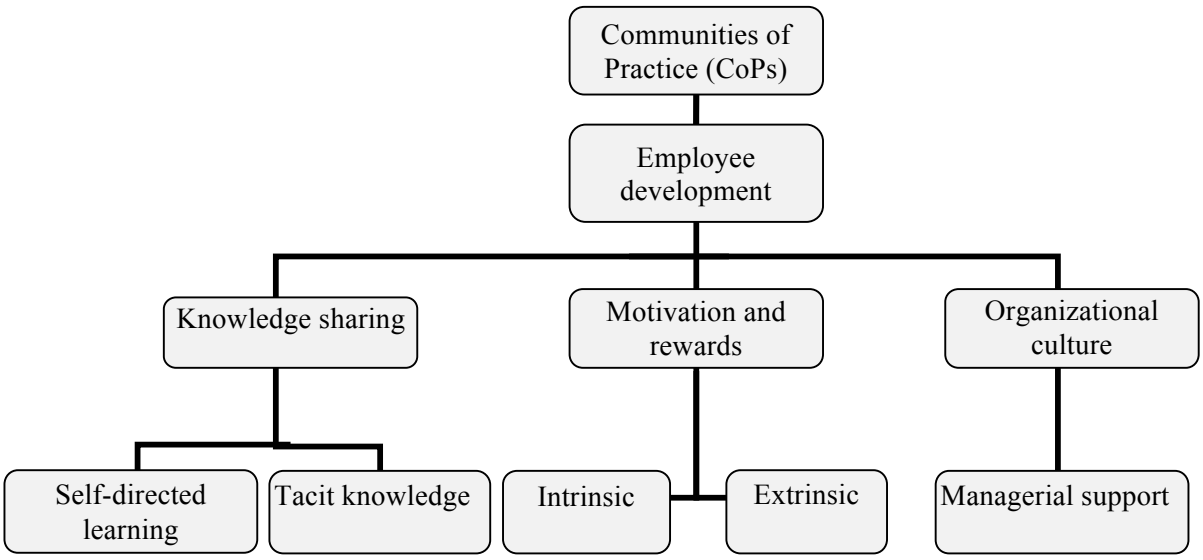

Figure 1. CoP Theoretical Construct

The review of existing literature explains the relationships between CoPs and employee development, knowledge sharing, motivation and rewards, and organizational culture. CoPs are a method for developing employee skills, knowledge, and abilities (Lopez-Cabrales et al., 2009). Employee development within a CoP is achieved through knowledge sharing and is facilitated

through self-directed learning and tacit knowledge, as discovered through the review of literature (Cotton, 2004; Hemmasi & Csanda, 2009; Howells, 1996; Jucevičienė & Leonavičienė, 2007; Kessels & Poell, 2004; von Krogh et al., 2000). Motivation and rewards, both intrinsic and extrinsic can also influence participation in CoPs. However, extrinsic rewards can negatively influence intrinsic motivation (Liu et al., 2011). Organizational support can also affect the sharing of knowledge within a CoP and managerial support reinforces the organizational culture. The relationships between the concepts identified in the theoretical construct explain the role of CoPs in organizations as an employee development method and the factors the literature review has identified that can affect the process.

Summary

Researchers have studied many facets of CoPs, including knowledge sharing, adult learning theory, tacit knowledge, intrinsic and extrinsic motivation, the use of rewards, and organizational culture. Each study included in the review of the literature proposes a factor that affects knowledge sharing in CoPs. The large body of literature on motivation, organizational support, and knowledge sharing within organizations currently does not provide practitioners with a framework linking and explaining the interaction between each factor and its impact on CoPs to professionally develop organizational members. In order to develop this framework, the researcher analyzed the content of prior research studies to identify the factors that directly relate to knowledge sharing as a means of employee development in CoPs, which can be used by practitioners when developing and implementing CoPs.

Research Methodology

The research methodology chapter explains how the researcher designed the content analysis, how the data was collected, how the theory was addressed through the selected research method, and the data analysis strategy. The research method selected for this study is a content analysis, which was chosen based on the study's purpose in synthesizing the literature and identifying factors that affect knowledge sharing in Communities of Practice (CoPs). Through an analysis of several articles and studies on this topic, the researcher collected data, analyzed it, and then identified categories and themes through a three-step coding processes that was used in the data analysis strategy.

Research Design

Weber (1990) explains content analysis as a means of reducing textual information into a more manageable form of data. The content analysis method was selected to synthesize the current literature on CoPs and to identify the factors scholars have identified through studies that affect knowledge sharing in CoPs. According to Krippendorff, "Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2003, p. 18). Using the content analysis method, the researcher was able to draw conclusions based on the research that led to the development of a conceptual framework. A content analysis also addressed the research questions which the researcher sought to answer in the study. Through an electronic search of scholarly data, articles were selected that addressed CoPs, knowledge sharing, learning, and professional development.

The researcher conducted research by selecting 10 scholarly articles that met the criteria determined by the researcher. The researcher read the 10 selected articles first for a basic understanding of the data, and used a first and second cycle coding process and triangulation to analyze the data (Saldaña, 2009). The first cycle coding was conducted using the descriptive

coding method and the second cycle coding method was pattern coding (Saldaña, 2009). The coding of the data will further assist in the data analysis stage to develop keywords and concepts, categories, and themes.

Data Source and Collection

The sources of the data include an electronic search of databases including ABI/INFORM Complete, EBSCO Host, Emerald, SpringerLink, and Wiley. Keyword searches used include: *communities of practice, employee development and communities, knowledge communities, knowledge management, knowledge sharing, learning communities, online communities, training and communities of practice, virtual communities, and work communities.*

A database search was conducted for the keywords that led the researcher to scholarly, peer-reviewed articles relating to the topic. The researcher identified criteria that was used in selecting articles which include the following:

- The article or study was published within the past 10 years.
- The article or study is peer-reviewed and published in a scholarly journal.
- The article or study addresses CoPs, knowledge sharing and a factor that affects this process and explains through quantitative or qualitative research how the study affects or does not affect knowledge sharing in a CoP.

Role of Theory

Through the data collection, the researcher identified factors that support Knowles' Theory of Andragogy and the theory of tacit knowledge. The role of theory guided the researcher in collecting and analyzing data. Both Knowles' Theory of Andragogy and the theory of tacit knowledge provide the knowledge sharing and human resource development approach to the research, which will explain how CoPs as an employee development tool and the factors within CoPs can affect knowledge sharing. The use of both of these theories also assisted the

researcher in further understanding the relationships and influences factors have on knowledge sharing in CoPs.

Data Analysis Strategy

The data was analyzed using descriptive and pattern coding. Descriptive coding is defined as summarizing the topic of a passage of qualitative data with keywords or phrases (Saldaña, 2009). For the first level, descriptive coding will identify keywords and concepts from the articles. Pattern coding is defined as "explanatory or inferential codes, ones that identify an emergent theme, configuration, or explanation" (Saldaña, 2009, p. 152). The second level method will use pattern coding to identify patterns in the content to develop themes. The third step is triangulation, which will compare the first and second level coding results for validity of the data and for a greater discovery of the data found through the data analysis.

Summary

This content analysis sought to synthesize the current literature on knowledge sharing in Communities of Practice (CoPs) and identify the factors that affect knowledge sharing. The purpose of the research was achieved by conducting an electronic search of scholarly databases using specific key words to guide the search and data was selected based on researcher-identified criteria. Using the three-step coding process including descriptive and pattern coding and triangulation, the data collected was coded to identify keywords and concepts, categories, and themes. The data collected also was also applied to the Theory of Andragogy and the theory of tacit knowledge.

Findings

This chapter discusses the findings of the qualitative content analysis of 10 scholarly articles published within the past ten years. The findings are a result of a three-step coding process, which developed categories, themes, explored relationships, and assessed the validity of the data through triangulation. The strategy used to conduct the content analysis is explained, followed by a summary of each article used in the content analysis. The first and second coding levels and results are explained and a comparison of the first and second coding levels is discussed as a result of triangulating the data. The data findings are also related to the theoretical construct developed in chapter three.

