

## MASTER

### Internal co-creation

internal co-creation through the construction of online communities of practice : a theoretical analysis and a case study in a small-sized insurance company using social network analysis

Laurense, S.E.T.

*Award date:*  
2010

[Link to publication](#)

#### **Disclaimer**

This document contains a student thesis (bachelor's or master's), as authored by a student at Eindhoven University of Technology. Student theses are made available in the TU/e repository upon obtaining the required degree. The grade received is not published on the document as presented in the repository. The required complexity or quality of research of student theses may vary by program, and the required minimum study period may vary in duration.

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain

Eindhoven, June 2010 (form 6)

**Internal Co-creation:**

Internal co-creation through the construction  
of online Communities of Practice:

*A theoretical analysis and a case study in a small-sized  
insurance company using social network analysis*

By  
S.E.T. Laurensse

BSc Industrial Engineering & Innovation Sciences — INPG 2010  
Student identity number 0634604

in partial fulfilment of the requirements for the degree of

**Master of Science  
in Innovation Sciences**

Supervisors:  
Prof.dr. C.C.P. Snijders, TU/e, IE&IS  
Dr. B.M. Sadowski, TU/e, IE&IS

TUE. Department Industrial Engineering & Innovation Sciences.  
Series Master Theses Innovation Sciences

Subject headings: internal business organization, knowledge management, communities,  
online computer systems, information systems: case studies, innovation

# INTERNAL CO-CREATION

Internal co-creation through the construction of online Communities of Practice:  
*A theoretical analysis and a case study in a small-sized insurance company using social network analysis*

MASTER OF SCIENCE IN INNOVATION SCIENCES - THESIS



---

STUDENT S.E.T. LAURENSSE  
ID-NUMBER: 0634604

---

SUPERVISORS TU/E: DR. B.M. SADOWSKI [MENTOR]  
PROF. C.C.P. SNIJDERS [SECOND ASSESSOR]

---

SUPERVISOR REDESIGNME: M.J. SCHRAM [COMPANY]

---

DATE OF REPORTING: 11 JUNE 2010

---

## **Preface**

---

The last semester of the Innovation Science master's program at the Eindhoven University of Technology (TU/e) is assigned to the master thesis project. For this project, I conducted a research about online 'communities of practice' (CoP) and 'co-creation'. The research was executed in cooperation with the Dutch company RedesignMe, a company specialized in online co-creation.

The project covers one of the main domains of the master's program, namely Information and Communication Technologies (ICT). Its relevance to Innovation Science is also characterized by a multi-disciplinary approach; the project studies the interaction between technological, economic, psychological and social developments of the CoP approach.

This report is the result of this graduation semester. For RedesignMe, this report is the starting point to implement and apply the several managerial implications within future applications for co-creation. For the TU/e, and for me as student, this report is part of the completion of the graduation project, and with it the completion of the master program.

Herewith, I want to express my thanks to everyone who has contributed to realize this project:

- RedesignMe, specially Maxim Schram, for the several learning moments and valuable advice. Also an expression of thanks for the received feedback from all colleagues at RedesignMe.
- TU/e, especially to Bert Sadowski and Chris Snijders, for their guidance throughout this project.
- The company of the case study, especially to the community managers, for giving me the possibility to collect detailed information about their attempts to co-create in an online environment
- Blauw Research, especially Ivo Langbroek, for conducting an interview about their intended co-creation project. Unfortunately, this project was not operational within the scope of the present master thesis project.
- Finally, I want to express my thanks to Jelle for his support throughout my study.

The interpretations and opinions expressed in this paper do not necessarily reflect the policy of the company RedesignMe, and remain my own.

Eindhoven, 11 June 2010,

Sylvia Laurensse

## **Executive Summary**

---

In a co-creative organization, value is created through interaction between employees, customers and partners. Based on a request from RedesignMe, a Dutch company specialized in co-creation, the present study was aimed at developing a conceptual framework for understanding and managing internal co-creation in an online setting. Based on internal co-creation, a company is able to create innovative value by enabling interaction and co-development between employees. By using this process, the company benefits from knowledge within its boundaries, which in turn allows to develop a co-creative organization.

To realize co-creation inside an organization, the study argues that one should establish an online Community of Practice (hereafter CoP). The notion on CoP, introduced by Lave and Wenger in the early 1990's, stresses the critical role of the use of a group based structure to improve learning, knowledge flows and innovation. Based on a definition by Wenger (2002), an *online* CoP is defined as an informal group of employees who share a concern, a problem, or a very strong interest about a topic for innovation. By interacting on an ongoing basis, this group deepens both their own and an organization's insights into one of these areas. In the context of this research, these interactions are related to co-creation challenges. The phrase 'online' means that interaction takes place in an environment facilitated by internet-based technologies. The advantage of moving a CoP online: it can facilitate networking among dispersed employees without the need for expensive and time-consuming face-to-face meetings. The power of online interactive technologies, however, should be in perspective with complementary traditional activities. That means that traditional activities can compensate for the limits of an online environment (e.g. by building trust through means of face-to-face interactions), just as online activities can compensate for shortcomings of a traditional method of interaction (e.g. prevent for high costs of face-to-face meetings).

The main research question of the study and the related sub questions are as follows:

*What are the important managerial implications to make the implementation of an online CoP a valuable contribution for the facilitation of internal co-creation?*

- ◆ Sub question 1: Why does online CoP facilitate internal co-creation within companies?
- ◆ Sub question 2: How does online CoP facilitate internal co-creation within companies?

Regarding the sub questions, the concept of the value chain (introduced by Porter in 1985) is used to illustrate why a CoP can facilitate internal co-creation. As defined in the context of this thesis, an online CoP can be drawn in parallel with the linear model of value creation. A CoP therefore creates an environment where employees from different parts of an organization are encouraged to co-create value. In addition, it allows the company to utilize knowledge which is spread across the entire organization. The argument that the establishment of an online CoP can lead to co-creation is supported by the findings of the research. Based on the concept developed in the thesis, the building blocks of internal co-creation are the following;

- (i) Access to information and tools needed for participation,
- (ii) Reveal information and feedback to influence individuals' willingness to participate,
- (iii) Transparency of information to enhance one's ability to make informed choices, and
- (iv) A dialogue which encourages both knowledge sharing and a shared level of understanding, in order to supply knowledge that the company can use to innovate.

Grounded on a typology by Amin and Roberts (2008), who reviewed over three-hundred CoP related publications, it was possible to identify the CoP's relation to these building blocks. In the first place, all CoP's are represented by a virtuous circle; as more people participate, more co-creation occurs. The more people identify with and become prominent within a group, the more they become motivated to participate even further, and so on. Therefore, active participation in a CoP will result

in increased frequency of interaction and the development of weak into strong ties among employees. Combined with CoP interaction characteristics as reputational trust, this will likely facilitate an environment where all four building blocks can develop. The knowledge provided by a CoP can lead to mainly incremental types of innovation, which is reflected in the dialogue building block. Finally, the CoP has a self regulating nature, which is managed by online tools. This structure shows how technology can facilitate all four building blocks. This description suggests that an organization's role is mainly to provide the community with the necessary information and tools for interaction. This view is in line with implications, which show that management has a crucial role in supporting and constructing a CoP.

*Literature review* - The literature review has focussed on *why* the CoP concept is embedded within the literature of learning and knowledge management. Although the CoP concept originally developed in the theoretical field of learning, the concept is also applied in the relative new area of knowledge management. This usage of the concept can be explained by the fact that both fields are closely related; strategic choices undertaken in organizations with respect to learning processes are generally marked as knowledge management. Since knowledge management is closely related to the application of a technical approach, the study's scope is on utilization of online technologies. The study's main focus is on sources and key concepts which relate to the knowledge management field.

The literature is characterized by quite different perspectives on knowledge management. By means of a framework developed by Schultze and Stabell (2004), the different theoretical assumptions underlying this field of research are discussed. The framework is characterized by four distinctive discourses. From these discourses, the aspects of the 'dialogic' and 'constructivist' discourse reflect best the way knowledge is shared and managed regarding CoP and co-creation. Both discourses share the assumption that knowledge is inseparable from people's practices. Accordingly, interaction through dynamic, interactive and social networking activity is the only way to constitute knowledge. This view is in line with the CoP concept, which acknowledges that knowledge is situated in practice. It is also in line with the fourth co-creation building block, which encourages interaction for understanding of knowledge. The discourses have the following opposing view; the dialogic discourse assumes that existing social relations are characterized by suspicion and conflicts of interest, while the constructivist discourse assumes that these relations are characterized by trust and common interest. Existing CoP and co-creation studies build largely on insights of the constructivist discourse, through which it neglects the role of power and conflict. By recognizing these issues, the dialogic discourse will likely provide additional support in explaining causes of interaction. Therefore, both discourses will be used to design, test and evaluate the framework.

*Hypothesis* - Based on the argument that a CoP may provide the building blocks that make processes more co-creative, the following set of hypotheses is used to understand *how* the different CoP characteristics may affect the potential for internal co-creation.

*As a result of structural features, this online type of CoP:*

- H1 ♦ Offers an environment free from the procedural constraints evident in the formal organization, and an environment where all employees are encouraged to co-create.
- H2 ♦ Is characterized by the exploitation of various types of ideas; suggestions which can make an organization more efficient for short-term profits by building upon existing organizational knowledge.
- H3 ♦ Is suitable to implement in small and medium-sized enterprises (SME's); cultivating an online CoP in a SME makes essential offline face-to-face meetings possible (e.g. to build trust).
- H4 ♦ Is most productive when managers make indirect attempts to influence employees' future interactions (e.g. provide employees with interaction tools in a non-prescriptive way).

The study contributes to the current research agenda by testing hypotheses, which explore a number of unresolved issues, critiques and difficulties evident in the CoP approach. These issues refer to the ways that management measures power and conflict shape in the CoP structure. Other issues are related to its relevance for SME's, how CoP's interact with an organization's formal structure, and how successful this approach is in achieving innovation goals. It will also contribute by giving an understanding of the way in which organizations can build effective employee networks.

*Conceptual framework* - The conceptual framework aims to explain why online CoP facilitates internal co-creation. The framework is composed of the link between individuals, CoP, structure and support (see figure 0.1). The central part of the model represents the CoP's virtuous circle, required for internal co-creation. To incorporate individual's autonomy of participating, organizations' individuals are part of this virtuous circle. Research already has provided some evidence that the issues as individual's motivation to contribute and utilize a CoP (supply and demand) will engender interactions between a diverse range of actors. Subsequently, the model shows how the research will rely on these insights to explain CoP in a wider context. In this wider context it takes account of the way a CoP is organized and managed regarding structural elements and issues as size, power and performance. Structure is incorporated because it both enables and constraints CoP's level of interaction. This interaction, in turn, (re)constructs structure. Consistent with the description of the virtuous circle before, a key link between structure and individuals motivation to participate is the way people identify with such structure. Accordingly, managerial support is important for the infrastructure surrounding this virtuous CoP circle. The management can overcome obstacles that may prevent employees from participation and using a CoP. According to the model, all the above issues will influence the level of interaction among those engaged in co-creation. The model shows the relation between online CoP's and co-creation by taking account of the influence and advantages of external factors.

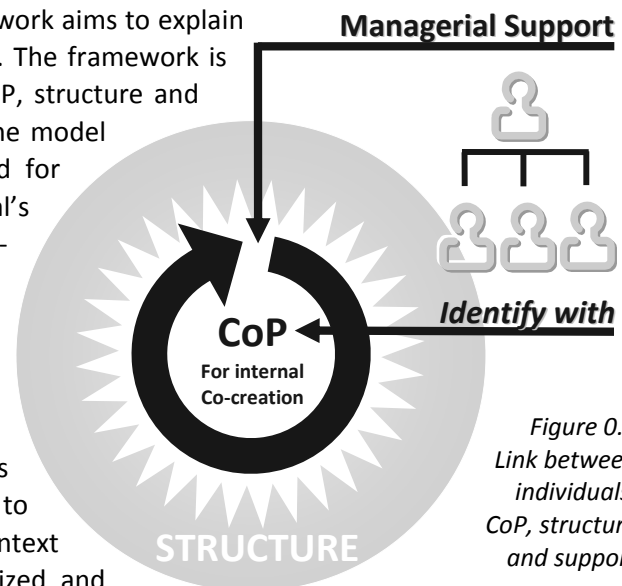


Figure 0.1  
Link between  
individuals,  
CoP, structure  
and support

*Methodology* - The study is aimed at getting more insight into the manner in which an online CoP can be applied for internal co-creation. This exploratory approach to characterize the relation between internal co-creation, CoP and its wider organization shows that the research will generate theory from case study evidence. This means that a case study is used to accomplish a description of CoP and co-creation constructs in order to build theory. The case study is a test of the usefulness of facilitating online CoP to encourage internal co-creation to emerge. It also tests if the found online CoP and their co-creation goal achievement can be explained by the hypotheses and conceptual model. To analyze interactions among participants, Social Network Analysis (SNA) techniques were used. Networks were constructed and calculations were made using Ucinet Software (Borgatti et al. 2002). The analysis of the evolution of the online CoP was divided in two parts: (1) a macro-structural analysis to obtain a global view of the community evolution and highlight the core/periphery (C/P) structure, and a (2) micro-structural analysis to zoom in on particular and interesting areas of the network. The C/P structure divides the network in two distinct subgroups; the core (densely connected actors), and nodes on the periphery (not connected actors). This C/P analysis will also focus on the existence of reciprocated structures, which are essential to encourage interaction to occur. The micro analysis is to understand how structure and managerial actions affect individual actors. For this assessment, the concept of degree centrality was used. Degree centrality



will give the number and direction (out-degree and in-degree) of ties in which each employee is involved. Out-degree is a measure of how influential the actor may be. In-degree examines the extent of which an actor is a receiver of information. To indicate the value, contributions were assessed by evaluating their relevance for co-creation (content analysis).

*Case selection* - The selected case reflected a firm where the CoP process of interest was observable. This made it possible to study the relationships between the components as proposed before. In addition, the limited organization size with about forty-three individuals made it possible to include all of the organization's actors in the analysis, which will enhance the generalizability of the findings.

*Research setting* - The online CoP under study was the result of an attempt by a small-sized insurance company to become a co-creative organization. The online environment was deployed to co-create with (non-)customers about insurances, and to challenge employees about issues for which specialist knowledge is required. Organized around the formal organizational structure, seven community managers were assigned to this online environment. These managers, drawn from different business units, were responsible for running the online system. To encourage individuals to participate, the company rewarded good ideas with tangible gifts (direct material incentive). While the company had also cultivated the online environment for customers, the employers group formed the subject of study. Dispersion of working hours and places makes an online environment useful for these employees. Regarding the individuals, a distinction was made between different user profiles and business units.

*Data* - Interactions in the online CoP are characterized by 'threads' of contributions towards several co-creation challenges. These threads are groups of messages sharing the same subject, which allow the possibility to list the sequence of related messages and contributions. An actor who replies to a threaded list of contributions must take earlier postings into account to develop a coherent answer. That is the reason why a CoP member posting to a thread should be tied to all employees who have previously posted to the same thread. The major data source was based on these threads of interaction. It included data of individuals' network position and performances. In addition, a variety of company documentation was collected and analysed. Direct and indirect management measures were recorded by attending face-to-face editorial meetings among the community managers. Participation activity and related data were collected for a period of nine weeks.

*SNA* - During the period of study, the community managers took several measures to encourage CoP development. To analyse their effects, the SNA was structured around these measures. The density and reciprocity measures of the macro analysis showed a C/P structure with a small core and a low level of interaction. The micro-structural analysis allowed the identification of groups of non-, moderate and active users. As shown by the analysis, the group of moderate and active users was constantly changing. The core of active users was rather small, which means that only a small group of users participated. The centrality measures of the micro-structural analysis showed that positional advantages were not in accordance with the formal organization structure. It was remarkable that the majority of participants are characterized by changes in out-degree relative to the number of ideas contributed. Such a pattern suggests that members simply participate to receive rewards.

All threads within the CoP since establishment and the different user profiles and business units were combined in one figure. The figure showed that after four months of both direct and indirect management intervention, most interactions are between employees from different departments and hierarchic level. However, not all groups of employees were present. Active users are in general surrounded by moderate and active users, and attendance of the weekly editorial meeting has a positive influence on participation. Regarding the content analysis, 94% of the contributed ideas could be assigned to exploitation, while only 6% could be assigned to exploration.