Data Analysis Strategy

The researcher read each article first for a basic understanding of the content. In the second reading of the articles, the first level coding was conducted using descriptive coding. Saldaña describes descriptive coding as summarizing "in a word or short phrase – most often as a noun – the basic topic of a passage of qualitative data" (Saldaña, 2009, p. 70). The descriptive codes were then put into categories in order to lay the foundation for the second level coding (Saldaña, 2009, p. 72).

The second level coding method used to analyze the data was pattern coding. Miles and Huberman (1994) define pattern codes as "explanatory or inferential codes, ones that identify an emergent theme, configuration, or explanation" (Saldaña, 2009, p. 152). Using the categories developed in the first level descriptive coding method, the categories were analyzed to determine commonalities and to assign a pattern code (Saldaña, 2009, p. 154).

After themes were developed in the second level pattern coding method, triangulation was conducted. The data from the first and second level coding was compared to discover

relationships between the two and to create a greater understanding of what the data reveals through the analysis conducted.

Discussion of the Sample

The articles used in this content analysis were retrieved from scholarly databases including ABI/INFORM Complete, EBSCO Host, Emerald, SpringerLink, and Wiley. The articles were published between 2002 and 2010. Five of the articles were case studies, one was a literature review, one was a theoretical analysis, and three were qualitative analyses. The articles were selected based on keyword searches including *communities of practice, knowledge management, knowledge sharing and communities,* and *training and communities of practice*. The articles used in this content analysis are explained below.

Lank, Randell-Khan, Rosenbaum, and Tate (2008) Herding cats: Choosing a governance structure for your communities of practice. Lank, et al., explain the different CoP governance structures in organizations, specifically, Freshfields Bruckhaus Deringer, Oracle, Shell, and Schlumberger. The organization's CoPs use structured approaches to the management and facilitation of CoPs through groups, boards, or councils, which manage the direction and development of a CoP. Through the case studies of each organization, the article explains how the management structure within an organization can impact the effectiveness of CoPs.

Borzillo (2009) Top management sponsorship to guide communities of practice. Borzillo identifies the mechanisms CoP top management sponsors use in facilitating best practice development and knowledge sharing in this article. Through a study of 48 CoP leaders, three mechanisms were identified – sponsors as control agents, governance committees and a sponsor as a multiplication agent. The article suggests that top management sponsors can have a more active role in CoPs and should have a dual approach, where the sponsor collaborates with the

CoP leader about managing the activity of the community and the CoP leader communicates the achievements of the CoP to top management.

Bogenrieder and Nooteboom (2004) Learning groups: What types are there? A theoretical analysis and an empirical study in a consultancy firm. In this article, Bogenrieder and Nooteboom identify types of learning groups through an empirical study of a consultancy firm. Through a theoretical analysis, a list of variables were created to identify features of learning groups which include knowledge and learning, potential relational risk, and governance (p. 298). The study's hypotheses were identified from the variables to test in the empirical study. The study identifies four learning groups, which exhibit different variables including project teams, expert groups, professional development groups, and project improvement and orientation groups.

Fahey, Vasconcelos, and Ellis (2007). The impact of rewards within communities of practice: A study of the SAP online global community. Fahey, et al., conducted a case study of Systems Applications and Products (SAP) community site. The community includes discussion forums, which are open to the public through a registration process. Specifically, the SAP Community Reward Program was studied and its effects on the community. Through the rewards program, membership increased, however the quality of postings were affected and conflict arose between members who were extrinsically and intrinsically motivated. The rewards program was eventually terminated, however the findings of the study suggests intrinsically motivated members would retain membership without the rewards program, rewards had both a negative and positive impact on members, and rewards affected the quality of postings in the community.

Ardichvili, Page, and Wentling (2003) Motivation and barriers to participate in virtual knowledge-sharing communities of practice. Ardichvili, et al., discusses why members

actively participate in virtual communities, the barriers to sharing knowledge, and the reasons and barriers to use communities as a source of new knowledge. The authors conducted an exploratory study of three virtual communities at Caterpillar, Inc. The selected communities consisted of one "successful" community with over 1000 members and active participation, and two communities with fewer members and less traffic (p. 67). Through this study, the organizational and knowledge-based barriers are identified, along with answering the question of what motivates members to share and obtain new knowledge in a CoP.

Ipe (2003) Knowledge sharing in organizations: A conceptual framework. Ipe developed a conceptual framework based on a review and synthesis of literature about knowledge flow, creation, transfer, sharing, acquisition, and individual and organizational learning (p. 339). Four factors that influence knowledge sharing are identified including: nature of knowledge, motivation to share, opportunities to share, and culture of work environment. From the review of literature, the conceptual framework shows how each factor is interrelated in knowledge sharing between individuals in organizations. The conceptual framework also explains that knowledge sharing is a process, which involves each factor to promote the sharing of knowledge.

Hara and Schwen (2006) Communities of practice in workplaces: Learning as a naturally occurring event. Hara and Schwen conducted an ethnographic case study of a public defender's office to discover how knowledge is created and shared in organizations. By conducting interviews, observations, and a review of documents at the public defender's office, Hara and Schwen used five attributes to research the factors that influence learning in a CoP including: 1) a group of practitioners, 2) the development of a shared meaning, 3) informal social networks, 4) supportive culture, and 5) engagement in knowledge building (p. 98). After conducting the study, a sixth factor was added – individual's negotiation and development of

professional identities (p. 106). The article suggests that before designing a CoP, the characteristics of a CoP should be understood, as the article identifies through the case study.

Corso, Giacobbe, and Martini (2009) Designing and managing business communities of practice. Corso, Giacobbe, and Martini explain how to design and cultivate a business CoP in the article. A review of literature defined the effectiveness of CoPs. Best practices from organizations including Xerox and Daimler Chrysler, and seven case studies, two of which were longitudinal identified the levels of organizational commitment, member involvement, and member participation. The findings of the study explain that a high level of commitment from both the organization and its members relates to the effectiveness of a CoP, fostering learning, and knowledge management (p. 86).

Moore and Barab (2002) The inquiry learning forum: A community of practice approach to online professional development. Moore and Barab (2002) report the findings of year one of a three-year National Science Foundation (NSF) funded grant to design and implement a technology-based CoP, the Inquiry Learning Forum (ILF). The ILF was created to gain a better understanding of how CoPs are developed and supported to facilitate continuous professional development for teachers (p. 45). By applying a CoP model to the professional development of teachers, the goal of the research grant is to foster learning and create relationships between teachers to improve teaching and learning (p. 49).

Gammelgaard (2010) Knowledge retrieval through virtual communities of practice. Gammelgaard conducted a case study of Computer Sciences Corporation (CSC) Denmark, a multinational corporation, to discover how knowledge is transferred through virtual CoPs used as a knowledge-sharing tool. The study examined how virtual CoPs coordinate knowledge within a multinational corporation, how contextual gaps between senders and receivers are solved, and the type of trust established in virtual CoPs (p. 350). The findings of this study support the use

of virtual CoPs to facilitate knowledge sharing in multinational corporations and coordinate knowledge processes.

Data Coding

Descriptive Coding. The first level coding method used to analyze the content was descriptive coding. Through descriptive coding, words and phrases were used to summarize the data (Saldaña, 2009). The researcher read each article and identified the keywords and phrases that captured the topic of the content. Table 1 shows the keywords and phrases and the resulting categories for each article.