*Results and main findings* - The study results, grouped according to the four hypotheses:

- H1* The CoP of the case study setting does not offer a place free from power. Namely, the particular online CoP is restricted, controlled, and limited by several power constructs, which arise from the formal organization. The disagreement with the first hypothesis also emerged from the finding that, besides a core of regular contributors from different departments, there are still groups of non-participating individuals. In particular, freelancers, temporary workers, trainees, the evening shift and people from the ICT department have less commitment to identify themselves with the system. A possible explanation for why these particular groups of people did not respond to any request for taking part within the co-creation process is that the request for help is not from people in their direct environment or with a higher position (more power) than themselves.
- H2* Furthermore, the case study's CoP network with a small and fluctuating group of active users had a likely negatively effect on the overall performance and continuity. The content analysis confirmed that an online CoP of employees is mainly characterized by exploitative types of ideas.
- H3* An online CoP is suitable for implementation in a SME.
- H4* Indirect management attempts affected employees' participation patterns to larger extent as compared to direct attempts. However, the analysis results did not agree with the suggested effectiveness of these attempts. The effects were of short duration, and did not result in a group of active users, which is sufficient to realise a productive online CoP.

*Conclusions* - The case study provided some evidence that online CoP's are a promising source of internal co-creation. However, there are several unresolved issues to make implementation of an online CoP a valuable contribution for the facilitation of internal co-creation. These are issues related to the involvement of employees with different function profiles, as well as the encouragement of a sufficient group of active users who co-create on an ongoing basis. Still, the conceptual model is a valuable starting point to provide understanding of the dynamics of employee's centred innovation.

*Limitations* - One limitation is the enormous volume of research in the field of learning and knowledge management. This made it impossible to build a framework which captures everything. Previous research evidence for issues as motivation and trust made it possible to come towards this limitation. Another limitation relates to the problem of creating a continuous flow of co-creation. The problem is too big to be solved by a model which for testing made use of only one case study.

*Managerial implications* - The implications focus on stimulating co-creation. The important ones are:

- Community managers need to act, on an ongoing basis, to sustain development of the online CoP.
- One should turn to a policy which will serve several groups of actors with co-creation
- The reward systems, the way of giving feedback, and recognition of contributions all need to be in accordance with the CoP features and the co-creation building blocks. In addition, it needs to be balanced between all parties.
- Both direct and indirect regulation and motivation instruments are needed. Indirect measures have influence on participation patterns. Direct measures are to maintain the content quality.

Despite the difficulties in developing CoP's and encouraging all employees to participate and interact within the community, organizations concerned with co-creation should still consider using an online CoP that can connect employees from several business departments. The problem is not the technology. Instead, managers should pay attention to encouraging interactions.

*Further research* - This research resulted in a framework which gave a better overall perspective compared to other studies. One of the main tasks ahead is the development of more accurate parameters for the model. In addition, further research should take issues as time and proximity into account. The issue of time relates to slack time which may prevent employees from participation. The issue of proximity relates to the finding that the physical closeness of active users has a positive influence on participation. It will also be complementary to repeat the study in other online CoP's.

# Table of Contents

Preface .....	i
Executive Summary .....	ii
List of figures .....	ix
List of Tables.....	ix
<b>1. Introduction .....</b>	<b>1</b>
1.1 Modelling Query .....	1
1.1.1 Study purpose .....	1
1.1.2 Scope of study.....	2
1.1.3 Limitations of previous studies .....	3
1.1.4 Research questions .....	3
1.2 Basic principles of Communities of Practice .....	4
1.2.1 Recognition of Communities of Practice.....	4
1.2.2 Cultivating Communities of Practice .....	4
1.2.3 Different types of Communities of Practice.....	5
1.3 Online Communities of Practice .....	5
1.3.1 Online Communities of Practice defined .....	6
1.3.2 Characteristics of an online community of practice .....	6
1.3.3 Configuration of online communities of practice .....	7
1.4 A value chain of interaction .....	8
1.4.1 Online CoP integrated in the value chain .....	8
1.4.2 A virtuous circle of interaction.....	9
1.4.3 A focus on intra-organizational processes .....	9
1.4.4 Relativize online activities.....	9
1.5 Report Structure .....	10
<b>2. Literature Review .....</b>	<b>11</b>
2.1 The field of study .....	11
2.1.1 The process of learning.....	12
2.1.2 The knowledge content .....	12
2.1.3 The research domain of Communities of Practice.....	13
2.1.4 Major source to investigate Communities of Practice.....	13
2.2 Discourses in Knowledge Management.....	13
2.2.1 Epistemology (Duality versus Dualism).....	14
2.2.2 Social order (Consensus versus Dissensus).....	16
2.2.3 Dialogic Discourse and Constructivist Discourse .....	16
2.3 The motivational and management side of knowledge sharing.....	17
2.3.1 Willingness to share knowledge .....	18
1) Trust.....	19
2) Mutual understanding .....	20
2.3.2 Willingness to use the community of practice.....	21
2.4 Structural features .....	21
2.5 Hypothesis .....	22
2.5.1 Power .....	22
2.5.2 Performance and Innovation .....	23
2.5.3 Small and medium-sized enterprises .....	24
2.5.4 The role of management in the process of creativity and innovation.....	25
<b>3. Conceptual Model.....</b>	<b>27</b>
3.1 Main variables.....	27
3.2 Basic assumptions.....	28

<b>4. Methodology</b> .....	<b>29</b>
4.1. Case study approach .....	29
4.2 Social Network Analysis .....	29
4.2.1 Social CoP network .....	29
4.2.2 Co-creation Threads.....	30
4.2.3 Constructing the social network .....	30
4.2.4 Macro and micro-structural analysis .....	30
4.2.5 Content analysis.....	32
4.3 Data collection .....	32
<b>5. Research Setting</b> .....	<b>33</b>
5.1 Case selection .....	33
5.2 Case description.....	33
5.2.1 Organization structure.....	34
5.2.2 Community Managers.....	35
5.2.3 Internal co-creation .....	35
5.2.4 Launch.....	36
5.3 Data collection .....	36
<b>6. Social Network Analysis</b> .....	<b>37</b>
6.1 Point of departure .....	37
6.2 Structure SNA.....	37
6.3 Core/Periphery structure [macro] .....	39
6.3.1 Network Status online CoP on 30 April 2010.....	39
6.4 Legitimate Peripheral Participation [micro].....	40
6.4.1 Degree centrality .....	41
6.4.2 Groups of users .....	41
6.4.3 Effects of direct and indirect management measures.....	42
6.4.4 Influences around management attempts .....	43
6.5 Content analysis.....	44
<b>7. Results and Main findings</b> .....	<b>45</b>
7.1 Power .....	45
7.2 Performance and Innovation .....	45
7.3 Size .....	46
7.4 Management.....	46
<b>8. Discussion and Managerial Implications</b> .....	<b>47</b>
8.1 Conclusions .....	48
8.2 Limitations .....	49
8.3 Managerial implications.....	49
<b>9. Directions for Further Research</b> .....	<b>52</b>
<b>References</b> .....	<b>53</b>
<b>Notes</b> .....	<b>56</b>
<b>Appendix I. Office Plan</b> .....	<b>I</b>
<b>Appendix II. Data</b> .....	<b>III</b>
<b>Appendix III. Degree Centrality</b> .....	<b>IX</b>

## List of figures

---

Figure 0.1	Link between individuals, CoP, structure and support .....	iv
Figure 1.1	Online CoP integrated within the value chain of an organization .....	8
Figure 2.1	Map of key learning and knowledge topics related to communities of practice.....	11
Figure 2.2	Four discourses of knowledge (management).....	14
Figure 3.1	Link between individuals, CoP, structure and support .....	27
Figure 5.1	Organization Chart Self-Assured on 1 March 2010.....	34
Figure 6.1	Network relations distributed on department level (30 April 2010) .....	40
Figure AI.1	Network relations distributed on work place .....	I
Figure AI.2	Office Plan Self-Assured (30 April 2010) .....	II

## List of Tables

---

Table 1.1	Key characteristics of a online CoP of employees.....	7
Table 6.1	Community Managers direct and indirect attempts over time .....	38
Table 6.2	Core/Periphery (C/P) structure (March 2010 – April 2010) .....	39
Table 6.3	Groups of users .....	41
Table 6.4	Effects of community managers direct and indirect attempts over time .....	43
Table 6.5	Results of Content analysis .....	44
Table All.1	Network relations among employees on 2 March 2010.....	III
Table All.2	Network relations among employees on 9 March 2010.....	IV
Table All.3	Network relations among employees on 17 March 2010.....	IV
Table All.4	Network relations among employees on 23 March 2010.....	V
Table All.5	Network relations among employees on 31 March 2010.....	V
Table All.6	Network relations among employees on 7 April 2010.....	VI
Table All.7	Network relations among employees on 9 April 2010.....	VI
Table All.8	Network relations among employees on 14 April 2010.....	VII
Table All.9	Network relations among employees on 22 April 2010.....	VII
Table All.10	Network relations among employees on 26 April 2010.....	VIII
Table All.11	Network relations among employees on 30 April 2010.....	VIII
Table All.1	Degree centrality.....	X

# **1. Introduction**

There is a consensus in the literature on knowledge management that high involvement of employees can and does result in enhanced performance (e.g. van Wijk et al. 2008, Bogner and Bansal 2007). General agreement about the advantages of employee involvement has made internal knowledge connections of great importance for decision-makers in evaluating processes and drafting policies. Rather than solely rely on innovation specialists in formal departments, like R&D or marketing, decision makers recognize that much of the knowledge lies also in the experience and ideas of 'ordinary' employees. Thus, it is worth to utilize employee's underlying skills and problem solving abilities across the entire organization (Tidd and Bessant 2009, p.260-1). Instead of considering just employee involvement<sup>1</sup>, the main problem addressed in the more recent knowledge management literature is from another type. Namely, present studies try to understand the way in which organizations can build more effective employee networks within organizations (Tidd and Bessant 2009, p.294). These networks on the inside are to ensure a high level of employee driven innovations and to benefit from knowledge that exists within firm boundaries (Tidd and Bessant 2009, p.115-7; van Wijk, et al. 2008). This view reflects the internal form of the business concept of co-creation<sup>2</sup>, which is the subject under study. Internal co-creation is aimed at enhancing innovation by enabling interaction and co-development between employees. Implementation of co-creation inside the organization is required to become a co-creative organization where value is created through interaction between employees, customers and partners (Ramaswamy 2009, p.36).

*The next section describes what the present study is trying to achieve, followed by the area the study deals with, the limitations of previous studies and the questions to investigate.*

## **1.1 Modelling Query**

The research is based on a request from the Dutch company RedesignMe. By facilitating community co-creation this company supports organizations in utilizing customers' competences in articulating their needs. In addition, they facilitate the set-up of online communities in which an organization can start a dialogue with their target groups. The research aims at more insight into the manner in which the current technique can be applied within internal organizational settings.

### ***1.1.1 Study purpose***

The objective of the study is to develop a conceptual framework for understanding and managing internal co-creation in an online setting. A case study will be utilized to illustrate practical application of the framework. In this manner, the study should provide a valuable mechanism which an organization can and should effectively use in order to realize internal co-creation. Both online community designers and decision makers will benefit from this research.

### **1.1.2 Scope of study**

To address the problem of internal employee linkages, this study will redirect<sup>3</sup> the original concept of Communities of Practice (hereafter CoP). From the broad range of literature on learning and knowledge management using the terminology of CoP (Hughes et al. 2007), this research gives special attention to the use of online interactive technologies which enable CoP's to emerge. It is expected that an online CoP with employees from different parts of an organization offers a strategy to facilitate the potential for internal co-creation. This belief arises from the insight that CoP creation may provide the building blocks that make processes more co-creative. To clarify this argumentation, the following gives a brief description of the way in which the elements of CoP are connected to the building blocks of co-creation.

The existence of both (1) a sense of collective identity and (2) a significant common knowledge base indicates that a CoP has been formed. As a direct result of both these elements, a CoP will make access and exchange of knowledge across different parts of an organization easier and less problematic. Regarding the issue of identity, perceived or real similarities of interest will simplify the process of knowledge sharing, resulting in prevention for undesirable conflict<sup>4</sup>. Regarding the second factor, the existence of common goals, assumptions and interpretative frameworks significantly decrease the difficulty of appreciating the knowledge of another community. The sharing of knowledge between different employee communities is much more complex, difficult and problematic by a lack of both these elements. Therefore, the translation of individual insights and knowledge into collective knowledge and organizational capability is more likely to be supported and strengthened by work groups, such as CoP's (Tidd and Bessant 2009, p.548-550; Bogenrieder and Nooteboom 2004, p.288; Lam 2005, p.124). CoP platforms could, in turn, provide the building blocks that make the process of internal co-creation more likely to happen. Based on the author's interpretation of the internal co-creation concept found in the literature<sup>5</sup>, these building blocks are;

- (i) Access to information and tools needed for participation,
- (ii) Reveal information and feedback to influence individuals' willingness to participate,
- (iii) Transparency of information to enhance one's ability to make informed choices, and
- (iv) A dialogue which encourages both knowledge sharing and a shared level of understanding, in order to supply knowledge that the company can use to innovate.

In line with the purpose to develop a conceptual framework for internal co-creation, the study will evaluate to what extent an organization can use such a CoP mechanism. To further clarify the reasoning that a CoP mechanism could make employees more active participants as co-developers of products or services, the remainder of this introduction will discuss what constitutes CoP.

### **1.1.3 Limitations of previous studies**

Access to online environments became affordable in the early 1990's, which is the same period in which the CoP concept was developed. Since then, the impact of information and communication technologies (ICT) on the conduct of CoP has become a subject of considerable interest within managerial and academic circles (Hughes et al. 2007, p.13-4; Porter 2001). Here, it should be mentioned that there is a wide system of naming for CoP conducted via online interactive technologies. Researchers use terms such as; 'virtual', 'computer-mediated', 'online', 'electronic' and 'distributed' communities (Jewson 2007b, p.158). Studies on online CoP's have been focused on communities within organizational settings, a particular profession or between organizational settings (Hara et al. 2009, p.741; Dubé et al. 2006). Existing studies, however, show a minimum of knowledge about the effectiveness of an online CoP mechanism for utilizing employees' abilities and, in turn, to contribute to innovation (Amin and Roberts 2008, p.364; Ardichvili et al. 2003, p.64). This fact makes it difficult to provide online community designers and decision makers with a useful framework to effectively describe, design, understand and manage this kind of CoP. Also, it will be difficult to give consistent advice about implementing CoP interventions. Given the small number of models that have addressed the effectiveness of online CoP's, reference material for comparison is scarce. However, it is a unique opportunity to contribute to this research agenda.

### **1.1.4 Research questions**

The study will focus on the following main research question:

#### ***Main question***

*What are the important managerial implications to make the implementation of an online CoP a valuable contribution for the facilitation of internal co-creation?*

To measure CoP's performance in offering a valuable contribution for internal co-creation, the following five criteria are used to define a successful CoP (Bourhis and Dubé 2010, p.5): (1) the extent to which the CoP has met its objective of internal co-creation, (2) the value it created for the organization, (3) the benefits it provided to its members, (4) member satisfaction and (5) level of interactions among CoP members<sup>6</sup>. Criteria 1, 2 and 3 refers to the CoP's actual impact, criteria 4 and 5 refers to the process by which the results were obtained. To answer the main question properly, the study will provide an answer to the following sub questions:

#### ***Sub questions***

*(1) Why does online CoP facilitate internal co-creation within companies?*

*(2) How does online CoP facilitate internal co-creation within companies?*

*The following two sections discuss the time lines within the area on CoP. It will show why the CoP concept can provide conceptual depth on the social aspects of managing internal co-creation.*



## **1.2 Basic principles of Communities of Practice**

As will be shown in the following, the notion on CoP stresses the critical role of the use of a group based structure to improve collective learning, knowledge flows and innovation.

### ***1.2.1 Recognition of Communities of Practice***

In the early 1990's, the concept of CoP first emerged as an informal label for a set of ideas developed in the process to analyze and criticize all kinds of learning theories (Lave 2008, p.283). It escaped seminars and presentations at the Institute for Research and Learning in Palo Alto (California) by a report written by Lave and Wenger and published in 1990 (Duguid 2008, p.2). Subsequently, Lave and Wenger (1991) transformed their ideas into a book named '*Situated Learning: Legitimate Peripheral Participation*'. This book was intended as both a critique of conventional theories of learning, doing, and social change and as a mean of analysing situations of which learning was of interest (Lave 2008, p.283). The work suggests that learning is a process of jointly participating in a CoP. Since the publication, further work during the 1990's (e.g. Wenger 1998; Brown and Duguid 1991, 1998) went on to suggest that CoP are, besides essential for learning, also a rich source of knowledge creation (Amin and Roberts 2008, p.354). Thus, the more recent notion of CoP suggests that it provides an important place where both intense learning and knowledge creation may develop. The notion on CoP further suggests that organizational members construct their shared identities and perspectives through 'practice'. Practice involves a shared work experience that a group of people pursue by a shared task, process or the need to solve a problem. This way of interacting provides a social activity in which shared perspectives, experiences and cognitive repertoires<sup>7</sup> develop to facilitate knowledge sharing and transfer to occur (Lam 2005 p.125; Mutch 2003, p.388).

### ***1.2.2 Cultivating Communities of Practice***

CoP's are argued to underpin innovation processes and facilitate learning and knowledge sharing in organizations (Hislop 2009, p.172-3). The suggested number of advantages resulted in increasingly company attempts to design and manage CoP. Recent implications show that management, as coordinators of organizational activity, likely have a crucial role in supporting and constructing a CoP (Swan et al. 2002, p.841-2). Also later work by Wenger in 2002, this time with McDermott and Snyder as co-authors, shows a shift towards the position of the work of a manager. They suggest that CoP can be cultivated and leveraged for strategic advantage. In this work they mention the importance of a technological infrastructure to launch CoP and to manage their activities (Wenger et al. 2002, p.197). In line with this view, an increasing number of consultancy firms are offering to improve their clients' abilities in managing knowledge processes by identifying or establishing a CoP (Roberts 2006, p.626). Successfully installing a CoP gives the impression that one will advance

organizational goals. However, there is no guaranteeing whether they further organizational goals. At times, they might even challenge or undermine these goals (Duguid 2008, p.5-7).

### **1.2.3 Different types of Communities of Practice**

As an active academic construct, CoP is susceptible to constant change and redirection. Those who are currently engaged in construction of CoP are entitled to use the term as they find it (Duguid 2008, p.1). The difficulty is that the generic way CoP usually is defined means that it can exist almost everywhere (Hislop 2009, p.177). For example, Wenger et al. (2002, p.4) characterize in their volume CoP as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis”. This characterization is very broad, with a wide scope for different interpretations about what it means. Because of these and others broad terminologies, the concept has been applied so widely that it seems in danger of sliding into a catch-all descriptive term (Hughes et al. 2007, p.2-4). As already suggested by a number of writers (Bogenrieder and Nooteboom 2004, p.288; Roberts 2006, p.631,636; Dubé et al. 2006, p.70; Amin and Roberts 2008, p.365), it is becoming increasingly important to differentiate between different types of CoP as they may have quite different aims, characteristics, outcomes and dilemmas.

*The next section will describe the type of CoP on which the research focuses on, namely online CoP's. This differentiation will serve as a basis for a deeper understanding of internal co-creation.*

### **1.3 Online Communities of Practice**

---

From the many different types of CoP to describe practice, learning, and knowing this research focuses on CoP's in an online setting and within organizational boundaries. A good example is a challenge in form of a creative assignment, involving employees to interact with each other on an online basis. This type of CoP is based on characteristics similar to classical forms of CoP, such as the presence of highly motivated people, problem orientation, and coming together for the explicit purpose of generating new knowledge. The social interaction in online communities, however, is different from the dynamics in non-virtual environments. Instead of enabling face-to-face interactions, an online CoP relies heavily on ICT to enable interaction at the interface between face and screen. Moving a CoP online, therefore, can facilitate networking among dispersed employees without the need to be in direct contact. In this way, people can focus more on generating ideas. In addition to dispersion of employees, factors such as busy schedules make communicating through ICT more efficient than face-to-face meetings. In this way, it offers the possibility to reduce or eliminate expensive and time consuming face-to-face meetings (Amin and Roberts 2008, p.363; Bourhis and Dubé 2010, p.2; Toral et al. 2010, p.296).

*Other factors which explain why an online CoP is likely to facilitate the potential for internal co-creation are made clear in the following sub sections.*

### **1.3.1 Online Communities of Practice defined**

The focus on a type of CoP which is to some extent different from the more classical forms makes it necessary to describe the construct's precise meaning. Within the context of this research, an online CoP of employees is defined as:

#### ***Online Community of Practice of employees***

*An online CoP of employees is an informal group of individuals with different knowledge sets who share a concern, a problem, or a very strong interest about a topic for innovation. By interacting on an ongoing basis, this group deepens both their own and an organization's insights into one of these areas. Interaction takes place in an environment which is facilitated by Internet-based technologies (based on a definition by Wenger et al. 2002, p.4 as quoted before).*

What is central in this definition is that knowledge and expertise are held by individual employees, but can further be deepened by online interactions between them. In the context of this research, these interactions relate to co-creation challenges. Co-creation challenges are guided by shared notions of validity between participants and contributions from a core group. A community manager - preferably the originator of the challenge - could actively direct the flow of contributions (Amin and Roberts 2008, p.363). The group of employees is typically informal in nature, which describes that this entity is not a part of the formal organization structure (Hislop 2009, p.166; Ardichvili et al. 2003, p.65). Unlike formalized instructions, shared attention binds employees together. It is this sharing of some common knowledge, both technical and organizational, that facilitates the transfer of knowledge within the CoP (Kogut and Zander 1992, p.389). How the definition reflects the building blocks of internal co-creation (see section 1.1.2) is made clear in the following subsection.

### **1.3.2 Characteristics of an online community of practice**

This section yields an inventory of some basic structural characteristics which an online CoP arguably requires to function at all. In addition, it identifies those characteristics which could make internal co-creation more likely to happen. Table 1.1 (page 7) gives an overview of four distinctive properties of online CoP's: (1) nature of social interaction that sustains co-creation; (2) knowledge used and produced; (3) kind of innovation undertaken; and (4) the organizational dynamic of interaction. This description is adopted from a typology by Amin and Roberts (2008) who reviewed over three-hundred publications on CoP's and related practice-based<sup>8</sup> approaches. The proposed specifications make it possible to identify the concepts' relation to the building blocks of internal co-creation (see section 1.1.2). In the first place, the 'social interaction' property with characteristics as strong ties and reputational trust, will likely facilitate an environment where all four building blocks can develop. The 'knowledge' and 'innovation' property reflects the intended results of the dialogue building block. Namely, it describes the kind of knowledge a CoP will make available for innovation.

The final property shows how technology can provide the facilitation of all four building blocks. This property suggests that an organization's role is mainly to provide the community with the necessary information and tools for interaction. This view is in line with recent implications (see section 1.2.2) that an organization's management has a crucial role in supporting a CoP. All characteristics as presented in table 1.1 are discussed within this research (see section numbers at the bottom). The nature of ties, kind of innovation and organizational dynamic are already discussed in the next section.

Social interaction			Type of knowledge	Kind of Innovation	Organizational dynamic
Proximity of communication	Temporal aspects	Nature of social ties			
Social interaction mediated through technology; Distanciated communication	Long and short lived; Developing through fast and asynchronous interaction	Weak [⇒Strong] social ties; Reputational trust; Object orientation [High density]	Codified + Tacit; Exploratory and exploitative	Incremental [↑] and radical [↓]	Self regulating [virtuous circle]; Managed by technological tools; Open for knowledge from other communities
<b>Discussed in section(s)</b>					
1.3, 1.4, 2.3	1.4, 1.4.2	1.3.3, 2.3, 5.1	1.4.1/4, 2.2.1	1.3.3, 2..5.2	2.3, 2.4, 2..5.4, 1.4.2

Table 1.1 Key characteristics of a online CoP of employees  
(Amin and Roberts 2008, p.357; section overview and texts in brackets are authors own contribution)

### 1.3.3 Configuration of online communities of practice

An online CoP of employees can be characterized as a relatively closed interest group<sup>9</sup> facing specific problems (Amin and Roberts 2008, p.363). Despite the characterization of a closed group, it should be mentioned that CoP's are no stable or static entities; they evolve over time as new members join and others leave (Roberts 2006, p.625). Thus, the boundary between a CoP and the wider organization is not fixed, but open. On intra-organizational level, the relationships between employees from different departments are characterized by the absence of strong inter-personal ties<sup>10</sup> (Amin and Roberts 2008, p.363). Accumulated evidence suggests that strong ties at the intra-organizational level influence knowledge transfer to increase (van Wijk et al. 2008, p.835-841). Facilitated by internet-based technology, an online CoP allows initially the creation of weak ties among those dispersed individuals (Toral et al. 2010, p.296). Weak ties characterize distant and infrequent relationships. These ties are efficient for knowledge sharing because they provide access to novel information by bringing together otherwise disconnected individuals (Hansen 1999, p.82). And according to the weak-tie theory originally advanced by Granovetter (1973), people receive crucial information from individuals whose very existence they have forgotten. Thus, when searching for new information or advice, an organization will benefit more from those weak ties (Ardichvili et al. 2003, p.73). It is not necessary that all participants interact intensely with each other, or know each other very well. Increasing interaction may result in overload, in the course of which employees experience problems in managing the large number of knowledge sources (van Wijk et al. 2008,

p.840-3). The less they interact, however, the more their configuration looks like a set of interrelated practices rather than a single CoP (Wenger 1998, p.125-6). Namely, it is through participation (both action as well as connection) that practices develop (Handley et al. 2006, p.643). The successful function of an online CoP, therefore, requires an active participation of a substantial part (ideally all) of its members (Ardichvili et al. 2003, p.65). This active participation will result in frequency of interaction and an increase of strong ties. On condition that all employees are involved, indicators that an online CoP has formed would include a high density and strength of ties, with a certain durability and stability of relations (Bogenrieder and Nootboom 2004, p.293-4). This description of a formed CoP is an addition to the weak social ties characteristic as given by Amin and Roberts (2008) in table 1.1. Here, it should be noted that a dense network with strong ties will yield the danger of lack of radical innovation (marked by arrows in the table). Namely, in dense networks there are many ties to maintain while they yield little added value in access to new knowledge (Bogenrieder and Nootboom 2004, p.292-5). In the second chapter it will be further explained why this may be good for incremental innovation, but weaken the scope for radical innovation.

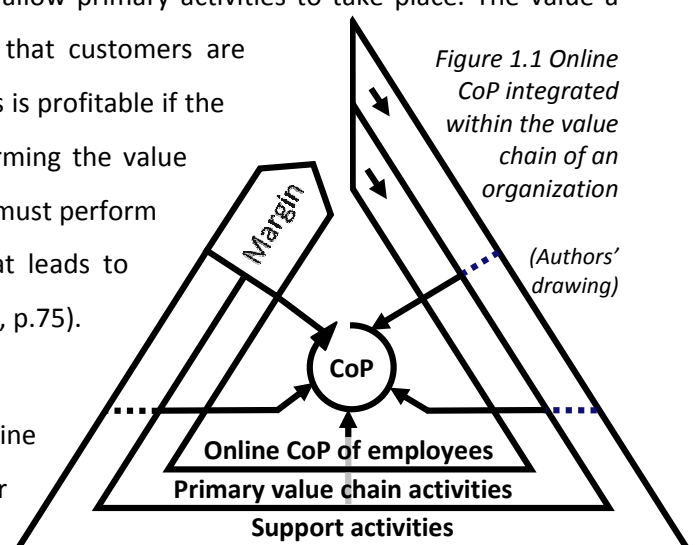
*As will be described in the next section, the focus of this research is on linkages that connect value activities inside a company, and where employees are a source of knowledge.*

#### **1.4 A value chain of interaction**

An important concept that can illustrate the potential role CoP and internal co-creation can play in gaining competitive advantage is the value chain. This concept, introduced by Porter in 1985, divides an organization's activities, called value activities, into the (i) primary and (ii) support activities it performs. Primary value chain activities are the set of activities through which a product or service is created and delivered. These activities are dominated by the stage model, where processes are characterized as being divisible into a number of discrete stages. The support activities provide the inputs and infrastructure (e.g. accounting) that allow primary activities to take place. The value a company creates is measured by the amount that customers are willing to pay for a product or service. A business is profitable if the value (incl. margin) exceeds the costs of performing the value activities. To gain competitive advantage, a firm must perform these activities at lower costs or in a way that leads to differentiation and a premium price (Porter 1985, p.75).

##### **1.4.1 Online CoP integrated in value chain**

As illustrated schematically in figure 1.1, an online CoP can be drawn in parallel with the linear model of value creation. In line with the



argument that an online CoP facilitates the potential for internal co-creation, an internal form of co-creation can therefore be seen as an extension of the linear model. This extension includes the creation of an environment where all employees are encouraged to question and challenge, and encompasses a way to improve organizational performance in the field of knowledge sharing and creation. Through deploying an online CoP which facilitates a parallel system of innovation, it is expected that value chain stages can become more interactive in nature. If value chain stages are interactive, it means that employees of discrete stages communicate with each other, and are actively inferring and constructing meaning (Hislop 2009, p.45). Interactive processes should enable employees to utilize knowledge which is spread across the entire organization, in order to perform activities at lower costs or in a way that leads to differentiation and more value (margin).

#### ***1.4.2 A virtuous circle of interaction***

The core of figure 1.1 represents the virtuous circle<sup>11</sup> which is present in all CoP's; where more people participate, more co-creation occurs. The more people identify with and become prominent within a group, the more they become motivated to participate even further, and so forth. Unless an organizational group exhibits the behaviour of the virtuous circle, it cannot be defined as a CoP (Thompson 2005, p.152). Research must demonstrate if an online CoP approach will engender increasingly extensive and repeated interactions between diverse ranges of actors through the value chain. In addition, it should demonstrate if this approach can ensure that employees from different business units and functions share and build on each other ideas. An idea can be characterized as a notion, perspective or stepping stone towards some useful solution (Tassoul 2009, p.26).

#### ***1.4.3 A focus on intra-organizational processes***

The value chain of an organization is embedded in a larger stream of activities, which includes the value chains of suppliers and buyers. Several organizations also undertake external activities regarding interaction with other professionals or users (the public) (Porter 1985, p.76-9). For the sake of a focus on the internal co-creation dynamics around online CoP's of employees, these external processes will be excluded from this research. For this research, therefore, the point of departure is that co-creation takes place exclusively within the boundaries of the organization.

#### ***1.4.4 Relativize online activities<sup>12</sup>***

The power of online interactive technologies to form a CoP must be kept in perspective (Hara 2007, p.86; Jewson 2007b, p.161-3). Namely, online applications are neither the only influence on the integration of activities throughout the value chain. Many traditional sources of competitive advantage, such as skills and investments, remain intact. Online activities do not eliminate the need for those conventional factors, but will at best amplify their importance. This complementary between online activities and traditional activities arises for a number of reasons (Porter 2001);

*First*, introducing online applications in one activity often places greater demands on physical demands elsewhere in the value chain. Input from employees to optimize product design, for example, makes product development more demanding.

*Second*, using an online environment can have systemic consequences, requiring new or enhanced physical activities (often unanticipated). An online CoP of employees can greatly increase the stream of information, but they also can flood them with too much information. The added back-end costs, in particular for physical activities to store and analyze the flood of information, can end up outweighing the up-front savings. These systemic effects underscore the fact that an online application is not a stand-alone technology; it should be integrated into the overall value chain.

*Third*, while an online application can link many different parties, knowledge transfer is restricted to codified knowledge (Hislop 2005, p.110; Porter 2001, p.125). Given that the online CoP will be employed within a real live business environment, there is still the ability to build familiarity and trust by means of face-to-face interactions (Amin and Roberts 2008, p.364). Thus, the online focus does not sacrifice the tacit dimension of knowledge<sup>13</sup>. This is in accordance with the typology as in table 1.1. In addition, it is in accordance with the theoretical perspective of this study which views knowledge as two interrelated aspects of tacit and codified knowledge (see section 2.2.1).

Traditional activities can compensate for the limits above, just as online activities can compensate for the shortcomings of traditional methods (e.g. prevent for high costs of face-to-face meetings). Thus, traditional activities and an online application can benefit each other. By presenting the online CoP as a complement, rather than a 'cannibal', realizing internal co-creation requires building on proven principles. Therefore, using an online CoP approach strategically into an established company can especially create advantages by leveraging existing strengths of employees (Porter 2001).