Table 1

Category results from keywords and phrases

Author (s) and Article Title	Keywords and Phrases	Categories
Lank, Randell-Khan, Rosenbaum, and Tate (2008) Herding cats: Choosing a governance structure for your communities of practice	advocates, champion, community involvement, connection, democratic, directive, facilitative, formalization, governance structure, leadership, management support, recognition, relationship, reporting structure, respect, self-organization, technology, time limitations, trust	-Community roles and management structure - Physical and psychological needs
Fahey, Vasconcelos, and Ellis (2007). The impact of rewards within communities of practice: A study of the SAP online global community	arguments, collective trust, community conflict, enhanced reputation, extrinsic rewards, hard rewards, intangible rewards, intrinsic motivation, motive questioning, mutuality, personal satisfaction, points allocation system, public good, relationships, soft rewards, tangible benefits, trust, value clashes	-Conflict -Extrinsic and intrinsic rewards -Trusting relationships
Borzillo (2009) Top management sponsorship to guide communities of practice	benefit promotion, bonds, control, encouragement, financial support, formal structure, governance, governance committee, management, recognition, reporting structure, self-organizing, strategic sense, supervision, support, time constraints	-Governance structure and management -Physical and psychological needs
Bogenrieder and Nooteboom (2004) Learning groups: What types are there? A theoretical analysis and an empirical study in a consultancy firm	cognitive distance, cooperation, gaps, isolation, learning opportunities, motivation, obstacles, professional development, psychological safety, risk, shared beliefs, shared experiences, shared norms, time, threat, trust	-Psychological needs -Shared values and experiences -Barriers

Author (s) and Article Title	Keywords and Phrases	Categories
Ardichvili, Page, and Wentling (2003) Motivation and barriers to participate in virtual knowledge-sharing communities of practice	community manager, competitive advantage, confidentiality, criticism, delegates, experts, fear, information hoarding, lack of confidence, lack of direction, mentoring, moral obligation, organizational culture, public good, security, self-interest, subscribers, supportive relationships, team election, willingness to share	-Community roles and management structure -Organizational environment -Fear and uncertainty -Intrinsic motivation
Ipe (2003) Knowledge sharing in organizations: A conceptual framework	benefits, cooperative exchanges, culture, emotional ownership, equal contribution, face-to-face communication, friendship, formal, incentives, individual ownership, informal, joint ownership, knowledge acquisition, knowledge hoarding, learning, norms, power politics, reciprocity, relationships, relinquish ownership, respect, rewards, significance, social interaction, status, trust, trust building, value, work environment	-Intrinsic and extrinsic rewards -Structure -Trusting relationships
Hara and Schwen (2006) Communities of practice in workplaces: Learning as a naturally occurring event	culture, expertise, family-like culture, formalized sharing, proximity, lack of external incentives, learning environment, learning opportunities, organizational learning, partnership, physical environment, relationship, shared meaning, small organization, support, ties	-Organizational environment -Relationships -Extrinsic rewards
Corso, Giacobbe, and Martini (2009) Designing and managing business communities of practice	autonomy, collaborative attitudes, collective identity, common ground, cultural foundation, geographical bonds, geographical distance, informal relations, interpersonal relations, mutual engagement, organizational bonds, organizational core values, organizational learning, personal development, physical interaction, professional development, reporting structure, resources, self-controlled, self-organization, sense of belonging, social entity, social relations, status, supporting tools, value, virtual interaction, work environment	-Relationships -Organizational environment -Intrinsic rewards -Structure
Moore and Barab (2002) The inquiry learning forum: A community of practice approach to online professional development	administrators, community input, community policy, continuing education credits, engagement opportunity, face-to-face communication, geographic boundaries, geographically separated, isolation, participant advisory board, personal growth, professional development, sociability, sustained support, time boundaries, time limitations, university credit, websites	-Boundaries -Community roles and management structure -Intrinsic and extrinsic rewards
Gammelgaard (2010) Knowledge retrieval through virtual communities of practice	common meaning, contextual gaps, distance, corporate culture, corporate language, expert, flexible structure, friendly culture, geographical proximity, higher status, manager, professional language, public good, relationships, reputation, trust building, trust-based culture	-Organizational environment -Community roles and management structure -Intrinsic rewards -Relationships

After keywords and phrases were identified for each article, they were grouped into categories. The categories from the analysis include community roles and management structure, physical and psychological needs, extrinsic and intrinsic rewards, trusting relationships, governance structure and management, shared values and experiences, fear and uncertainty, intrinsic motivation, structure, organizational environment, relationships, conflict, barriers and boundaries. An example of the identification of keywords and phrases is shown in the excerpt below from Fahey et al. (2007) case study of Systems Applications and Products (SAP) online global community:

> Hall (2001a) classifies rewards into two categories: explicit hard/rewards and soft rewards. Explicit/hard rewards include tangible benefits, such as enhanced pay, stock options, or in the case of the SAP community branded gifts (e.g., a SAP clock, pen, towel). Soft rewards are intangible and can include enhanced reputation and personal satisfaction (Hall, 2001b) (as cited in Fahey, et al., p. 188).

From this excerpt, the keywords are hard rewards, soft rewards, tangible benefits, intangible rewards, enhanced reputation and personal satisfaction. The keywords describe both extrinsic and intrinsic rewards, which is the resulting category.

Several articles support the categories community roles and management structure and governance structure and management. Borzillo conducted 48 interviews with CoP leaders from organizations including Siemens, Mazda, the World Bank, and the United Nations, in which it was expressed that there was “tight control over the quantity and performance criteria of best practices developed within the CoP” (Borzillo, 2009, p. 61). Borzillo postulates that an organization should have some involvement in CoPs by managing them, but not in a way that would cause ineffectiveness (Borzillo, 2009, p. 60).

Oracle, a global organization, created a Professional Community Board including business executives, Professional Community Leaders, and a Programme Director, which adopt a formal process for creating and terminating communities (Lank, Randell-Khan, Rosenbaum & Tate, 2008, p. 103). According to Borzillo (2009) some organizations use governance committee's comprised of CoP sponsors and CoP leaders. Sponsors are a control agent that determine the deliverables of best-practice sharing and report the CoP benefits to top management (Borzillo, 2009, pp. 64-66). An illustration of the reporting structure within formally structured communities is in Figure 2.

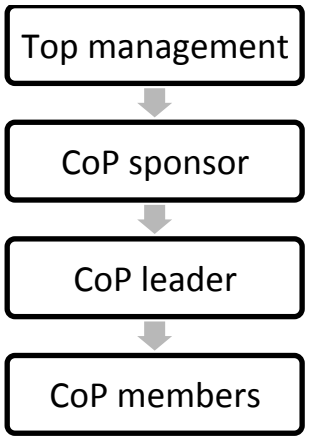

Figure 2. Formal structure of Communities of Practice (Borzillo, 2009, p. 66).

According to Ardichvili, Page, and Wentling virtual communities need supportive environments, which are based on a culture of institutional trust and transparency in communicating standards and norms for knowledge sharing (Ardichvili, Page, & Wentling, 2003, p. 74). An interviewee in Hara and Schwen's (2006) case study of a Public Defenders office describes the supportive culture that encouraged learning and sharing information and how the office was like a family. The attorney's office also was small, which allowed for easy sharing of information, both formally and informally. This shows how the physical organizational environment can influence how, what, and when knowledge is shared (Hara &

Schwen, 2006). At Computer Sciences Corporation (CSC), Denmark, the employee's reported in interviews that the company has a knowledge-sharing friendly culture; however, because CSC is a multi-national corporation, there are elements of the physical environment that affect knowledge sharing, including contextual gaps and differences in corporate language (Gammelgaard, 2010).

Articles in the content analysis also support the physical and psychological needs, extrinsic and intrinsic rewards, and intrinsic motivation. The SAP Community Reward Program is a point-based system, which allows members to accrue points for creating posts, participation in surveys, and referring new members (Fahey et al., 2007). Ardichvili et al. discovered through the study of Caterpillar, Inc.'s CoPs that the community members feel their knowledge is not solely for individual use but for the public good, which motivates them to share knowledge, therefore, they are intrinsically motivated (Ardichvili, et al., 2003, p. 69). According to Ipe, the intrinsic rewards are "the perceived power attached to the knowledge and the reciprocity that results from sharing" (Ipe, 2003, p. 345). One CoP has high member participation and the members participate in the CoP outside of normal work hours because they view the community as an investment into their professional development (Corso, Giacobbe, & Martini, 2009).