## **1.5 Report Structure**

The remainder of this report is organised as follows. In addition to the described opportunity of an online CoP to facilitate internal co-creation, chapter two presents the literature review of this concept. Chapter three draws a conceptual framework for dealing with internal co-creation. The system of methods and principles for carrying out the analysis is described in chapter four. The fifth chapter describes the empirical context of the study, which is an online CoP in a case study. By analysing the social network dynamics of the online CoP of the case study, chapter six shapes the main interaction effects in this system. The results and main findings are presented in chapter six, followed by verification and validation of the model. Chapter seven discusses the results in more detail. From the analysis, chapter eight draws a conclusion and presents management implications. The final chapter identifies areas for further research.

## 2. Literature Review

*This chapter discusses and analyses the dynamics of CoP and how it is embedded within the literature of learning and the literature of knowledge management in particular.*

For understanding and managing internal co-creation between employees of a particular organization, three related aspects need further consideration (Bogenrieder and Nootboom 2004, p.288). *First*, the sources of the key concepts in the knowledge management field covered by this study need further explanation (sections 2.1 - 2.2). *Second*, the motivational and management side should be considered. Paying attention to both aspects is relevant to overcome obstacles that may prevent employees from participation and using a CoP for co-creation (section 2.3). *Third*, structural features are discussed because they affect both the management and ability to participate well in an online CoP (section 2.4). So, much of the first part of the literature review is devoted to discussing the theory. Next, the chapter turns to motivational and management issues related to one's willingness to participate and use the CoP. This part is followed by the structural features that are both the basis and the result of processes of interaction. The final section (2.5) is an addition to the discussion of the three related aspects. This section yields an inventory of a set of hypothesis concerning how the CoP characteristics outlined in chapter one affect the potential for internal co-creation.

### 2.1 The field of study

Based on simplification and mapping by Easterby-Smith and Leyles (2003, p.2-4) in their handbook of organizational learning and knowledge management, this section shows how the concept of CoP is embedded in the literature. As shown in figure 2.1, the dichotomies of theory/practice and content/process are used to organize the mapping. Accordingly, one can make a distinction between organizational learning, the learning organization, organizational knowledge and knowledge management. The dichotomy of theory and practice follows the concerns of academics against those

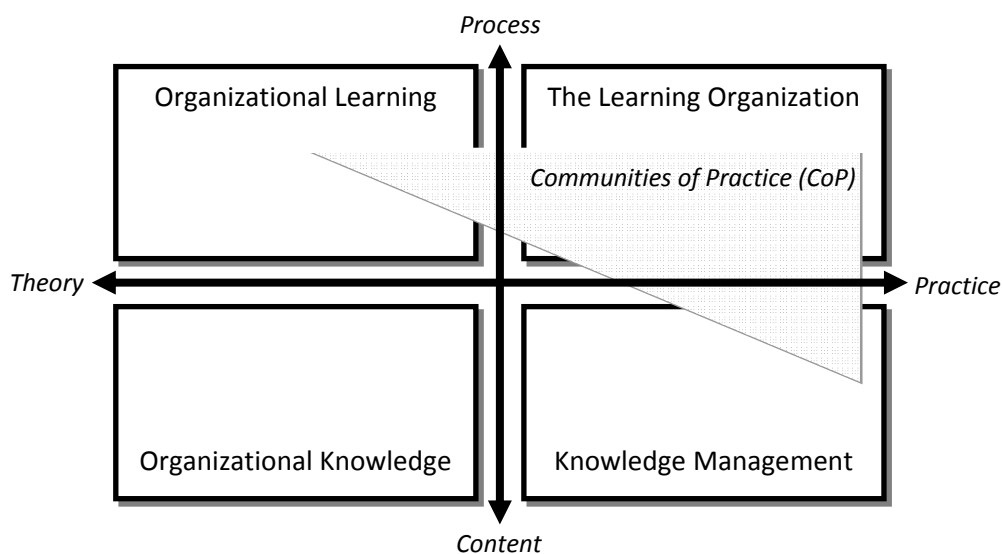


Figure 2.1 Map of key learning and knowledge topics related to communities of practice (Easterby-Smith and Leyles 2003, p.3; Communities of Practice 'triangle' is authors own contribution)



of practitioners. The dichotomy between learning and knowledge follows from the difference that knowledge is the content that the organization possesses, and learning is the process whereby the organization acquires this knowledge.

*Subsections 2.1.1 and 2.1.2 describe the difference between the learning and knowledge divisions in more detail. This review is followed by a description of the disciplinary perspectives underlying the research domain of CoP in subsection 2.1.3. Subsection 2.1.4 concludes with an assessment of the particular perspective which will be the focus on the present study.*

### **2.1.1 The process of learning**

The distinction between organizational learning and learning organization can be as best explained by the examination between these two streams as made by Tsang (1997). According to Tsang (1997, p.74-5), organizational learning refers to the study of certain types of learning processes that take place within an organization, while the learning organization refers to a particular type of organization in itself. Organizational learning is mainly from an academic point of view. Conversely, publications on the learning organization are often based on the authors' consulting experience rather than systematic data collection and rigorous research. Seldom do these practitioner authors explain their research methodology, possibly due to the fact that they are directed to practitioners instead of academics (Tsang 1997, p.79, 85). Organizational learning is essential to have an understanding of the relationships among major variables such as learning effectiveness, organizational structure, formalization, corporate culture and performance. Based on these theoretical studies, one could accomplish prescriptive writings on the learning organization, followed by studying the outcome of implementing these prescriptions in an organization. That is, one investigates the problems associated with implementation and the critical factors that have been neglected when the prescriptions were made (Tsang 1997, p.85-6). Publications about learning organizations generally aim to understand how to create and improve the learning capacity, which give them a more practical and performative agenda compared to the theoretical domain covered by organizational learning (Easterby-Smith and Leyles 2003, p.2)

### **2.1.2 The knowledge content**

The distinction between organizational knowledge and knowledge management is as follows. Organizational knowledge often refers to a philosophical perspective in trying to understand and conceptualize the nature of knowledge that is contained within organizations (Easterby-Smith and Leyles 2003, p.3). Conversely, the relatively novel area of knowledge management often refers to applying a technical approach aimed at creating ways of diffusing and leveraging knowledge in order to enhance organizational performance. In such discussions, the role and design of information technology is often a central issue (Easterby-Smith and Leyles 2003, p.12). Given the novelty of the knowledge management area, it is difficult to offer defined influences other than Nonaka and

Takeuchi (1995) that set the standard for the organizational knowledge field with a rich mixture of concepts and field data, and the literature on organizational learning (Easterby-Smith and Leyles 2003, p.11-2). With the growth of interest in the topic of knowledge management among academics, policy makers, consultants and business people during the mid 1990's, the various perspectives on knowledge (management) that exist in the literature grew too (Hislop 2009, p.1-2). Behind this literature is the complicated issue that - aside from some formal project activities - many of the employees remain unconnected within an organization (Tidd and Bessant 2009, p.294).

### **2.1.3 The research domain of Communities of Practice**

The triangle shown in figure 2.1 indicates the CoP research domain within the wider learning and knowledge framework. The concept of CoP initially offered a critique of conventional theories of learning (see section 1.2.1), therefore one point is connected to the quadrant of organizational learning. Although CoP originally developed in the field of organizational learning, this concept is largely being studied by learning organization and knowledge management practitioners at the same time (Easterby-Smith and Leyles 2003, p.9-11; Vera and Crossan 2003, p.136). By describing knowledge management in terms of the strategic choices organizations can make regarding the information sources for their learning processes, it becomes clear that the fields of the learning and knowledge management are closely related to each other (Schultze and Stabell 2004, p.551-2). Therefore, the CoP concept is located in the learning as well as the knowledge side on the map.

### **2.1.4 Major source to investigate Communities of Practice**

As mentioned, the use of technologies has been closely associated with the development of the majority of knowledge management initiatives (see section 2.1.2). The study's scope on the utilization of CoP's enabled by online interactive technologies makes that the knowledge management field is likely to provide useful insights. A single focus on the knowledge management field, however, is inadequate to have an understanding of the relationships among major variables. Integrating theories on organizational knowledge will likely provide more comprehensive descriptions of the phenomenons of co-creation and CoP. Therefore, an additional focus on theories about knowledge can shed light on both concepts, and is essential for developing a conceptual framework that researchers can test, apply, and adapt.

*This next section opens with an overview of the quite different perspectives on knowledge (management) that exist in the literature. By indicating the CoP research domain within the wider framework, it subsequently zooms in on this domain and specifies the properties of this context.*

## **2.2 Discourses in Knowledge Management**

To characterize the knowledge management literature, the framework developed by Schultze and Stabell (2004) will be used. This framework is in itself an adaptation of Burrell and Morgan's (1979) sociological paradigm about social theory and the study of organizations. The framework by Schultze

and Stabell highlights different theoretical assumptions underlying extant knowledge (management) research. The authors also consider the consequences of these assumptions on the apparently contradictory nature of knowledge and its management (Schultze and Stabell 2004, p.550). Four discourses on knowledge (management) are illustrated in figure 2.2. The figure illustrates the two key dimensions in the knowledge (management) literature, namely (1) epistemology<sup>14</sup> and (2) social order. These dimensions, in turn, produce four distinctive discourses. The solid lines shown in figure 2.2 indicate the research focus of the present study.

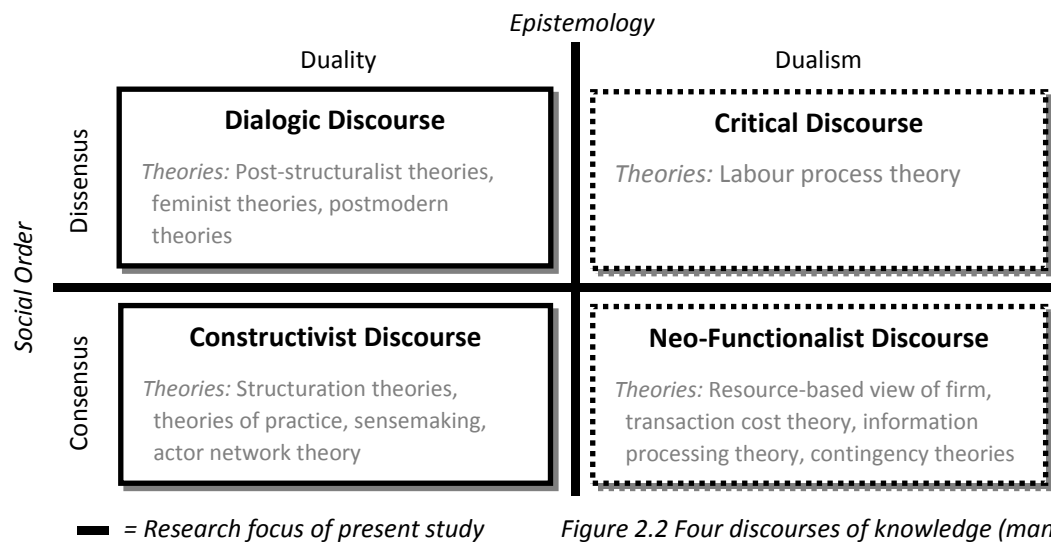


Figure 2.2 Four discourses of knowledge (management) (Schultze and Stabell 2004, p.556)

The following two subsections describe the two dimensions on knowledge management. This description explores the perspectives which likely can provide even more insight into the concepts of internal co-creation and CoP.

### 2.2.1 Epistemology (Duality versus Dualism)

Regarding to epistemology, two perspectives dominate. These perspectives are labelled in the figure as duality and dualism. Dualism assumes that knowledge is an entity that can be codified and separated from the people who own and use it. In addition, it supposes that an object like ‘status of knowledge in organizations’ makes it a resource subject to managerial control. Conversely, duality challenges the notion that knowledge can be managed as an object separate from human action. This perspective assumes that knowledge is embedded in, developed through and is inseparable from people’s workplace, practices and the (cultural) contexts in which they occur (Hislop 2009, p.9; Schultze and Stabell 2004, p.557-8; Wasko and Faraj 2000, p.156). From this perspective, it is argued that knowledge is never totally neutral and unbiased. This means that what constitutes knowledge is somewhat subjective and open to interpretation and debate (Hislop 2009, p.40-1). With the absence of claims for objective knowledge, interaction is the only path one can take to correct any errors or to invest in understanding (Nooteboom 2009, p.xi; Bogenrieder and Nooteboom 2004, p.291). The interaction aspect suggests that the sharing of knowledge does not involve the simple transferral of

a fixed entity between people (Hislop 2009, p.45). Instead, knowledge develops through learning, conducting activities and gaining experience (Hislop 2009, p.38; Vera and Crossan 2003, p.129). This different socially constructed nature of knowledge applies to both its (i) production, and its (ii) interpretation (Hislop 2009, p.40). Boland and Tenkasi (1995) used the terms (i) perspective making and (ii) perspective taking to refer to these two processes. According to Boland and Tenkasi (1995, p.351); *“Knowledge production involves communication within and between a firm’s multiple communities of knowing. We refer to communication that strengthens the unique knowledge of a community as perspective making, and communication that improves its ability to take the knowledge of other communities into account as perspective taking.”* This citation suggests that knowledge must be continuously re-created and re-constituted through dynamic, interactive and social networking activity (Swan et al. 1999, p.272).

### ***Tacit knowledge and Explicit knowledge***

One key difference between the two epistemologies of knowledge is their attitude towards the relationship between tacit and explicit knowledge. The duality perspective views tacit and explicit knowledge as two interrelated aspects of knowledge that is inseparable from human activity. This means that in discourses characterized by duality, there is no fully explicit knowledge as all knowledge will have a tacit dimension. Dualism, by contrast, regards knowledge as an object that can be separated into tacit and explicit elements. Thus, it regards knowledge as a discrete object that can be codified and separated from people (Hislop 2009, p.34-6; Schultze and Stabell 2004, p.564-6). The description of tacit and explicit knowledge can be extended to understanding of other variables, such as knowledge and doing. In view of the duality perspective, all knowledge involves some element of doing and vice versa. Unlike impossible separation, dualism opines that knowledge can exist in an objective form independently from doing (Hislop 2009, p.37-40).

### ***Focus on Duality***

The interaction aspects of the duality perspective reflect the way knowledge is shared and managed regarding CoP, as well as regarding internal co-creation (see sections 1.1.2 and 1.3.2). The concept of CoP acknowledges that interaction leads to the provision of knowledge that lie in the context of its use, called ‘situated action’. This notion that knowledge is situated in practice is in line with the duality perspective that regards knowledge as inseparable from practice (Hislop 2009, p.168-170; Bogenrieder and Nooteboom 2004, p.290). Besides, the duality perspective is in line with the dialogue building block of co-creation that encourages interaction for understanding of knowledge. Thus, the epistemology of duality will be accurate to gain an understanding of both CoP and co-creation concepts. Accordingly, this research will utilize a perspective which Schultze and Stabell (2004) label ‘duality’ to examine perspectives on knowledge and what it means to manage it.

### **2.2.2 Social order (Consensus versus Dissensus)**

The second dimension, social order, draws a distinction between the consensus perspective and dissensus perspective. The consensus perspective regards existing social relations (such as division of labour) as unproblematic. This dimension assumes that existing social relations are characterized by trust and common interest. Conversely, the dissensus perspective assumes that existing social relations are characterized by suspicion and conflicts of interest. This dimension implies that existing social relations are problematic, that conflict is widespread, and that they typically reinforce power<sup>15</sup> (Hislop 2009, p.9-10; Schultze and Stabell 2004, p.555). For example, conflicts can influence who a person is willing and unwilling to share knowledge with. From this dissensus perspective, power and knowledge processes are conceptualized as being closely interrelated (Hislop 2009, p.201-3).

The consensus perspective on social order predominate the knowledge management literature. This means that most literature regards the management of organizational knowledge as being positive and progressive, certainly benefiting all organizational members. Consequently, it neglect results in issues of conflict, power and disagreement (Hislop 2009, p.10; Schultze and Stabell 2004, p.567).

### **2.2.3 Dialogic Discourse and Constructivist Discourse**

Since the dualism perspective is excluded from further research (see last part of section 2.2.1), the following discusses only the opposing duality perspectives of the social order dimension. These opposing duality perspectives are the dialogic and constructivist discourse (see figure 2.2). From both perspectives there is no separation either between individual and social knowledge, or between knowledge and action (Schultze and Stabell 2004, p.558).