The categories trusting relationships, shared values and experiences, and relationships are supported by Fahey, et al. (2007); Bogenrieder and Nooteboom (2004); Ipe (2003); Hara and Schwen (2006); Corso et al. (2009); and Gammelgaard (2010). When SAP started the SAP Community Rewards Program, the value clash between those who participated because they were intrinsically motivated to share and those that were driven by the rewards affected the trust between the members in the community (Fahey et al., 2007). According to Fahey, et al. "Many postings highlighted the rupturing effect rewards have had on relationships within the community" (Fahey et al., 2007, p. 191). The establishment of trust is related to social

interaction and relationship building. According to Bogenrieder and Nooteboom "Social foundations may be found in shared norms of reciprocity or moral duty and obligation" (Bogenrieder & Nooteboom, 2004, p. 296). Bogenrieder and Nooteboom further go on to say "When trust is not in place prior to relation it has to be built up" (Bogenrieder & Nooteboom, 2004, p. 296).

The fear and uncertainty and boundaries categories are supported by Ardichvili et al. (2003) and Bogenrieder and Nooteboom (2004). Ardichvili et al. explain how there was a fear of misleading employees by the information shared or not knowing which information is important or not (Ardichvili et al., 2003, p. 70). A barrier within a CoP can be caused in many ways including gaps within the network and isolation of members (Bogenrieder & Nooteboom, 2004). According to Bogenrieder and Nooteboom, structural holes can be created within networks when there are gaps that cause isolation of participants due to the structure of the community, which affects knowledge sharing (Bogenrieder & Nooteboom, 2004, p. 292).

According to Borzillo, some scholars suggest that there should not be management involvement and CoPs should be self-managed, which presents an outlier (Borzillo, 2009, p. 60). The categories community roles and management structure and governance structure and management suggest that CoPs involve some type of managerial or leadership involvement. Another outlier is shown in a SAP online global community posting from the Fahey et al., case study:

> Good decision. SAP community should be a place for users to meet, share know how and help each other, not a place to collect points for gifts. Those who use the forum in this sense will easily do without the gifts… (Fahey, et al., 2007, p. 194).

The category 'external rewards' suggest that offering extrinsic rewards should not influence community members and that members should be solely intrinsically motivated.

Pattern Coding. Pattern coding was selected as the second level coding method to develop themes from the data and to identify explanations and causes in the data (Saldaña, 2009, p. 152). Community roles and management, structure, and governance structure and management, share commonalities that explain a formalized management structure. The pattern also explains how a formal CoP is structured and managed and the different roles organizational members have within a community from community member to top management. In the case of Oracle, the organization adopts a formal CoP structure in which management is involved in CoP development and implementation and communities are supported directly by Professional Community Leaders (Lank, et al., 2008). This theme is also supported by Figure 2, which shows the formal reporting and management structure that can exist and influence CoPs.

Trusting relationships, shared values and experiences, and relationships explain the theme of mutual relationships. The SAP global online community case study shows how members who valued intrinsic rewards clashed with members who were extrinsically motivated (Fahey, et al., 2007). Due to this value clash, trust was affected because there was not a mutual understanding of reasons to participate. According to Bogenrieder and Nooteboom, "…there will be cognitive distance between people with different experiences, and cognitive similarity to the extent that people have interacted within a shared experience…" (Bogenrieder & Nooteboom, 2004, p. 291). Without shared values and experiences, establishing trust will be hard to achieve among members in a CoP.

Physical and psychological needs, organizational environment, fear and uncertainty, boundaries, and barriers form the positive and supportive work environment theme. Time constraints are a barrier, which can affect an employee's participation in a CoP (Borzillo, 2009).

If employees are not given an opportunity to share knowledge due to lack of management support or the time demands of the job, there will be limited knowledge sharing. The Inquiry Learning Forum (ILF), which was a virtual community created for the professional development of teachers, breaks down the time and location boundaries teacher's experience by allowing access no matter where a teacher is located and having access at any time (Moore & Barab, 2002). The physical and psychological needs, and fear and uncertainty relate because if a member is not psychologically secure about sharing knowledge, participation could be affected. Therefore, both categories also present a barrier to knowledge sharing. When members fear that posting inaccurate, irrelevant information or feeling unsure about what to share, a barrier is established within the community. When there is a positive and supportive work environment, the fear and uncertainty, time and location boundaries, and organizational physical and psychological barriers can be prevented.

Intrinsic motivation, external rewards, intrinsic rewards, and extrinsic and intrinsic rewards describe the extrinsic and intrinsic motivators theme. There can be intrinsic motivator's including fulfilling one's moral obligation to the organization, personal and professional development, or enhancing one's professional reputation (Ardichvili et al., 2003; Gammelgaard, 2010). External motivator's to share in CoPs include a point-based system for exchange of hard rewards or offering education or university credits for participation (Fahey et al., 2007; Moore & Barab, 2002).

Table 2

Pattern Codes

Categories	Pattern Code/Theme
Community roles and management structure Governance structure and management Structure	Formalized management structure
Physical and psychological needs Organizational environment Fear and uncertainty Boundaries Barriers	Positive and supportive work environment
Trusting relationships Shared values and experiences Relationships	Mutual relationships
Intrinsic motivation External rewards Intrinsic rewards Intrinsic and extrinsic rewards	Extrinsic and intrinsic motivators

Triangulation

According to Jonsen and Jehn, triangulation is conducted to "…eliminate or reduce biases and increase the reliability and validity of the study" (Jonsen & Jehn, 2009, p. 126). The data was triangulated by comparing the results of the descriptive and pattern coding of the articles for the content analysis. The purpose of triangulating the data is to discover relationships between the two coding levels and verify the results of each level compared with the data.

Lank et al. (2008) describe several organizations that use a formal governance structure to provide management over communities, which are comprised of various roles including community leaders, community sponsors, and community facilitators. Although many organizations adopt a formal governance structure including Oracle, Schlumberger, and Shell through specific community roles and management involvement that direct community activities, CoPs have been defined as self-organizing and not considered as formal structures (Ardichvili et al., 2003; Borzillo, 2009).

The data shows a contrasting view of how management entities and roles should be involved in CoPs. When the Inquiry Learning Forum (ILF) was implemented for teacher development, school administrators were not allowed access to the community because of a concern that administrator's would misuse the community to evaluate or recruit teachers (Moore & Barab, 2002). However, later on in the implementation phase of the ILF, teachers expressed an interest in allowing administrator access to promote the support of the community. Although the administrators would not directly manage the community, their managerial status can cause influence in community participation and could create a formal structure if teacher involvement requires mandatory assessment for performance evaluations or rewards programs.

CoPs can also have established roles such as 'expert' or 'manager' who could initiate the creation of a community (Gammelgaard, 2010). In a case study of Computer Sciences Corporation (CSC) Denmark virtual CoPs, Gammelgaard explains "CSC's employees informally grade and rank the virtual communities, stating that '20 to 30 of the communities are more prestigious to join because they have some of the company's highly esteemed experts" (Gammelgaard, 2010, p. 358). Without established roles within a community including expert, employees could question the quality of the CoP and decide not to participate in a CoP or knowledge sharing. A relationship is shown between management, governance structure, and community roles and involvement. However, because the data refers to scholars who suggest CoPs should be self-managed, a new concept is created that CoPs should have a leadership structure in place for support but members should have involvement and input into the structure that is established.

In Fahey, et al. (2007) study of the SAP online global community, the establishment of a rewards program affected community member trust and caused conflict between members who were motivated by intrinsic rewards and members who were motivated by extrinsic rewards.

One of the postings in the community illustrated the frustration with the rewards program and those who used it for the extrinsic rewards:

> The rewards system is interesting, but it does have some negative effects. People tend to post meaningless replies like 'I agree with your solution'. These are obviously posted to gain rewards as they do not tend to appear in other forums (Fahey, et al., 2007, p. 193).

Another posting further illustrates frustration with the effect rewards had on the community:

> Seems like some guys are more interested in gathering points for rewards than in gathering information or useful help concerning SAP. A pity there is no program able to check and eliminate non-value added postings (Fahey, et al., 2007, p. 193).

The postings from the CoP show a relationship between extrinsic and intrinsic rewards and shared values and experiences. Additionally, the postings illustrate members who participate because of intrinsic motivators, shame those who are extrinsically motivated. This also shows a relation to how extrinsic and intrinsic motivators can lead to conflict, fear, and uncertainty, which can affect the trust and mutual relationships established within a CoP.