The dialogic discourse is embedded in the work of the philosopher Foucault (Hislop 2009, p.203; Schultze and Stabell 2004, p.565). This perspective is interested in social conflict and the role of knowledge in the exercise of power and control. In this discourse, power is something that is embedded in the way people act, talk and interact with each other. The dialogic discourse embraces that power and knowledge are two interrelated and inseparable aspects. Further, these variables are mutually constituted and neither element should be privileged over the other. The manner power conceptualized in the dialogic discourse corresponds closely with the constructivist view of phenomena where knowledge is embedded in particular work practices (Hislop 2009, p.213).

Assumptions about social relations and its role in organizations are fundamental in both the dialogic and constructivist discourse (see section 2.2.2). Therefore, it seems impossible to adopt both discourses within one research. Given that the dialogic and constructivist discourses are fundamentally different, the following will identify which of these two discourses most support both the practitioners CoP approach and the business concept of internal co-creation. This will be an

important task because it will have significant effects on the recommendation on both how one should manage knowledge and the impact of knowledge management efforts on performance.

The CoP literature build on insights developed using the duality perspective on knowledge (Hislop 2009, p.170; section 2.2.1). Arguably, the co-creation literature builds in similar insights. Generally, this literature neglects issues of power and conflict (Hislop 2009, p.176; Jewson 2007a, p.72; Handley et al. 2006, p.644, Fox 2000, p.857). Therefore, this literature is most closely associated with the constructivist perspective (Johnson 2001, p.47). An approach which does not take account of concepts of 'power' and 'conflict', however, makes any analysis about the intended internal co-creation initiative worse in quality. For this reason the dialogic discourse will likely provide additional empirical support in explaining the causes of interaction between employees. An awareness of the dialogic discourse surfaces the blind spots in the constructivist discourse by recognizing the role of power. This focus will likely generate advances regarding the extent to which one can generalize research findings.

Accordingly, the efficacy of an online CoP approach on a firm's internal co-creation performances will be tested through a constructivist discourse and a 'dialogue' with the dialogic discourse. By taking account of power and conflicts, such a dialogue could highlight any unintended consequences of the CoP approach. In addition, it can help in explaining the social dimension of the CoP approach, such as whether people are willing or reluctant to participate in the CoP (Schultze and Stabell 2004, p.568; Hislop 2009, p.216). Therefore, it is expected that making use of both perspectives is a reliable way to design, test and evaluate the conceptual framework about internal co-creation.

This section has evaluated a theory-informed framework that highlights different assumptions about knowledge and its management. This framework has made it possible to differentiate among previous research projects in the field of knowledge (management), which in turn provide the context of their solutions and recommendations. The awareness of the different discourses with their metaphors of knowledge and perceptions of what it means to manage it will help to develop a clear conceptual framework for internal co-creation (Schultze and Stabell 2004, p.566-7).

*In line with the selected discourses of the duality perspective, the next section examines the motivational and management side of knowledge (management). Paying attention to both aspects is relevant for a successful CoP and related processes for internal co-creation.*

### **2.3 The motivational and management side of knowledge sharing**

According to the duality perspective, knowledge is viewed as an individual asset. Organizations must therefore recognize that individuals have control over their personal knowledge. Choices for an individual include; sharing knowledge with others, disclosing only some elements, keeping knowledge secret completely, or leaving the company and taking their knowledge with them (Wasko

and Faraj 2000, p.159). In line with the view that knowledge is 'owned' by the individual, Ardichvili et al. (2003, p.66) identified the following three requirements for an online CoP to be successful;

- 1) Members willingness to share and contribute knowledge
- 2) Members willingness to use the online CoP as a source of knowledge
- 3) Members need to be comfortable with participating in an environment via online technologies

These requirements are based on a qualitative study about intra-organizational online CoP's. All three requirements, or the lack thereof, can be characterized by reasons and barriers for such participation, the use of the community as a source for co-creation, or the extent one feels comfortable with an online environment (Ardichvili et al. 2003, p.66; Tassoul 2009, p.38).

As described, an online CoP of employees is based on a prior network, namely the current social networks in an organization (see section 1.4). Participants therefore know what to expect from particular CoP members. This situation has implications for the first two requirements. Factors such as 'satisfactory prior social interaction experience' and 'the knowledge that members have expertise in a certain area' likely will have a positive influence on both requirements (Ardichvili et al. 2003, p.72-3). Subsections 2.3.1 and 2.3.2 discuss condition number one and two in more detail. Condition number three, which involves being confident with limited face-to-face communication, was already discussed in section 1.4.4.

### ***2.3.1 Willingness to share knowledge***

Research shows that there are numerous reasons individuals could have for sharing their knowledge with other members of an online CoP. The reasons range from self-esteem boosting to altruistic and conformist considerations. It embraces factors like moral obligation towards the organization, and self based considerations as gaining recognition or rewards through contributions to the community. Here it should be noted that members' intrinsic motives (e.g. moral obligation towards the community) are much more powerful enablers of qualitative knowledge sharing and innovation compared to extrinsic motives (e.g. economic self-interest as financial rewards) (Amin and Roberts 2008, p.363; Ardichvili et al. 2003, p.66-9; Wasko and Faraj 2000, p.170). Due to reasons of self-interest and economic gain (like receiving a reward), high extrinsic rewards could displace and undermine many members' intrinsic motivation to contribute (Fahey et al. 2007, p.192-3; Wasko and Faraj 2000, p.162). Barriers to employees' contributing their knowledge to online CoP are both selfish attempts to hoard the information and the fear to post information which is not important, accurate or relevant. A related barrier is that people are not always sure what information should be contributed, and they fear possible criticism or ridicule (Ardichvili et al. 2003, p.69-70).

From the several possible motivational factors, research shows that the following two primary and closely inter-related elements are required to realize knowledge sharing across communities of an entire organization (Bourhis and Dubé 2010, p.3; Hislop 2009, p.198);

- *Firstly*, an adequate level of trust should be developed between individuals from several organization departments.
- *Secondly*, individuals from several organization departments require developing a basic understanding of the values, assumptions and viewpoints which underpin each other's knowledge base.

Both elements are developed through a process of social interaction and communication (Hislop 2009, p.198; see also section 1.3.2). Here, it is important to recognize that power shapes this social interaction (Roberts 2006, p.628). Firms seeking to change the extent of knowledge transfer within organizational boundaries thus need to focus on developing strong and trustworthy relations (van Wijk et al. 2008, p.846). The characterization of an online CoP of employees as in section 1.3.2 (with social relations characterized by reputational trust and strong ties) is suitable for building this mutual understanding and trust (Bogenrieder and Nooteboom 2004, p.297). Both elements are to some extent manageable, which means that much can be done to address them and facilitate cross community co-creation. In general, this involves improving the level of mutual understanding and developing the social relationship and work relations between relevant employees (Hislop 2009, p.194). Both elements are discussed in more detail in the following two parts.

### **1) Trust**

In the context of knowledge sharing across communities, trust has been found to significantly affect this process (Hislop 2009, p.191, van Wijk et al. 2008, p.835,840; Fahey et al. 2007, p.193). When trust is not in place prior to a relation, members of a CoP may be unwilling to share knowledge. In this situation, it needs to be built up (Roberts 2006, p.628; Bogenrieder and Nooteboom 2004, p.296). Since trust is a complex subject, this section focuses only on the key features related to the influence of trust on an employee's willingness to participate in a CoP and share knowledge to co-created with others.

Ardichvili et al. (2003) found evidence that if employees were confident that the organization provides a working environment conducive to positive knowledge sharing and where others are unwilling to use its knowledge opportunistically or act excessively selfishly, employees were likely to contribute knowledge to an online CoP. Thus, employees would need to have trust in the integrity of the organization and the competence of its members (Hislop 2009, p.159; Ardichvili et al. 2003, p.72-3). In addition, Usoro et al. (2007) suggest that the greater a person's level of trust in, and identification with, a particular work community, the more likely they will be willing to supply knowledge to others in that community (Hislop 2009, p.159; Usoro et al. 2007, p.207). Roberts



(2006, p.629) indicated that opposing relations between workers and management with low levels of trust and strong hierarchical control may fail to support effective CoP. Moreover, competition between workers is likely to discourage the collaborative efforts required in the establishment and maintenance of successful CoP and co-creation. Indeed, CoP may be better suited to harmonious and trusting organizational environments in which an organization encourages and supports working practices of co-creation. The presence of a relationship of trust between individuals indicates an ability to share a high level of mutual understanding (Roberts 2006, p.628-9). This is the second point to discuss regarding knowledge sharing across communities, as outlined in the next section.

## **2) Mutual understanding**

The duality view on knowledge entails that individuals or communities with different experience see the world differently (see section 2.2.1). Therefore, one often needs to build up mutual understanding, in a shared language, before one can share or jointly develop new knowledge (Nootboom 2009, p.x; Bogenrieder and Nootboom 2004, p.289). This duality perspective involves the assumption that the processes of perspective making and taking are necessary for the sharing and communication of knowledge (see section 2.2.1). Especially the lack of common knowledge between employees from several business departments raises the importance of such processes for developing mutual understanding. These perspective making and taking processes requires not a merging of these different knowledge bases, but a process of communication, acknowledging and being tolerant to any difference in perspective which emerge (Hislop 2009, p.194-8). As stated by Bogenrieder and Nootboom (2004, p.291), the more shared experience people have, the greater the extent that people have interacted with a shared experience will be, and communication can take place efficiently with jargon that can be taken for granted. In line with this perspective, the managerial role is to encourage and provide the type of communication and interaction spaces that will allow effective perspective making and taking to occur (Hislop 2009, p.46; Tassoul 2009, p.35). Facilitating the development of an online CoP will likely affect how organization members are able to engage in perspective making and taking. Combined with providing a space with an adequate level of trust, CoP should encourage and support internal co-creation.

To sum up, the willingness to co-create requires a level of trust and mutual understanding, both of which require time to develop (Roberts 2006, p.633). Active knowledge contributions by some members of the community, however, represent only the supply of new knowledge. Perceptions concerning its use will also influence the level of trust among those engaged in co-creation. Therefore, for a community to be successful there should be also an active participation on the demand side. Numerous members should be visiting the CoP website when they search for advice or information (Roberts 2006, p.628; Ardichvili et al. 2003, p.66). For more details see the next section.

### **2.3.2 Willingness to use the community of practice**

Reasons for employees and companies to use the online CoP include factors like access to knowledge about many different subjects, and to get specific solutions on specific questions from a variety of CoP members. The systems ability to provide a space for jointly generating new knowledge leads not just to the posting of a solution or just exchanging the existing knowledge, but to generation of a new solution or a method in the course of idea exchange. The barriers which prevent individuals from using the online system can be divided in two main groups of barriers. First, one may prefer their own, existing networks of contacts and support as a method of working and co-creation. When problems or issues arise, these individuals turn to already existing communities rather than the online environment. Regarding this first group of barriers, the management task is not to replace the existing structures, but rather to ensure that the online CoP supports them. The second group of barriers is related to the nature of problems that require solutions. Some problems need a quick and accurate solution, and with an online CoP there is the danger of getting lots of answers, some of which may not be accurate or require additional time for verification. A related issue is the way a CoP is organized and managed. For instance, the process of getting knowledge entries approved and implemented by the management is time consuming. Inevitably, it takes time for a company to implement ideas. This delay makes it difficult to ensure one's willingness to participate in the online CoP on an ongoing basis (Ardichvili et al. 2003, p.70-4).

*The next section discusses the structural features related to online CoP and internal co-creation. These features affect the motivational and management issues as discussed in the present section.*

## **2.4 Structural features**

---

The structural dimension of online CoP's involves the pattern and configuration of relationships among employees. These links between employees facilitate access to potentially useful knowledge, ideas or resources for co-creation. In addition, it increases the probability and amount of internal co-creation (the movement of knowledge between actors). Various studies have shown that a large number of relations to other units, like employees, increase the likelihood that relevant knowledge can be accessed. Moreover, relations enhance information processing capacity, which enables knowledge flows through these relationships (van Wijk et al. 2008, p.834-7). Here, we tap into the extensive sociological literature on network structure (Bogenrieder and Nooteboom 2004, p.292).

On the one hand, an online CoP is a physically identifiable organizational group based structure, with visible, structural components in the form of shared symbols, infrastructure, etc. In particular, it involves an online infrastructure which supports the formal organization structure (see section 1.3). Yet on the other hand, their actual operation seems to be more difficult to pin down; it consists in practice and in the form of continued social interaction and communication within CoP members

(see section 2.3). While organizations wishing to encourage CoP's might be able to provide support with some of their structural components, this is likely to prove the easy part (Thompson 2005, p.151). According to Thompson (2005, p.151), persuading people to interact around these structures may be more difficult. Therefore, CoP's cannot be created by, for example, simply creating a user account for individuals who should participate in the online community. People must feel motivated to contribute to such online CoP's in their everyday interactions (Thompson 2005, p.151).

*By drawing on theoretical perspectives in the duality epistemology, the next section presents the hypothesis which could explain how online CoP could facilitate internal co-creation within companies.*

## **2.5 Hypothesis**

---

The key argument of this research is that dispersed knowledge is a key driver of organizational problems that an organization is able to respond to by facilitating a CoP in an online environment where employees with all sorts of knowledge are encouraged to question and challenge. In addition, it is argued that creating this online environment offers a type of leadership which enables internal co-creation to thrive. Regarding this statement, this research will test the hypothesis which explores a number of unresolved issues, critiques and difficulties evident in the CoP approach. These issues are subsequently power and conflict difficulties which also shape the CoP structure, its relevance for smaller enterprises, and how successful this approach is in achieving internal co-creation goals.

### **2.5.1 Power**

According to the characterization of an online CoP (see chapter 1), an online CoP will include members of varying standing in terms like experience, expertise, age, personality and authority within the organization. The online CoP will therefore always interact with the wider organizational structure (Contu and Willmott 2003, p.292). The notion of the duality view on knowledge and what constitutes knowledge is open to interpretation and debate (see section 2.2.1) This may lead to conflict due to attempts by these individuals or communities to have their knowledge legitimated (Hislop 2009, p.41). Moreover, the related selected dialogic discourse for analyzing issues of power and conflict makes that power pressures from internal sources in the organization, such as managers and experts, is expected to inhibit the will and ability of workers to participate effectively. Given the described capability of a CoP in an online setting to provide an environment to question around the formal organization structure, the research should demonstrate explanation for the next hypothesis:

#### **Hypothesis 1 Power**

*A CoP in an online setting has the potential to provide a place free from the power construct which is evident in the formal organizational structure, offering an environment where employees with all sorts of knowledge are encouraged to co-create.*

Thus, by sharing ideas in an online environment it is argued that CoP members enjoy any exemption from the procedural constraints of the wider organization. This hypothesis is based on expectations as described by Roberts (2006, p.627-8) in an example about a possible lacking relation between the formal organization structure and CoP. Moreover, it caters to an area for further research about organizational context as identified by Contu and Willmott (2003, p.294) and Roberts (2006, p.636). Namely, it is questionable how CoP's interact with the wider structure of an organization. By investigating the participation of employees in terms of relations of power in existing organizational structures, it should be possible to explain if power is evident in terms of the degree of participation, and in which type of organizational contexts the CoP approach is the most appropriate.

### **2.5.2 Performance and Innovation**

The characterization of CoP acknowledges that members of a CoP deepen their knowledge and expertise by interacting on an ongoing basis (see section 1.3). CoP's may therefore be subject to the negotiation of particular types of meaning to the detriment to other possible interpretations. Over time, this may lead to a CoP that develops preferences and predispositions which will influence member's ability to co-create (Roberts 2006, p.629). The process of co-creation within a CoP may therefore become path-dependent as new knowledge reinforces an existing preference. Roberts (2006, p.630) suggests in a section about predispositions that certain activities may be more suited to CoP than others; *"While communities of practice may support the accumulation of incremental knowledge developments, they may reduce the scope for radical innovation"*. Incremental knowledge developments can be defined as small changes of organization's current activities, radical innovation as fundamental changes. This description is also related to the distinction between doing existing things better and generate short-term results (exploitation) and doing new things (exploration), as made by Bogenrieder and Nooteboom (2004, p.290-1). These two kinds of performance (exploitation and exploration), however, do not stand apart from each other; exploitation is based on exploration, and vice versa. A central task of organizations is to find ways of combining these two opposites, e.g. to be efficient and innovative simultaneously (Bogenrieder and Nooteboom 2004, p.291; Benner and Tushman 2003, p.238; Birkinshaw and Gibson, 2004, p.47).