Ipe (2003) developed a conceptual framework based on a review of literature that encompasses factors that influence knowledge sharing between individuals and organizations. The factors include the nature of knowledge, motivation to share, opportunities to share, and the culture of the work environment (Ipe, 2003, p. 343). Comparing Ipe's (2003) findings, which was conducted in a similar methodology as this study and relating to the same topic, further validates the findings in the first and second level coding. According to Ipe, "Regardless of whether knowledge is tacit or explicit, the value attributed to it also has a significant impact on whether and how individuals share it" (Ipe, 2003, p. 344).

The value of knowledge can be a source of extrinsic or intrinsic motivation to share and participate in CoPs, as the 'extrinsic and intrinsic motivators' theme captures. Extrinsic and intrinsic motivators also relate to the motivation to share factor that Ipe (2003) presents in the conceptual framework. Ipe states that internal factors of motivation can include the perceived power of knowledge and the exchange of knowledge within a CoP and external factors can include rewards for sharing (Ipe, 2003, pp. 345-346). Under the motivation to share, Ipe (2003) suggests that relationships between the sender and receiver of knowledge are an external motivational factor. Although Ipe (2003) nests the relationships under motivation to share, relationships were not identified as an extrinsic motivator in the first and second level coding but a connection between relationships and motivation is made, which suggests that the two factors influence one another.

Ipe's (2003) opportunities to share and culture of the work environment factor, relates to the formalized management structure and positive and supportive work environment themes developed in the second level coding. According to Ipe, "Opportunities to share knowledge in organizations can be both formal and informal in nature" (Ipe, 2003, p. 349). From this understanding presented by Ipe (2003), an informal structure is a concept that is missing from the data analysis. The categories and themes developed focus on formalized and structured CoPs, and did not include the informal structures, which can foster trust building and relationships (Ipe, 2003).

Ipe (2003) explains that the organizational culture can be a barrier in knowledge sharing and that the organizational environment can shape and guide members on what knowledge to share and what value to place on knowledge sharing. This concept fits with the positive and supportive work environment theme, and the categories developed in the first level descriptive coding which describes the organizational factors that encourage or impede knowledge sharing.

Ipe's (2003) conceptual framework further supports that there is a relationship between each factor that influence knowledge sharing between individuals in organizations.

Theoretical Construct

The data supports the use of CoPs as an employee development tool. The Inquiry Learning Forum (ILF) is an internet based CoP for teachers, which was designed to facilitate continuous professional development and promote knowledge sharing (Moore & Barab, 2002). The knowledge shared in CoPs can result in organizational learning and knowledge acquisition by others (Ipe, 2003, pp. 342-343). In Bogenrieder and Nooteboom's empirical study of learning groups, the consultancy firm used in the case study placed a strong emphasis on professional development but viewed this as an individual responsibility (Bogenrieder & Nooteboomm, 2004, p. 300). This relates to Knowles' theory of andragogy, which is based on self-directed and individual learning for adult learners (Kessels & Poell, 2004). This also explains that knowledge sharing within CoPs is a self-directed process and the individual has personal responsibility for his or her personal and professional development.

Both extrinsic and intrinsic motivation to share knowledge is supported through the data analysis in several articles. Extrinsic rewards include point-based systems where community members accrue points based on community postings or offering continuing education credits for participation (Fahey, et al., 2007; Moore & Barab, 2002). Extrinsic rewards can be used to encourage and increase participation, especially for practitioners who have to sacrifice time to participate. Intrinsic rewards can include enhancing one's reputation, sharing because knowledge is viewed as a public good, mentoring opportunities, and building relationships (Ardichvili, et al., 2003; Gammelgaard, 2010). The data shows that if the appropriate motivators are in place within a CoP, knowledge sharing can happen, which can result in employee development within a CoP. The data also shows that professional development alone can serve

as a motivator and explains that a CoP can be used as an employee development tool, if the appropriate organizational factors are in place to foster this process.

A formalized management structure and positive and supportive work environment relate to the organizational culture and managerial support components of the theoretical construct. The data findings explain how organizational culture including the work environment can impact the way knowledge is shared. In the Inquiry Learning Forum (ILF) case, a virtual community was best suited for teachers because of the time demands and physical location barriers, which would prevent formal face-to-face CoPs from being conducted (Moore & Barab, 2002). In Hara and Schwen's (2006) case study of a small public defender's office, it was discovered that more informal knowledge sharing took place because of the small staff, which made it easier to share information.

The data presents more than just managerial support, but greater involvement from management and those in leadership roles in the creation and deployment of CoPs. Financial, physical, and emotional support is needed in order to implement community activities, but the data shows greater involvement from management such as developing strategic goals and direction for CoPs and establishing governance boards which have the power to create and terminate CoPs (Lank et al., 2008). As shown in figure 1 of chapter 3, managerial support stems from organizational culture, because the culture and work environment can determine the value of knowledge sharing. Some organizations do not foster knowledge sharing because it is not supported or recognized by management, which can affect how employees view the importance of knowledge sharing (Borzillo, 2009).

Summary

In this chapter, the findings of the content analysis that discover the factors that affect knowledge sharing in CoPs, have been presented. A discussion of how the data was collected

was explained and the articles used in the content analysis were summarized. The results of the first level descriptive coding and second level pattern coding were discussed, which were derived from the articles used in the content analysis. The triangulation of the data was conducted to compare the first and second level coding, and to assess the validity of the data analysis and identify missing concepts. The data findings were also related back to the theoretical construct, which was presented in Research Methods, Figure 1.

Discussion

This chapter discusses how the data addressed the research questions of the study, proposes a conceptual framework of the factors that affect knowledge sharing in communities of practice (CoPs), concludes the findings of the study, and provides recommendations for future research and for the human resources (HR) and training and development (T&D) field in relation to CoPs. The data addressed the factors that affect motivation to share knowledge in CoPs, how each factor affects the development of a CoP and knowledge sharing, and how the factors interact to affect knowledge sharing in CoPs. The proposed conceptual framework illustrates how the factors affect knowledge sharing, which also influences employee development. Due to the time limitations of the study, the researcher provides future research recommendations.

Research Questions

RQ 1: What factors affect motivation to share knowledge in CoPs?

Extrinsic and intrinsic motivational factors affect knowledge sharing in CoPs. A review of the literature explains how intrinsic motivation can occur through personal and professional development, career growth, and the satisfaction of sharing knowledge (Liu, Liang, Rajagopalan, & Sambamurthy, 2011). Extrinsic motivation includes external incentives such as increased pay, gift cards, or continuing education credits (Fahey, Vasconcelos & Ellis, 2007).

Although the literature review addresses hard and soft rewards as the source of motivation to share knowledge, the data findings suggest other organizational influences affect knowledge sharing. The organizational environment can impede knowledge sharing if the use of CoPs is not supported or CoPs and rewards are not properly managed. An example of this is the Systems Applications and Products (SAP) Community Reward Program, which offered points to members for posting in discussion forums and new member referrals, in exchange for tangible gifts (Fahey, et al., 2007). The rewards program affected the quality of postings and caused

frustration from members who were compelled to share knowledge because they were intrinsically motivated to participate. Due to the abuse of the awards program, community postings suggested the moderator assess the quality of postings to earn points or community members vote on the helpfulness of the post (Fahey, et al., 2007). The SAP case study shows how offering extrinsic rewards can raise participation and increase knowledge sharing, but an established protocol, community management, and member involvement should determine the value of posts to earn rewards. This also suggests that if extrinsic rewards decrease the quality of knowledge shared in a CoP, intrinsically motivated participants could become less motivated to share, which would affect the overall value of the community for producing valuable knowledge.