It should be clear that different authors use different opposites. Some speak of exploration versus exploitation, while others speak of radical versus incremental innovations etc. For the sake of clarity in this research, the word 'exploration' is used for the processes involved in innovation which require new knowledge or departures, and the word 'exploitation' for processes used in making an organization more efficient for short-term profits by building upon existing organizational knowledge. Such exploitation innovation tends to be closer to existing products and services (Benner and Tushman, 2003, p.246). The above review results in the second hypothesis;

### ***Hypothesis 2 Performance and Innovation***

*As a result of the structure of an online CoP, this type of CoP is characterized by exploitation types of ideas (instead of exploration types of ideas).*

In this hypothesis it is argued that exploration may be more easily introduced during the CoP development process. Conversely, exploration will be more difficult to bring about within an established CoP. Namely, as activities in a particular online CoP extend over time; more and tighter linkages between employee's routines further constrain the promotion of exploration. Thus, a CoP is more likely to be focused on co-creation that is relevant for particular existing activities, which may be easily exploited. And as mentioned, an established CoP will remain stable over time in terms of membership (i.e. not a frequent exit and entry of members, see also section 1.3.3). Over time, it is therefore less likely that a CoP will produce innovations that significantly depart from the organization's existing competences (Roberts 2006, p.630; Swan et al. 2002, p.478; van Wijk et al. 2008, p.845; Benner and Tushman 2003, p.245-6).

The second hypothesis follows one of the priorities for further research as defined by Bogenrieder and Nootboom (2004, p.310). They request for a test of a hypothesis which states that CoP restrict the scope for exploration. If the suggested conception about the effects of the CoP structure is proved to be correct, this insight has implications for the expected kind of knowledge that an online CoP can deliver for co-creation. Therefore, it suggests that an online CoP of employees run a risk of closing itself off to external concerns, and where exploitation tends to overwhelm exploration.

### ***2.5.3 Small and medium-sized enterprises***

One of the key limits to the CoP approach may relate to its relevance for small and medium-sized enterprises<sup>16</sup> (SME's) (Roberts 2006, p.635). With regard to organizational size, larger firms may not only have more resources to devote to co-creation, but may also have more diverse knowledge resources that enable absorption of new knowledge (van Wijk et al. 2008, p.844). Therefore it is questionable if SME's are able to spare the necessary resources to cultivate CoP. Thus due to resource limitations (like people and money), a SME may be less able to exploit the CoP approach (Roberts 2006, p.635). Existing evidence of the overall effect of organizational size on knowledge transfer, however, appears to be mixed. A meta-analytic study of the antecedents and consequences of organizational knowledge transfer by van Wijk et al. (2008) showed that most studies assessed the effect of organizational size on the extent of knowledge transfer as positive. The magnitude of the effect, however, was mildly positive. This means that some other studies have also found non-significant or negative effects.

In contrast to the views about CoP's in general, the literature reviewed by Amin and Roberts (2008, p.364) shows that, when explaining the success of the kind of online networks as described in

chapter 1, size may be of less significance. This compared to the degree of participant commitment, the clarity of purpose and rules of engagement, and the qualities of leadership and intermediation. These factors, notably participant commitment and leadership, require the possibility of offline meetings (e.g. to help to build familiarity and trust). As a result of their size, opportunities for face-to-face interaction in SME's are not so difficult compared to today's globally dispersed multinational companies (Ardichvili et al. 2003, p.65). In this way, a SME has the power to make the community serve as a viable complement to live conversations and knowledge exchange (see also section 1.4.4). The above argumentation results in the following hypothesis:

### ***Hypothesis 3 Size***

*As a result of the structure of an online CoP, this type of CoP is suitable for implementation in small and medium-sized enterprises (SME's).*

This hypothesis comes from a request for further research in the field of CoP, as articulated by Roberts (2006, p.636). It is a request for an understanding of the variations in the prevalence and success of CoP's in organizations of different sizes and in diverse sectors.

### ***2.5.4 The role of management in the process of creativity and innovation***

Despite the fact of usefulness of CoP's for problem solving, collective learning, creativity, innovation, and knowledge sharing in organizations, the literature is still uncertain concerning the manageability of CoP's, and there is not enough empirical research regarding the role of leadership in the process of creativity and innovation in CoP's (ICICKM 2010; van Wijk et al. 2008). The leadership research issue is therefore of special interest for this research.

To coordinate the facilitation and forming of a CoP, an organization can set direct or indirect constraints and incentive structures towards individual employees. The direct form of control can be characterized as hierarchical monitoring and intervention by formal order (Bogenrieder and Nootboom 2004, p.296). An indirect form of control is, for instance, providing employees with the adequate communicative interaction tools that are required as a basis to make them co-create (Bourhis and Dubé 2010, p.11-2). Thompson (2005, p.161-2) suggested that the use of structure in a non-prescriptive way is most likely to provide support to encourage CoP's. By contrast, the use of structure in attempts at directly controlling collaboration is likely to fail. These direct management efforts may throttle, or otherwise thriving CoP. The recognition that CoP's do not respond well to being managed is also a common theme in much of the other literature (Ardichvili et al. 2003, p.75). An explanation for this unsuccessful result is that a coordination mechanism which exercises authority directly reduces the degree of autonomy given to employees. In addition, formal orders cannot do justice to the richness and variability of practice with a CoP. Direct attempts to encourage CoP's can therefore yield undesired constraints on the scope of practice (Thompson 2005, p.161-2;

Bogenrieder and Nooteboom 2004, p.296). For organizations, the implication of this distinction is that it may be possible to act indirectly in order to affect the social context where an emergent CoP dynamic unfolds (Thompson 2005, p.161-2). Thus managers should recognize that they may be capable of deploying certain social structures that are likely to encourage the CoP to emerge. However, the management still need to maintain awareness that the achievement of the dynamic interaction itself remains an enactment of a CoP beyond their control (management can encourage, but they cannot force). Therefore, if characteristics and components of an online CoP as outlined in chapter 1 are indeed desired, then an infrastructure that supports interactive communication and strong personal identification is likely to be more successful in cultivating such characteristics than one emphasizing (centralized,)<sup>17</sup> top-down control (Thompson 2005, p.161-2). These insights result in the following hypothesis:

***Hypothesis 4 Management***

*Managers that make no attempt to directly control employees' actions, but merely seek to indirectly influence future interactions will result in a productive online CoP.*

This hypothesis is useful to deepening the understanding of the ways that *online* CoP's are affected by different types of organizational structures and related management measures. In this way it will deepen the implications found by Thompson (2005) in a study about attempts to control CoP's in general.

*Based on the literature review and by drawing on theoretical perspectives in the duality epistemology, the next chapter draws a conceptual framework for dealing with online CoP's to facilitate internal co-creation.*

### 3. Conceptual Model

This chapter draws a conceptual framework for dealing with the spreading of co-creation across an organization. It will present a comprehensive and integrative framework, and will link the online CoP concept and co-creation variables by explaining the various relationships.

To draw a conceptual framework, the following will rely on theoretical perspectives in the constructivist and duality discourse (see section 2.2) and several hypotheses (see section 2.5). The framework aims to explain why online CoP facilitates internal co-creation within companies.

#### 3.1 Main variables

The link between individuals, CoP, structure and support is presented schematically in figure 3.1. The central part of the figure represents the CoP's virtuous circle (see section 1.4.2) which is needed for internal co-creation. To incorporate individual's autonomy for participating, individuals are part of this virtuous circle. Regarding the two motivational factors mentioned on the this circle, research already has shown evidence that these issues will engender increasingly extensive and repeated interactions between a diverse

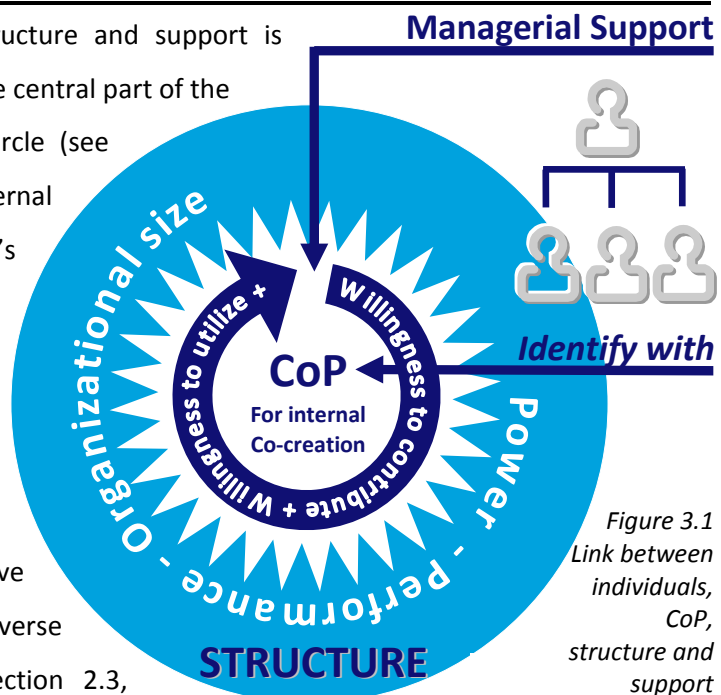


Figure 3.1  
Link between  
individuals,  
CoP,  
structure and  
support

As described in section 2.3, individual's motivation to contribute and utilize a CoP in their everyday interactions will engender interaction between employees from different business units and functions. Thus besides the motivational requirements for the supply of knowledge, the willingness to use the CoP for co-creation is also of importance. By only focusing on the problem of motivation and individual's ability to make their own decisions about participating, however, organizing principles associated with the way a CoP is organized and managed are neglected (Kogut and Zander 1992, p.396). Therefore, the model shows how the research will rely on the motivational insights to explain CoP in a wider context. Here, structure is incorporated because it both enables and constraints CoP's level of interaction. This interaction, in turn, (re)constructs structure (Bogenrieder and Nooteboom 2004, p.292). The structural dimension involves the relationship among employees, and presents both the basis and the result of processes of interaction. It takes account of the interplay between CoP and the wider organizational context with elements and issues as size, power and performance. As seen in the earlier discussion of the virtuous circle, a key link between structure and action is the way people identify with such structure, and thus whether (and how) they feel motivated to participate



(Thompson 2005, p.155). The organizations' management is in the position to overcome obstacles that may prevent employees from participation and using a CoP. Accordingly, the efficiency of managerial support is extremely important for the *infrastructure* surrounding this virtuous CoP circle (Toral et al. 2010, p.302). Management that supports interactive communication and personal identification can, in an indirect manner, encourage CoP interaction for internal co-creation.

By recognizing that the above described structural and supporting issues will influence the level of interaction among those engaged in co-creation, these issues appear to be an important addition to the motivational ones. According to the figure and hypothesis in the previous chapter, opposing relations between employees and management with low levels of motivation and strong direct control may fail to support effective CoP. Therefore, it is of significance to investigate the relation between online CoP's of employees and co-creation, while not excluding the influence and advantages of external factors. Indeed, CoP may be better suited to harmonious and trusting organizational environments in which workers are given a high degree of autonomy.

### **3.2 Basic assumptions**

---

The conceptual model has been developed according to the following main assumptions to simplify the modelling process;

- The model describes a self standing firm.
- The CoP represents a group of heterogeneous individuals. There may be considerable diversity in terms of knowledge, profession, contract of employment, as well as division of labour.
- Participation in the CoP is voluntarily and occurs when a message or idea is posted, becoming visible to all other members.
- The effects of CoP participation influence the companies' activities and relationships outside this informal environment, and vice versa.
- In line with the duality perspective on knowledge (see section 2.2.1), it is assumed that knowledge is embedded in, developed through and is inseparable from people's workplace, practices and the contexts in which they occur.
- In line with the dissensus perspective (see section 2.2.2), it is assumed that existing social relations are characterized by suspicion and conflicts of interest. This assumption will likely have an effect on the managerial implication on how one should manage a CoP.

*The remainder of this report represents an attempt to build on the literature to date, utilizing a case study to characterize the relation between internal co-creation, CoP and its wider organization. At a detailed level, this analysis should make it possible to understand the interrelationship between co-creation and CoP practices. At a broader level, this analysis is to understand the interrelationship between the online CoP and their organizational environment. The aim is largely confirmatory, since it tests if the conceptual framework can explain how internal co-creation can work, or fails to work.*

## **4. Methodology**

---

*To prove and confirm that the theorizing as described in the previous chapters actually works, examples are needed of online CoP in real firms who aim to employ co-creation. This chapter describes the methodological approach for carrying out this research.*

### **4.1. Case study approach**

---

The study aims to get more insight into the concepts of online CoP and internal co-creation. The study does not constitute a rigorous test of the hypotheses, with quantified measures and correlations of variables on basis of a large sample. Instead of a rigorous test, it is more a test of the usefulness of facilitating online CoP to encourage internal co-creation to emerge. This exploratory approach makes that the methodology is process oriented. Therefore, using a case study to investigate CoP structures and processes of internal co-creation seems appropriate. A case study is a research strategy. It can involve either single or multiple cases, and numerous levels of analysis. Case studies typically combine data collection methods, such as interviews and observations. The possibility of using multiple data collection methods provides stronger evidence of constructs and hypotheses. Finally, case studies can be used to accomplish various aims. It can provide (1) description, (2) test theory, or (3) generate theory. In the present exploratory study, the interest is in the first and third aim. More detailed, the case study approach makes it possible to see whether the found online CoP can be adequately characterized by the proposed variables in chapter 1. This prior specification of online CoP constructs will help to shape the initial design of the theory. In addition, the case study approach makes it possible to see whether the CoP working and co-creation goal achievement can be explained by the hypotheses in chapter 2 and conceptual model in chapter 3 (Eisenhardt 1989, p.534-8; Bogenrieder and Nooteboom 2004, p.300). The case study employs two levels of analysis; firm and employee.

*An online CoP for internal co-creation is characterized by challenges in form of creative assignments. These challenges involve employees to interact with each other on an online basis. The next section describes how these challenges are used to construct a social network for the case under study.*

### **4.2 Social Network Analysis**

---

Social Network Analysis (SNA) techniques will be used to analyze the interactions among participants in the online CoP. The success of a CoP is dependent on these interactions. The SNA technique also makes it possible to detect and interpret patterns of relations among actors. Results should illustrate the importance of these patterns to achieve a situation where a CoP facilitates co-creation to occur.

#### **4.2.1 Social CoP network**

In the context of this research, a social network is a self-organized structure of community members which in turn represent employees. This social CoP network can be modelled by a structure consisting of (i) individual company actors (called *nodes*), and (ii) relations which connect the nodes

(called *edges*). The edges, which represent the relationships between the individuals, are also called *ties* (Toral et al. 2010, p.297; Hanneman and Riddle 2005).

#### **4.2.2 Co-creation Threads**

Online CoP participation is being structured through ‘threads’ of contributions towards several co-creation challenges. According to Toral et al. (2010, p.297); *“Threads are groups of messages sharing the same subject. A thread is initiated by someone who posts a message asking for help, suggesting some improvements, or just considering some new idea. Then people start answering this initial message, posting possible solutions, sources of information or just extending posted considerations. Some members of the community become engaged in a process of conceptualization, leading to some collective innovation and new knowledge.”* As a result of this process, the online system allows the possibility to list the sequence of related messages and contributions (ibid). The simplest way to classify threads is using their length (the total number of posts they contain). Nevertheless, this kind of data does not provide any information about the social structure of the online CoP, or about the relationships among actors. Therefore, these patterns will be visualized and analyzed using SNA techniques. Not only is a distinction made between kinds of contributions (new knowledge or comments), but also the different user profiles among the participants themselves (like community manager or member). The next section describes how social networks will be extracted from threads of contributions. It also describes how SNA techniques will be applied to provide insight to test the hypothesis and answer research questions (Toral et al. 2010, p.297-8).

#### **4.2.3 Constructing the social network**

In contrast to a reply to a single message, it is more cognitively complex to reply to a threaded list of contributions for a particular challenge. It is more complex because earlier postings must be taken into account in order to develop a coherent answer. That is the reason why a community member posting to a thread will be tied to all employees who have previously posted to the same thread, including the individual who placed the first and foremost posting. Networks are constructed and calculations are made using Ucinet Software (Borgatti et al. 2002). The analyses will be based on directed networks; the relations between actors are indicated by their direction. The strength of ties among actors in the network is measured by the number of interactions at an interval scale; that is, the scales reflect differences in degree of intensity and equal differences.

#### **4.2.4 Macro and micro-structural analysis**

The analysis of the evolution of the online CoP will be divided in two parts: (1) a macro-structural analysis to obtain a global view of the community evolution, and a (2) micro-structural analysis to zoom in on particular and interesting areas of the network. This distinction in analysis will emphasize the following two features (based on Toral et al. 2010, p.297-8; Hanneman and Riddle 2005);

### **1) Core/Periphery structure [macro-structural analysis]**

From a *macro*-structure point of view, networks can be divided using some discrete characteristics of nodes. For instance, several classes of nodes can be obtained using the strength of ties. In the case of CoP, these kinds of divisions should highlight the core/periphery (C/P) structure of the community. A C/P structure divides the nodes in two distinct subgroups; (1) nodes in the core (densely connected with each other), and (2) nodes on the periphery (not connected with each other). In network analysis, density is a measure of the cohesion of the network and can be defined as the number of lines in a simple network, expressed as a proportion of the maximum possible number of lines. Therefore, more linkages between people yield a tighter structure which is more cohesive. Consequently, maximum density is found in a network where all pairs of nodes are linked. An average degree of all nodes will be used to measure the structural cohesion of a network. In addition to density, this C/P analysis will also focus on the percentage of ties that are parts of reciprocated structures. The existence of reciprocity is essential for the internal co-creation building blocks related to revealing information and enabling dialogue. It means that a substantial number of participants must contribute reciprocally to encourage interaction patterns to occur. Therefore, a CoP will not survive if reciprocity does not exist (Fahey et al. 2007, p.187). The reciprocity analysis is possible since the network constructed is directed (see section 4.2.3). Assessment of the C/P structure is important because it can give an indication of the level of CoP interactions in the manner of the amount of connections. This information is also important to test the hypothesis about size.

### **2) Legitimate Peripheral Participation [micro-structural analysis]**

From a *micro*-structural point of view, the analysis focus on the different positions taken by individuals belonging to the online CoP. Such an analysis is useful for understanding how structure and managerial actions affect individuals' contributions. The position that someone takes relative to others lies in the notion of Legitimate Peripheral Participation (LLP). As mentioned, the online system lists the sequence of related messages and contributions. In this way, newcomers (like new members) can follow the sequence of reflections and reasoning step by step. These newcomers start by participating in a practice, or set of practices, and this immediate contribution makes them a legitimate member of the community (called LPP). As they master these peripheral practices more and more, their legitimacy increases within the group (Fox 2000, p.855). In this process, new members learn how to function as a full community member through participation, and acquire consequently the language, values, and norms of the community. Consequently, these and other processes lead to participation patterns driving the behaviour of online CoP's. For this assessment of participation patterns the concept of degree centrality is used. According to Bogenrieder and Nootboom (2004, p.292) centrality is "*the degree to which an agent is connected to others who are*

*not mutually connected*". The concept of degree centrality looks at the number of ties in which each employee is involved (degree of nodes). Centrality will compute the direction of ties by giving the out-degrees and in-degrees of nodes. Out-degree is the number of posts an actor sends and is a measure of how influential the actor may be. In-degree is the number of posts of a threaded list of contributions which link to this actor. It examines the extent to which an actor is a receiver of information. The combination of an actor's in-degree and out-degree refers to the effect of each actor to the community. Actors can have a reciprocated or asymmetric<sup>18</sup> relation with other actors in the community. By making a distinction between the company's formal organization structure and informal CoP structure, this analysis will have implications for power as formulated in hypothesis 1. This distinction can show differences in power in terms of access to alternative members and coalition formation. Namely, in their daily work the community members are involved in quite different tasks and may even come from other divisions within the company (Bogenrieder and Nooteboom 2004, p.292,304). Thus, identification of LPP members is important because it can test the hypotheses of power.

#### **4.2.5 Content analysis**

The frequency of engagement in the online CoP alone does not indicate the quality, usefulness or value of the knowledge provided or acquired (Usoro et al. 2007, p.204). These values, which are of importance to test hypothesis related to performance, are therefore assessed separately. This is done by evaluating the content of the ideas and other contributions on relevance for internal co-creation (Wasko and Faraj 2000, p.162). This kind of analysis should make it possible to develop categories describing if it were an exploration or exploitation kind of contribution. Thus, ideas should be categorized into two general categories: (1) exploration and (2) exploitation.

### **4.3 Data collection**

---

Regarding the relation between internal co-creation, CoP and its wider organization, the research will collect data about the details of the network position and performances of individuals. In addition, a variety of company documentation should be collected and analysed. These different kinds of data should allow building an understanding of the interaction between organizational structures, an online CoP (incl. the five criteria to define a successful CoP; see section 1.1.4), and co-creation. In particular, mapping and analysing those networks is likely to provide insight on these factors. Identifying employees' level of interaction within an online CoP makes it possible to investigate employees' identification and commitment with such structures.

*Based on the set of methods or procedures that underlying the present study, the next chapter describes the research setting.*

## **5. Research Setting**

---

*This chapter describes the particular setting where the case study is performed. It describes the case in an insurance company where attempts were being made to establish an online CoP of employees. This community had explicit aims of internal co-creation, or was intended to do so.*

### **5.1 Case selection**

---

Given a limited number of cases which can be studied with regard to customers of RedesignMe, it makes sense to choose a case where the CoP process of interest is observable. Because the initial online technical (infra)structure to facilitate a CoP to emerge was already been operational, the case as described in this chapter appeared to present an ideal research setting. The case was chosen because it presented an ideal testing ground to study the relationships between the components as proposed in the hypothesis (chapter 2) and conceptual model (chapter 3). Besides a system which is operational, the size of the community is also crucial. The size defines the set of entities from which the research sample can be drawn. Selection of an appropriate population will help to define the limits for generalizing the research findings (Eisenhardt 1989, p.537). The selected case represented a company with about forty-three individuals. This limited organization size made it possible to include all of the organization's actors in the network study. Accordingly, the selected case allowed reflecting an entire organization, which will help to generalize the findings.

### **5.2 Case description**

---

The online CoP under study was the result of an attempt by a small-sized insurance company (which will be called "Self-Assured") to apply the business concept of co-creation in an online environment. This online environment was deployed to include special interactive co-create challenges with (non-) customers about private assurances, and to challenge employees about issues for which specialist knowledge is required. The system's main purpose is to create value through online interaction between (non-)customers and employees in order to improve the organization's business performance. While the insurance company had cultivated also the online environment for their customers, the employers subgroup of specialist insurance co-creators who know each other formed the subject of study.

To justify that the organizational group under study originally was intended to conform to what can be described as an online CoP, first-hand observational evidence was obtained. These observations gave evidence of the existence of some important similarities (like informal behaviour and using an online tool) that were consistent with the characteristics as described in chapter 1. The online CoP was organized around the formal organizational structure as expressed in their organigram (see next section for details). The members would meet mainly virtually with the broad objective to co-create on specific, generally broad, challenges.

### 5.2.1 Organization structure

The organizational structure of the company Self-Assured is shown in figure 5.1. According to this schematically presentation, the company can be characterised as a flat organization; there is only one level of intervening management between staff and managers. The board of directors and all company staff are located in an office in 's Hertogenbosch, the Netherlands. Employees work twenty-five percent of their working hours at home, and some people work in the evening shift only. At their disposal, the company does not have a room where all employees can meet at the same time (also not for lunch). Therefore, all meetings are on department level. This dispersion of working hours and places makes an online environment even more interesting and useful. As shown in the figure, some employers work as a temporary worker or trainee. During the period of study, two of these workers were dismissed and the internship of the two trainees ended. Two new employees, one related to the office duty and one trainee, joined. Besides the role of user, the role of community manager was established. The role of community manager, which is fulfilled by seven different individuals, is described in detail the next section.

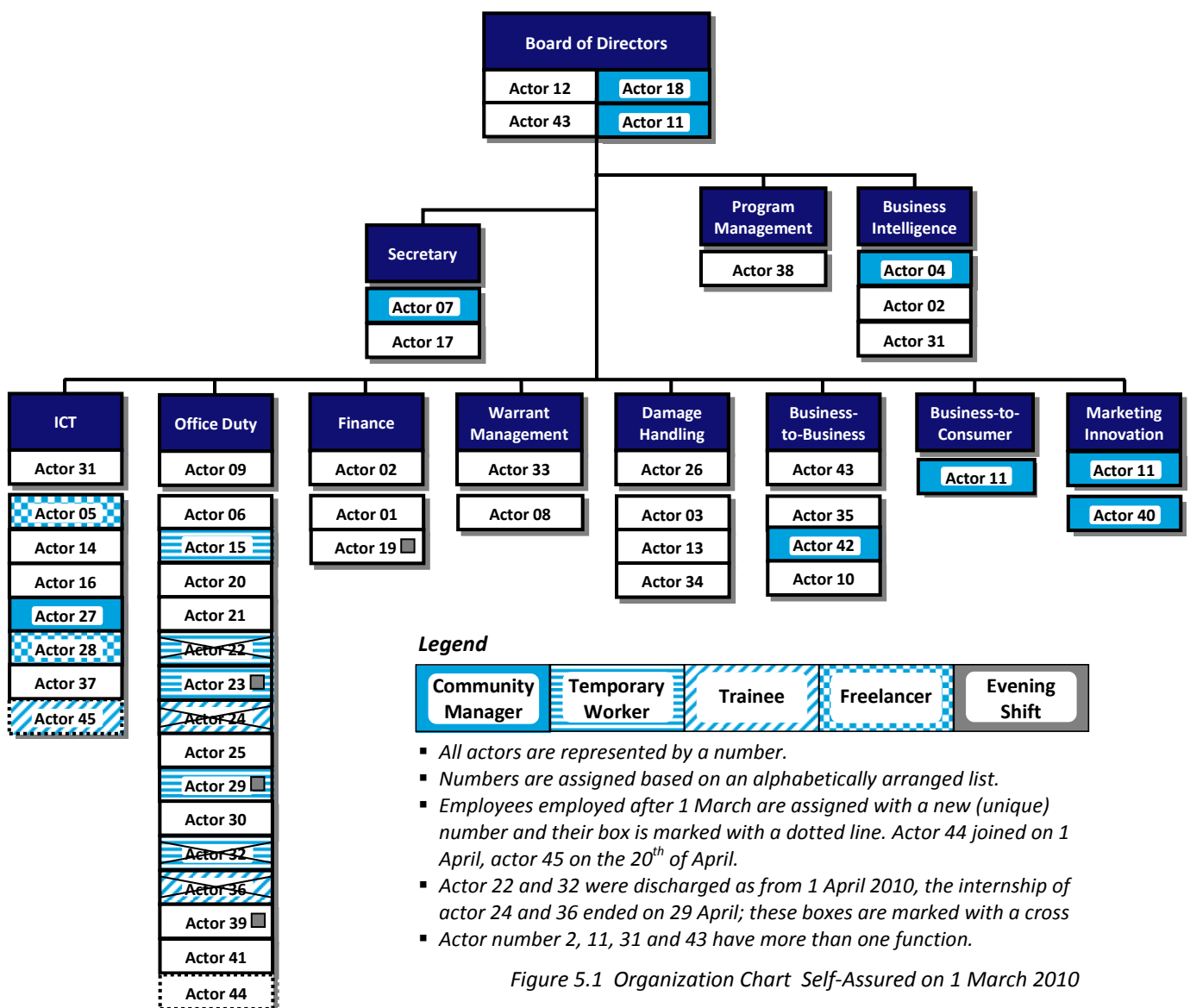


Figure 5.1 Organization Chart Self-Assured on 1 March 2010

### **5.2.2 Community Managers**

The company 'Self-Assured' assigned seven community managers. These managers are individuals who are responsible for operational factors or problems and running the online system. In addition, they have the rights to place challenges. These managers were drawn from different business units. Namely, they were drawn from the board of directors, business intelligence, ICT, business-to-business, business-to-consumer and marketing. Later on, the secretary was added to this list. The other departments were sections in the organization without a community manager (see figure 5.1).

### **5.2.3 Internal co-creation**

Employer's community members are challenged on a regular basis to undertake assignments ranging from specialistic issues about services and products to internal problems and issues. Initially, the online environment seems to represent all building blocks of internal co-creation (section 1.1.2);

#### **(i) Access to information and tools**

---

The community is supported by an intranet based online system (developed by RedesignMe)<sup>19</sup>. This system was designed to provide the infrastructure for community functioning. Like, it allowed users to post ideas, comments and questions (possible combined with pictures). Registration is required initially, and after one agrees with the terms and conditions<sup>20</sup> access is through a username and password. It is questionable, however, if the content of these terms will make users confident with the organizations' integrity. Namely, it does not give the impression that the organization wants to provide an informal environment where others (notably the community managers) are unwilling to use contributions opportunistically. The terms could affect one's willingness to participate.

#### **(ii) Reveal information and feedback**

---

All community members have the position to give information and feedback, and start a new forum topic. Challenges, however, are formed as the result of interventions planned by the community management team. As defined by these managers; good ideas for these challenges will be rewarded with points. An accumulated set of points can the winner spend in a shop in the same online environment for tangible gifts. These direct material incentives were introduced to encourage individuals to participate. The reward scheme was argued to produce a large amount of goodwill and appreciation towards these individuals. The rewards structure (like 400 points for the most useful idea) is made clear at the start of the challenge. These direct incentives require reliable monitoring.

#### **(iii) Transparency of information**

---

All contributions are visible, which make it possible for members to talk about these issues to others. This transparency makes it possible to reuse existing components from within the group.

#### **(iv) Dialogue**

---

The community has the opportunity to be comprised of a mix of marketers, office duties, ICT experts etc. That is, it can be comprised of all organization' individuals. Besides gaining competitive advantage, the challenges are an opportunity for employees to enhance their position by



demonstrating their creativity and/or competencies. The online environment offers an opportunity to exchange ideas about generating, adopting and implementing solutions. These interactions help to form relationships, which in turn help to co-create new value and chances for all parties involved.

#### **5.2.4 Launch**

In early December 2009, access and participation in the online system was made available to the public. By means of an e-mail request, the management invited all employees to participate. At the same time, the management started four public moderated challenges and one challenge for employees only. This personnel challenge was about increasing the number of insurances that has been taken out by each customer. The request resulted in eight voluntarily subscribers. None of these subscribers was a temporal worker, trainee or freelancer. This suggests that the other groups of employees have more commitment to identify themselves with such a structure. The enrolled subscribers, however, did not respond to the challenge. Thus, the subscribers were not participating members of a core, visible CoP group. Halfway February 2010, the management explained towards their employees the working of the online environment by means of a presentation. At this moment of time, it was still of employee's own free will to enrol in this online environment and participate.

### **5.3 Data collection**

---

The major data source is based on the interactions among CoP members (criteria 5 in section 1.1.4) as documented by the online system. Threads within various challenges were analysed and coded at the interval level for the purposes of the research. In addition, a variety of company documentation was collected and analysed. The documentation included the company's organigram, an office plan, employee's function descriptions and personal data. By attending the weekly face-to-face editorial meeting among the community managers, it was possible to record the various direct and indirect management measures. During this meeting, the progress made within the online community was discussed. Detailed notes of changes, anomalies and rewards, were collected during these meetings. This data made it possible to identify if management measures had succeeded in encouraging the CoP development. In addition, it made it possible to have a better understanding about how direct and indirect attempts exert influence on each other. If management succeed in encouraging the development, this should be visible in terms of its conformance to the characteristics of CoP and co-creation dynamics described in chapter 1. Data from the physical business community, the online environment and related logs have been collected, monitored, observed and analysed during from 2 March 2010 up to and including 30 April 2010 (nine weeks). This time frame was necessary to monitor changes in group participation, while maintaining the data set size at a manageable level.

*To the description of the case, the next chapter add an analysis to make an attempt to explain what happens throughout the study period. The analysis is conducted on basis of the literature review, conceptual model and hypotheses.*

## 6. Social Network Analysis

In this chapter the evolution of the online CoP will be studied using social network analysis (SNA). Networks are constructed and calculations are made using Borgatti et al. (2002). The data which is used for conducting the SNA is added in Appendix II.

### 6.1 Point of departure

At the start of study (2 March 2010), it became visible that of the forty-three individuals only twenty-two enrolled in the community through a registration process. This number of enrolled individuals included six assigned community managers. The remainder of the group was built up organically. None of these subscribers work on a temporary basis, freelance basis, in the evening shift or is a trainee (for an overview of all actors reference is made to figure 5.1). From the enrolled individuals, four community managers (actor 4, 11, 40, 42) and three employees (actor 1, 20, 42) were full participants. These participants posted ideas and responded to these contributions. Regarding the total number of individuals, there are at this point of study about twenty-one potential newcomers.