Other organizational influences on the motivation to share include the physical environment, the time available to participate in CoPs, and the opportunity to share knowledge in CoPs. Hara and Schwen (2006) noticed in their case study of a public defender's office, that the small office comprised of a staff of 11, could easily share knowledge because of proximity. According to Hara and Schwen, "The physical environment provides opportunity to share their knowledge informally" (Hara & Schwen, 2006, p. 103). This statement suggests that the size of a community can influence knowledge sharing and affect whether a CoP is informal or formal. If the CoP is small, members may be motivated to share because of the closeness of the group and the increased potential for relationship building. A smaller community could also provide more informal exchanges, which can also build relationships and establish trust in the community.

A larger CoP could prevent the ease of sharing knowledge informally. As explained in the case of the small public defender's office, the attorneys could easily share knowledge because there was frequent interaction with one another (Hara & Schwen, 2006). In a larger organization or community setting, members could feel less confident about sharing knowledge

and the size could de-motivate a member from contributing knowledge. A larger organization can cause relationship building to be a harder task than smaller organizations, which could delay an establishment of trust in the community to share knowledge.

In the case of the Inquiry Learning Forum (ILF), which was established for the professional development of teachers, the teaching practice does not easily allow for face-to-face interaction because of the geographic and time boundaries (Moore & Barab, 2002). The CoP was established as a technologically supported CoP, using the Internet to implement the community (Moore & Barab, 2002). Although the Internet-based CoP breaks the geographical boundary, teachers still have to devote time to participating in the community. According to Moore and Barab, "To help teachers best leverage their time, we are beginning to develop strategies whereby they can receive continuing education credits or university credit for active participation in the ILF" (Moore & Barab, 2002, p. 48). Although extrinsic motivators are considered to encourage teachers to participate, Moore and Barab explain "…the dual needs of personal growth and professional accountability often require a choice of professional development options that serve multiple purposes" (Moore & Barab, 2002, p. 48). The time demands of the profession can de-motivate a participant to share; however, extrinsic rewards that coincide with professional development such as continuing education credits, can influence knowledge sharing.

RQ 2: How does each factor affect the development of a CoP and knowledge sharing?

The factors that affect knowledge sharing, as identified in the findings of the content analysis are extrinsic and intrinsic motivators, formalized management structure, a positive and supportive work environment, and mutual relationships. From the data findings, each factor should be considered in the design phase of a CoP, to encourage knowledge sharing once it is

implemented. The data findings also support how each factor can affect the design of a CoP and knowledge sharing.

Part of the development phase of a CoP or later in the implementation phase, organizations should consider what intrinsic motivators are in place to encourage knowledge sharing and if extrinsic motivators should be offered. Intrinsic motivation is indeed innate, but can be influenced by organizational values and culture. Some employees view knowledge as a public good and feel it is his or her moral obligation to share knowledge (Ardichvili, Page & Wentling, 2003). Ardichvili, et al. discovered additional reasons employees are intrinsically willing to share knowledge in a case study of Caterpillar, Inc.:

> First, employees felt the need to establish themselves as experts (e.g. through gaining the formal expert status by contributing to the community, or through gaining an informal recognition through multiple postings and contributions to the community). Second, several managers and experts felt that they had reached a stage in their lives when it was time to start giving back, sharing their expertise, mentoring new employees; and they felt that the participation in the community provided them with this opportunity (Ardichvili, et al., 2003, p. 69).

If employees are innately motivated to share for personal reasons, organizational influences should support one's intrinsic motivation. Employees can be motivated to share for the reasons stated above, but can be de-motivated if the organizational culture influences knowledge hoarding, which causes employees to keep knowledge to themselves. According to Gammelgaard, "In an organisation characterised by employees generally rejecting and hoarding knowledge, transfers of knowledge are not free-flowing, even in face-to-face communities" (Gammelgaard, 2010, p. 352). A new employee might keep information to his or herself if an organization does not embrace new employees to make them feel that their knowledge is just as

valuable as more experienced employees (Ardichvili, et al., 2003). Employees also might be de-motivated to share if organizations do not provide guidance on what information should be shared in a CoP and what is valuable to know (Ardichvili, et al., 2003).

When developing CoPs, organizations should consider if extrinsic rewards will be offered to encourage knowledge sharing. The SAP rewards program was created to retain members, increase participation, and as a public relations technique by offering SAP logoed items as rewards (Fahey, et al., 2007). After the launch of the program, postings to the CoP were more about how to earn points than actually contributing valuable knowledge. If rewards will be offered, a method for assessing the quality of the knowledge shared should be considered or the reward can be tied to performance evaluations, which could lead to raises and promotions. The motivation crowding theory should also be taken into consideration in developing CoPs because offering external rewards has the potential to crowd out intrinsic motivation (Liu, et al., 2011).

In the development of a CoP, the management structure should be considered. Although CoPs are referred to as self-managed structures, management or leadership involvement can lead a community toward effective knowledge sharing (Borzillo, 2009). An organization should determine how CoPs will be managed, what the community roles will be, and who will be responsible for recruiting new members and advocating for support of the CoP. At Oracle, management supports CoPs but communities are led by a CoP leader, who reports to upper management about the activities and success of the community (Lank et al., 2008). There is also a Community Sponsor at Oracle who is a senior leader that serves in a 'champion' role and gains resources for the community (Lank, et al., 2008). In Shell's global CoP, a moderation team recognizes top contributors and reports the value of the CoP to top management, which can be a method for gaining organizational support (Lank, et al., 2008).

The CoP managers at Caterpillar, Inc. approve submissions to a CoP prior to posting from members to verify accuracy (Ardichvili et al., 2003). This method can be especially useful when external rewards are offered so that the postings are assessed for quality instead of rewarding insufficient postings or participation in a CoP. Xerox's SPI CoP has its own self-developed working methods, but reports its activities to management every three months (Corso et al., 2009). Although CoPs are established for self-directed learning, a management structure is critical in ensuring the CoP is designed to produce valuable knowledge.

The organization sets the tone for what is valuable knowledge and employees get direction from the organizational climate on what to share and what not to share (Ipe, 2003). Depending on what type of organization it is will impact the development of a CoP for knowledge sharing. Multinational organizations or organizations with several locations cannot effectively foster knowledge sharing in face-to-face communities because of geographical borders, but could thrive in a virtual setting (Gammelgaard, 2010).

Organizations should also have or establish a culture that is knowledge-sharing friendly (Gammelgaard, 2010). If the organization does not send out positive messages about sharing knowledge and the value of sharing knowledge, employees may not feel comfortable about participating or sharing knowledge within a CoP. If an organization has previously sent out negative messages about knowledge sharing, support for CoPs through money to develop a virtual CoP or hold community events and the technology to implement CoPs can show organizational support. Xerox's Eureka CoP was provided resources by the organization to develop a platform to communicate globally, once the organization recognized the value of the CoP (Corso, Giacobbe & Martini, 2009). The action taken by the organization shows that there is support and importance placed on employees sharing knowledge. A strong commitment from

the organization can result in full commitment from community members to participate in CoPs (Corso et al., 2009).

Mutual relationships are imperative to establishing the trust a member needs to share his or her personal knowledge. Lank, et al. explain:

> In our experience, the communities that tend to work most effectively are those that have managed to create a web of strong personal relationships across business units, giving the community a foundation of trust and respect that facilitates ongoing collaboration (Lank, et al., 2008, p. 106).

Without the establishment of trust within a community, it can slow down the knowledge sharing process, which would affect learning from taking place. When developing a CoP, relationship building should be considered and activities that would encourage this process. In Bogenrieder and Nooteboom's (2004) case study of an unnamed firm, the project team, which was a learning group, was given time off to get to know their fellow team members. Relationship-building events could include lunch and learns or the establishment of groups including expert groups, professional development groups, and project improvement groups (Bogenrieder & Nooteboom, 2004).

RQ 3: How does the interaction between the factors affect knowledge sharing in CoPs?

The findings discover that there is an interaction and relationship between the factors identified as affecting knowledge sharing in CoPs. A formalized management structure and positive and supportive relationships are connected by the support and resources each factor provides to a CoP to promote knowledge sharing. Management provides resources including personnel to develop and manage CoPs, a budget to implement CoP activities, and the time for members to participate in CoP activities and events (Lank, et al., 2008). CoP leaders or sponsors

advocate for resources and support from top management and communicate the value of CoPs, which can create the supportive work environment for CoPs to be effective (Lank et al., 2008).

The SAP rewards program shows how extrinsic motivators can affect trust, which establish relationships, because of resentment, anger, and questioning of intentions by intrinsically motivated members. Relationships are also an external motivational factor, which involves trust, power, and status (Ipe, 2003). The work environment can affect the establishment of mutual relationships. If an organization has geographic barriers, face-to-face CoPs would not always be feasible; therefore an Inter or Intranet CoP would be most effective to establish connections between employees. However, face-to-face CoPs would be easier to build trust and relationships (Ipe, 2003). According to Gaamelgaard, trust can be "adopted from the organizational setting" if there is a culture that supports knowledge sharing and the CoP aligns with organizational norms and values (Gaamelgaard, 2010, p. 352). Additionally, the work environment can affect intrinsic and extrinsic motivators because if the culture is not supportive of knowledge sharing practices, offering extrinsic rewards will not create quality knowledge sharing and can intrinsically de-motivate employees.

Cooper's Proposed Conceptual Framework

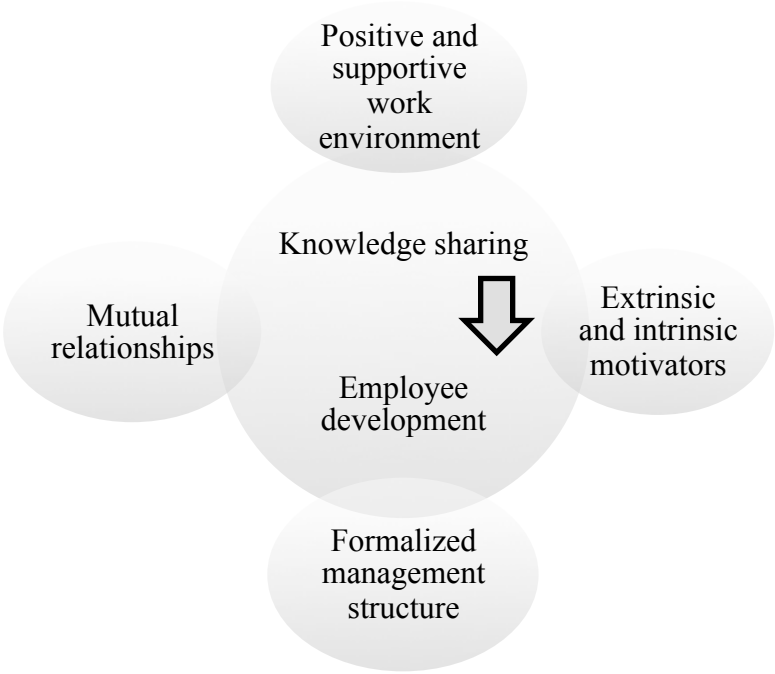

Figure 3. Cooper's Proposed Knowledge Sharing Factors Conceptual Framework

The proposed conceptual framework explains the factors that affect knowledge sharing, which can lead to employee development. Employee or professional development has been discovered as an intrinsic motivation factor through the data findings, but is also supported as a method for development. One of the benefits of CoPs is creating new knowledge and capturing existing knowledge (Ardichvili, et al., 2003). CoPs can also influence employee performance improvement and result in a better practitioner (Hara & Schwen, 2006). As a motivational factor, employees share knowledge and participate in CoPs because it is viewed as an enhancement to one's professional development. In a Telco CoP, members access the CoP outside of normal working hours because they see it as a personal investment into their professional development (Corso, et al., 2009). Therefore, knowledge sharing, as represented in the framework, results in employee development.

Extrinsic and intrinsic motivators, a formalized management structure, mutual relationships, and a positive and supportive work environment influence knowledge sharing and employee development. The framework depicts the relationships between each factor and its relationships to knowledge sharing and employee development. The interactions between the factors have been addressed in the answer to research question three of the study.

Conclusions

The content analysis' purpose was to synthesize the existing literature and identify the factors that affect knowledge sharing in CoPs. From the data analysis, factors were identified to develop a conceptual framework, which can be used as an employee development model, specifically for human resources (HR) and training and development practitioners (T&D). The content analysis shows that extrinsic and intrinsic motivators, a formalized management structure, mutual relationships, and a positive and supportive work environment affect knowledge sharing in CoPs.

As shown in Figure 3, employee development is a result of knowledge sharing in CoPs. The significance of this study is to provide HR and T&D practitioners with a model that incorporates the factors that can affect knowledge sharing and should be considered in the design, implementation, and management of CoPs. According to Lank, et al., (2008) the responsibility for CoPs in organizations are normally upon a Chief Knowledge Officer, Manager of Communities, or Director of Technical Communities. Human Resources and Training & Development practitioners are not normally considered as responsible for CoPs, but if employee development is involved in the process of knowledge sharing, they should have involvement in the development and implementation of CoPs to ensure the resources are provided for employees to learn and apply knowledge to their jobs. The data addressed the answers to the research

questions, but provided data from a knowledge management perspective more than from a human resources management perspective.

Recommendations

Due to the limited amount of time to conduct the content analysis, only 10 scholarly articles were analyzed and from the data, four factors that affect knowledge sharing in CoPs were identified. The analysis of more content could have provided additional factors that affect knowledge sharing in CoPs. The time limitations also did not allow for a testing of the proposed conceptual framework, to discover if the factors influence knowledge sharing in CoPs and promote employee development. Future research could test the conceptual framework by conducting a qualitative case study on an organization's CoP. By conducting a qualitative case study, an *in-depth examination* (p. 8) can be conducted on each factor and its influence on a single organization (Saldaña, 2011). A case study will also provide a model for HR and T&D to follow and apply to his or her organizational setting based on the findings from the case study.

The data focused mainly on the impact CoPs have on the organization as a whole and not on the individual employee. Future research should explore the impact CoPs have on an individual level within an organization, including how an employee's personal and professional growth evolves by participating in CoPs. With this research, HR and T&D practitioners can explore using CoPs as a professional development tool over more traditional training methods. Shrinking training budgets can cause HR and T&D practitioners to use more cost-effective ways to foster professional development, and the business case for CoPs would be supported by research on how CoPs can facilitate learning and application.

The factors identified in this content analysis suggest certain organizational factors should be in place for HR and T&D practitioners to be a part of the development and implementation of a CoP. Although normally seen as a knowledge management tool and

managed by knowledge management professionals, HR and T&D practitioners have the expertise to ensure the right factors are in place for training effectiveness and knowledge management professionals provide the technical framework for the design and implementation of a CoP. Both knowledge management, HR & T&D practitioners should collaboratively work together to develop and launch CoPs according to organizational and employee needs.

Summary

The existing literature on CoPs is extensive, identifying several factors that affect knowledge sharing in CoPs; however, there is a lack of synthesis that explains what factors affect knowledge sharing in CoPs as an employee development tool. The purpose of the content analysis was to synthesize the literature to identify the factors that influence knowledge sharing in CoPs and develop a conceptual framework explaining the interaction of each in CoPs. The conceptual framework provides a model for Human Resources and Training & Development practitioners, as they can ensure CoPs are developed to foster learning and application.

The guiding theories for the content analysis were the theory of tacit knowledge and Knowles' theory of andragogy. Tacit knowledge is "…tied to the senses, skills in bodily movement, individual perception, physical experiences, rules of thumb, and intuition" (von Krogh, Ichijo & Nonaka, 2000, p. 6). The basis of andragogy is self-directed and individual learning (Kessels & Poell, 2004, p. 149).

The research questions the researcher sought to discover through the content analysis were: 1) What factors affect motivation to share knowledge in CoPs? 2) How does each factor affect the development of a CoP and knowledge sharing? And, 3) How does the interaction between the factors affect knowledge sharing in CoPs? The findings of the content analysis answered each research question.

The factors identified that affect knowledge sharing in CoPs are extrinsic and intrinsic motivators, a formalized management structure, mutual relationships, and a positive and supportive work environment. Although employee development can be an intrinsic motivational factor, CoPs can cause personal and professional development. HR and T&D practitioners should be involved and collaborate with knowledge management practitioners to design and implement CoPs that foster learning and improve job performance.

This study led to the development of a conceptual framework for knowledge sharing as seen in Figure 3 above. This conceptual framework describes how CoPs might be best used in professional organizations and workplaces to create, capture, and share knowledge, improve performance, and motivate employees.

References

Allan, B. & Lewis, D. (2006). Virtual learning communities as a vehicle for workforce development: A case study. *Journal of Workplace Learning,18*(6), 367-383. doi:10.1108/13665620610682099.

Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management, 7*(1), 64-77. Retrieved from http://search.proquest.com/docview/230318978?accountid=1271.

Bartol, K. M., & Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership & Organizational Studies, 9*(1), 64-76. Retrieved from http://search.proquest.com/docview/203133740?accountid=12711.

Bogenrieder, I. & Nooteboom, B. (2004) Learning groups: What types are there? A theoretical analysis and an empirical study in a consultancy firm. *Organization Studies*, *25*, 287-313. doi:10.1177/0170840604040045.

Borzillo, S. (2009) Top management sponsorship to guide communities of practice. *Journal of Knowledge Management*, *13*(3), 60-72. doi: 10.1108/13673270910962879.

Brown, J. & Duguid, P. (2000). Balancing act: How to capture knowledge without killing it. *Harvard Business Review*, 78(3), 73-80. Retrieved from EBSCO*host*.

Büchel, B. & Raub, S. (2002). Building knowledge-creating value networks. *European Management Journal*, *20(*6), 587-596. Retrieved from http://www.sciencedirect.com/science/article/pii/S026323730200110X.

Chalhoub, M. S. (2009). Employee growth and development through knowledge management in the global environment: Effects on the competitiveness of firms in a multinational context. *Journal of Knowledge Globalization, 2*(2), 25-46. Retrieved from EBSCO*host*.

Corso, M., Giacobbe, A., & Martini, A. (2009). Designing and managing business communities of practice. *Journal of Knowledge Management, 13*(3), 73-89. Retrieved from http://www.emeraldinsight.com/info/journals/jkm/jkm.jsp.

Cotton, D. (2004). Essentials of training design part 5: Adult learning theories and design. *Training Journal, 22*. Retrieved from http://search.proquest.com/docview/202947344?accountid=12711.

Dixon, N. (2000). *Common knowledge: How companies thrive by sharing what they know.* Boston: Harvard Business School Press.

Fahey, R., Vasconcelos, A. C., & Ellis, D. (2007). The impact of rewards within communities of practice: A study of the SAP online global community. *Knowledge Management Research & Practice, 5*(3), 186-198. doi:10.1057/palgrave.kmrp.8500140.

Gammelgaard, J. (2010). Knowledge retrieval through virtual communities of practice. *Behaviour & Information Technology*, *29*(4), 349-362. doi:10.1080/01449290903548406.

Gladstone, B. (2000). *From know-how to knowledge: The essential guide to understanding and implementing knowledge management.* London: The Industrial Society.

Hara, N. and Schwen, T. M. (2006). Communities of practice in workplaces: Learning as a naturally occurring event. *Performance Improvement Quarterly,19*, 93-114. doi: 10.1111/j.1937-8327.2006.tb00367.

Hemmasi, M. & Csanda, C.M. (2009). The effectiveness of communities of practice: An empirical study. *Journal of Managerial Issues, 21*(2), 262-279. Retrieved from http://search.proquest.com/docview/194167392?accountid=12711.

Howells, J. (1996). Tacit knowledge, innovation and technology transfer. *Technology Analysis and Strategic Management*, *8*(2), 91-106. Retrieved from EBSCO*host*.

Ipe, M. (2003). Knowledge sharing on organizations: A conceptual framework. *Human Resource*

Development Review, 2(4), 337-359. Retrieved from http://search.proquest.com/docview/221836579?accountid=12711.

James, C.R. (2003). Designing learning organizations. *Organizational Dynamics, 32*(1), 46-61. Retrieved from http://www.sciencedirect.com/science/article/pii/S0090261602001377.

Jonsen, K. & Jehn, K.A. (2009). Using triangulation to validate themes in qualitative studies. *Qualitative Research in Organizations and Management, 4*(2), 123-150. Retrieved from ABI/INFORM Global. (Document ID: 1872012191).

Jucevičienė, P. & Leonavičienė, R. (2007). The change of human resource development concepts in the process of becoming a learning organization. *Economics & Management*, 569-575. Retrieved from EBSCO*host*.

Kerno, J. J. (2008). Tapping communities of practice. *Mechanical Engineering*, *130*(10), 22-27. Retrieved from EBSCO*host*.

Kessels, J. W. M. & Poell, R. F. (2004). Andragogy and social capital theory: The implications for human resource development. *Advances in Developing Human Resources, 6*(2), 146-157. Retrieved from http://search.proquest.com/docview/221133009?accountid=12711.

Koh, J., Young-Gul, K., & Butler, B. (2007). Encouraging participation in virtual communities. *Association for Computing Machinery.Communications of the ACM, 50*(2), 68-73. doi:10.1145/1216016.1216023.

Krippendorff, K. (2003). *Content analysis: An introduction to qualitative data analysis.* Thousand Oaks, CA: Sage.

Lank, E., Randell-Khan, J., Rosenbaum, S., & Tate, O. (2008). Herding cats: Choosing a governance structure for your communities of practice. *Journal of Change Management*, *8*(2), 101-109. doi:10.1080/14697010701838771.

Lee, C. (1998). The adult learner: Neglected no more. *Training, 35*(3), 47-52.

Retrieved from http://search.proquest.com/docview/62547307?accountid=1271.

Liu, C., Liang, T., Rajagopalan, B., and Sambamurthy, V. (2011) The crowding effect of rewards on knowledge-sharing behavior in virtual communities. *PACIS 2011 Proceedings, 116*. http://aisel.aisnet.org/pacis2011/116.

Lopez-Cabrales, A., Pérez-Luño, A., & Cabrera, R. (2009). Knowledge as a mediator between HRM practices and innovative activity. *Human Resource Management*, *48*(4), 485-503. Retrieved from EBSCO*host*.

Milne, P. (2007). Motivation, incentives and organisational culture. *Journal of Knowledge Management, 11*(6), 28-38. doi:10.1108/13673270710832145.

Moore, J. & Barab, S. (2005). The inquiry learning forum: A community of practice approach to online professional development. *TechTrends, 46*(3), 44-49. Retrieved from http://dx.doi.org/10.1007/BF02784841.

Nesheim, T., Olsen, K. M., & Tobiassen, A. E. (2011). Knowledge communities in matrix-like organizations: Managing knowledge towards application. *Journal of Knowledge Management, 15*(5), 836-850. doi:10.1108/13673271111174357.

Ray, T. (2009). Rethinking Polanyi's concept of tacit knowledge: From personal knowing to imagined institutions. *Minerva: A Review of Science, Learning & Policy*, *47*(1), 75-92. doi:10.1007/s11024-009-9119-1.

Saldaña, J. (2011). *Fundamentals of qualitative research.* New York: Oxford University Press.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.

Trinity Washington University (2011) *Policy: Academic honesty*. Retrieved from http://www.trinitydc.edu/policies/academic-honesty/.

von Krogh, G., Ichijo, K., & Nonaka, I. (2000). *Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation.* New York: Oxford University Press.

Weber, R. P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.

Wenger, E. (2000). Communities of practice and social learning systems. *Organization, 7*(2), 225-246. Retrieved from http://0-org.sagepub.com.sheba.ncat.edu/content/7/2/225.full.pdf+html.

Zboralski, K. (2009). Antecedents of knowledge sharing in communities of practice. *Journal of Knowledge Management, 13*(3), 90-101. doi:10.1108/13673270910962897.

Zmeyov, S.I. (1998). Andragogy: Origins, developments and trends. *International Review of Education, 44*(1), 103-108. Retrieved from http://www.jstor.org.sheba.ncat.edu/stable/3445079.