<b>Status on 2 March 2010</b> ▪ Individuals: 43 ▪ Enrolled: 22 ▪ Active: 7 ▪ Ties: 22 ▪ Ideas contributed: 7
--

### 6.2 Structure SNA

Because voluntary participation in the online community proved to be difficult from the start, (too less enrolments and active members) the community managers took measures. The SNA is structured around these management measures (measurements are made the next working day). In this way, it is possible to analyse the effects of direct as well as indirect management measures. Table 6.1 lists the several management attempts in chronological order, including a description and a listing concerning a direct or indirect management measure.

Date	Description attempt community management	Direct	Indirect
<b>08 March:</b> <i>Two new challenges</i>	To encourage CoP development, the community managers placed two new challenges on 8 March. The two challenges were created as an indirect attempt to activate employees to take part within the online environment. One challenge was to co-create about the next trip with the workforce. This is a challenge with a limited term, and not aimed to generate any type of exploration. The other challenge was in form of an idea box to gather suggestions for internal and external improvements. This is a challenge with an unlimited term. In contrast to the other challenge, this one is aimed to generate both exploration or exploitation types of processes.		✓
<b>16 March:</b> <i>Forced enrolment</i>	The potential newcomers had been 'forced' by the wider business to be present in this online environment. In an e-mail send on 16 March, the management raised that it was necessary for all employees to subscribe. They mentioned that it would encourage the internal communication and make it possible to send internal memos among all employees. This request can be characterized as a direct attempt to encourage CoP development. Participation in the online environment, however, was still voluntary.	✓	

(see next page)

(cont.)

Date	Description attempt community management	Direct	Indirect
<b>19 March: One new Challenge</b>	The community managers placed one new challenge on 19 March. This challenge was in the form of a 'fed up' box to give employees the possibility to express dissatisfaction about work related topics (like place of work), and give suggestions to improve this. This challenge, which has overlap with the idea box, has an unlimited term. Due to a mistake, this challenge was not mentioned in any newsletter. Since there was not any activity concerning this challenge, this attempt is excluded from further analysis. After the period of study, this challenge was mentioned in the newsletter of 11 May. It is interesting to note that this attempt resulted in one idea the same day.		✓
<b>22 March: Newsletter (1)</b>	On 22 March, the management had sent a newsletter with an update of the last developments of the online community. This was an indirect attempt to motivate employees to enroll and participate. The letter made employees notice contributions of others (actor 8, 20), the new public challenges (one, to gather ideas for new insurance products and the other one to describe the company as an animal), and the rewards one can earn by providing a valuable contribution. The 'animal' challenge is a technique which is vital to build enough variation in the co-creation program (Tassoul 2009, p.40).		✓
<b>30 March: Rewards</b>	During the weekly editorial meeting on 30 March, actor 35 was rewarded for her posted ideas regarding a public challenge.	✓	
<b>6 April: Rewards</b>	During the weekly editorial meeting on 6 April, actor 35, 1 and 20 were rewarded for their posted ideas regarding public challenges.	✓	
<b>8 April: Newsletter (2)</b>	On 8 April 2010, the management sent a newsletter again with an update of the last developments of the online community. The newsletter made employees notice the contributions of others (actor 35, 1, 20), who were also rewarded for this. The newsletter also reminded the reader of the existing challenges (for employees as well as the public), and the rewards one could earn by providing a valuable contribution to the community.		✓
<b>13 April: Feedback + Rewards</b>	During the weekly editorial meeting on 13 April, one of the community managers (actor 11) posted several comments towards the contributions of other members. In addition, the community managers rewarded actor 8 for one of her contributions for the next personnel trip.	✓	✓
<b>21 April: Personal e-mail with request to enrol</b>	On 21 April 2010, the management had sent an e-mail to employees who did not enrol yet (eleven individuals). In this mail it was mentioned that the receiver was not enrolled in the system. It was a direct request to enrol. The mail was also sent to temporary workers (2/3), all employees from the evening shift, both freelancers, one trainee (1/2), one employee from the ICT, one from the office duty and one from warrant management.	✓	
<b>23 April: Newsletter (3)</b>	On Friday 23rd April 2010, the management sent the third newsletter with an update of the latest developments of the online community. The newsletter made employees notice the contributions of actor 8, who was also rewarded for her idea (see attempts on 13 April). The newsletter also described the new public challenge, and the rewards one can earn by providing a valuable contribution.		✓

Table 6.1 Community Managers direct and indirect attempts over time (main structure behind the analysis)

The theme in the following sections is identifying those stages where employees had (not) identified with the online CoP, the resulting effect on their participation, and the reasons for these shifts.

### 6.3 Core/Periphery structure [macro]

In this section, the structure of the entire network will be analyzed, measuring the density and reciprocity. Table 6.2 details the macro data of the online CoP for the considered period of time. The first part of the table (row 1-3) lists some general network characteristics. A distinction is made between number of actors within the organization and the number of enrolled actors within the online CoP. With this distinction, the context of the C/P structure and related level of interaction (the number of ties) is made clear. Changes in the number of actors are caused by changes of the organization structure (see figure 5.1 for details). As of December 2009, there were over eight enrolled actors (see section 5.3.4) and at end of April that membership had risen to thirty-five. Also, in response to raised member enrolment, the number of ties increased during the studied period. Since the condition that all employees are involved is not met, indicators as high density and strength of ties cannot be used to indicate that an online CoP has formed. The second part of the table (row 4 and 5) shows the network's average density over time. To illustrate, on 2<sup>nd</sup> March, 1.22% of all the possible ties are present. The standard deviation of the entries is also given. The standard deviation is relevant since each tie in the original data file (see Appendix II) presents the number of interactions. The third part of the table (row 6) shows the percentage of ties that are parts of reciprocated structures. Most actors have no direct ties to other actors, therefore focus is on the degree of reciprocity among actors that have any ties. On 2 March, of all pairs of actors that had any connection, 35.71% of the pairs had a reciprocated connection. These figures seem to suggest that a considerable degree of connection within this network is following the thread, without starting a dialogue. To explain what happens, the micro-structural analysis in section 6.4 will zoom in on reciprocity and other features.

	March					April					
	02	09	17	23	31	07	09	14	22	26	30
<b>Actors #</b>	43	43	43	43	43	42	42	42	43	43	41
<b>Enrolled #</b>	22	22	24	29	29	29	29	30	34	35	35
<b>Ties #</b>	22	27	34	57	64	64	66	76	94	98	113
<b>Density</b>	0.0122	0.0155	0.0188	0.0316	0.0354	0.0372	0.0383	0.0441	0.0520	0.0543	0.0689
St. dev.	0.1283	0.1690	0.1931	0.2320	0.2509	0.2569	0.2590	0.2898	0.3060	0.3198	0.3803
<b>Reciprocity</b>	0.3571	0.5000	0.4118	0.2647	0.2368	0.2368	0.2250	0.2326	0.2364	0.2321	0.2807

Table 6.2 Core/Periphery (C/P) structure (March 2010 – April 2010)

#### 6.3.1 Network Status online CoP on 30 April 2010

The status of the online CoP after its launch and about four months of both direct and indirect management intervention is shown in figure 6.1 (see next page). The figure combines all threads within the CoP since establishment. The network is structured on department level. These are the departments in accordance with the formal organization structure (see figure 5.1). Figure 6.1 shows

that most interactions are between employees from different departments and hierarchic level. It seems not to follow the organization structure as presented in figure 5.1. The measures taken by the management (see section 6.2) were attempts to create a CoP that would succeed in getting employees from several business departments to work together. The data results, in form of expanded threads of contributions, show that several departments are already represent in this online environment. Active participants can be found in every department aside from ICT (8 actors) and program management (1 actor). Both ICT and program management are located in a far-off corner of the office (see Appendix I for details). Inactive participants (isolates) can be found in every department apart from business-to-consumer (1 actor) and marketing innovation (2 actors), which are departments constituted of community managers only. It is remarkable that the ICT department, the section in the organization that is involved in information and communication technologies, consist of not enrolled (4) and inactive (4) users. ICT is therefore a department which is not represented in the core of the online environment. The group of trainees show a similar pattern; this group consist of inactive (1) and not enrolled (2) individuals. The above findings support *partly* the hypothesis about power. *Partly*, because there are still several groups of not-enrolled and non-participating employees who are not involved in co-creation.

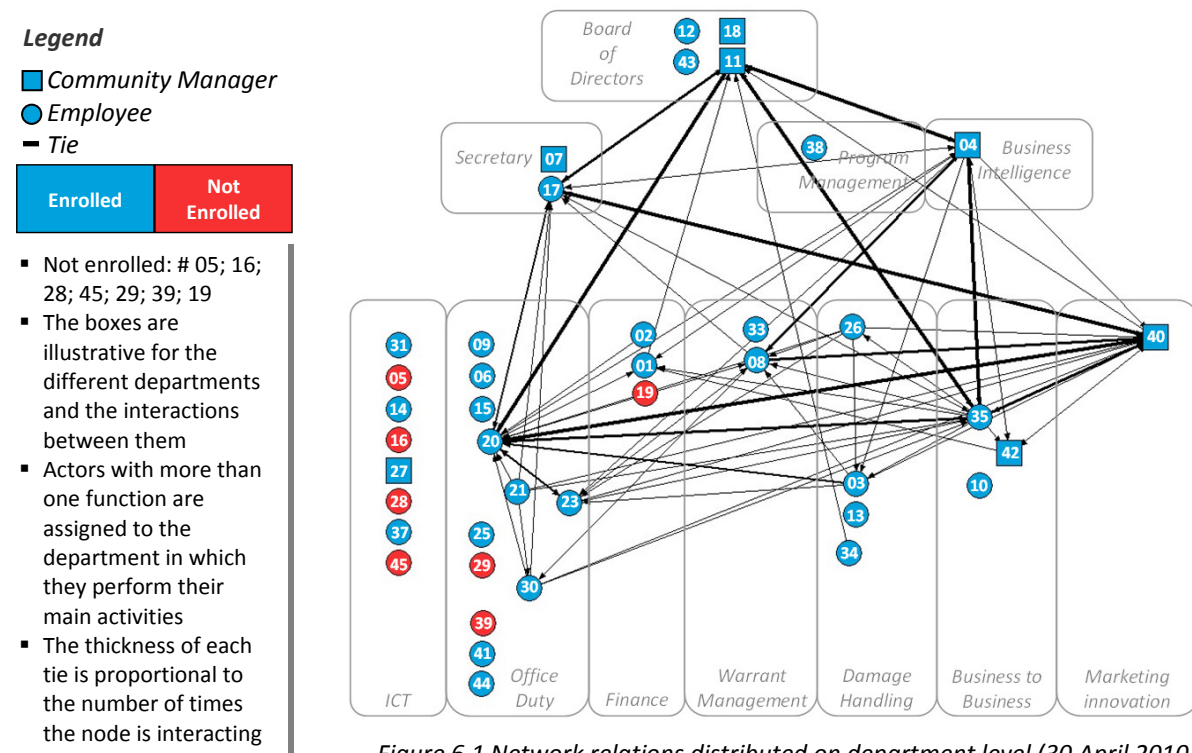


Figure 6.1 Network relations distributed on department level (30 April 2010)

#### 6.4 Legitimate Peripheral Participation [micro]

A micro-structural analysis is used to focus on individuals, rather than on the CoP network as a whole. This analysis attempts to identify actors who perform a specific peripheral or core role.

### 6.4.1 Degree centrality

Appendix III details the centrality measures corresponding to the threads of contributors in the online CoP during the considered period of time. On the average, actors have a degree between 0.5 and 2.8. This low value can be explained by the fact that there are many actors who are not active. Further, the appendix shows the centrality for each active participant by taking account of the direction of ties (out-degree and in-degree). The actors with the highest in-degrees and out-degrees over time might be regarded as the most influential ones. These are not only community members, but are also employees from lower layers within the organization. With regard to the hierarchical structure, these figures indicate that positional advantages are rather unequally distributed. The combination of an actor's in-degree and out-degree is analyzed to identify if actors have a reciprocated or asymmetric relation with other actors. In general, actors in the community have an asymmetric relation with others. This is in accordance with the findings of the macro-structural analysis. Remarkably, the majority of participants are characterized by changes in out-degree relative to the number of ideas contributed (with the exception of community managers 4, 11, 40 and actor 2). Such a pattern suggests that community members simply participated in order to receive rewards. Therefore, one could argue that rewards are an issue here. Users seem to be motivated by rewards. Namely, users simply post a new idea to seize the opportunity of gaining the reward itself, instead of starting or engaging in any dialogue regarding others posted ideas. As mentioned, some community managers are an exemption to this finding. Especially community managers 40 and 11 who were fairly active during the period of study. By starting most of the challenges, they visibly attempted to encourage other employees to contribute.

### 6.4.2 Groups of users

The micro-structural analysis allowed the identification of groups of (i) non users, (ii) moderate and (iii) active users (see table 6.3). Individuals can navigate from non users to different forms of participation, like full participation as an active user. The group of active users, characterized by the creation of weak ties among dispersed individuals, indicates that an online CoP is forming (section 1.3.3). As shown in the table, the group of moderate and active users is constantly changing.

	March					April					
	02	09	17	23	31	07	09	14	22	26	30
Non user (i)	21	21	19	14	14	13	13	12	09	08	06
Moderate user (ii)	15	19	21	22	28	29	27	27	30	33	31
Active user (iii)	7	3	3	7	1	0	2	3	4	2	4
Ideas contributed	7	1	4	4	2	0	2	2	5	2	3

Table 6.3 Groups of users

The core of active users is rather small (less than twenty percent) compared to the total number of actors. This means that only a small group of users give information towards the community as well

as acquire information. A user can give information by posting a new idea. In addition, a user can respond to questions and contributions of other users. A user can acquire information by simply reading the ongoing threads within the community or starting a new forum topic (Fahey et al. 2007, p.187). The moderate users are enrolled in the community but did not post any information to the community at the time of measurement. Since these members are enrolled in the community they are, however, in the position to acquire information and are able to participate. Because of the low level of activity before - most members were nonparticipants - little contributed material existed for moderate users or other newcomers. The above distinction between different user groups is useful since full participation is of importance for the success of a CoP.

### 6.4.3 Effects of direct and indirect management measures

The following analyses the effects of direct as well as indirect management measures, described in the order in which they happened. Table 6.4 describes the several responses on management measures, including argumentation and if it concerns a direct or indirect management measure.

Date	Description: effects of community management attempts	Direct	Indirect
<b>09 March:</b> <i>Two new challenges</i>	The two new challenges seem to have resulted in some extra activity among the enrolled members. However, the micro-structural analysis shows that there is only some extra activity among the already active members (actor 4, 11 and 35). Moreover, it concerns activities within already operational challenges which are open for the public. That the new challenges did not result in any new subscribers can be explained by the fact that the new personnel challenges were only visible for enrolled employees.		✓
<b>17 March:</b> <i>Forced enrolment</i>	The e-mail of 16 March 2010 with a request to enrol in the online system resulted in two new subscribers the same day (actor 7 and 31). These subscribers do not work on a temporary basis, freelance basis, in the evening shift nor are trainees.	✓	
<b>23 March:</b> <i>Newsletter (1)</i>	The indirect action of sending the first newsletter resulted in five new subscribers (incl. one trainee) and contributions by employees who did not participate before. These new subscribers were not individuals who work on a temporary basis, freelance basis or in the evening shift. Mentioning the reward program may explain the increase in membership. However, the critical issue remains why particular groups of people did not join.		✓
<b>31 March:</b> <i>Rewards</i>	The direct action of rewarding actor 35 resulted the next day in two new contributions by this rewarded actor. There were no other changes.	✓	
<b>7 April:</b> <i>Rewards</i>	The direct action of rewarding actor 35, 1 and 20 did not result in any new contributions by these rewarded actors. No other changes were found.	✓	
<b>9 April:</b> <i>Newsletter (2)</i>	The indirect action of the second newsletter resulted in contributions by enrolled employees who did not contributed before, but no new subscribers or contributions by the three rewarded actors.		✓

(see next page)

(cont.)

Date	Description: effects of community management attempts	Direct	Indirect
<b>14 April: Feedback + Rewards</b>	The indirect attempt of giving feedback resulted in more thread among the already active members, but there were no new contributions by the rewarded actor 8. The thread, which arises from feedback, refers to the second and third building blocks for co-creation. Namely, the feedback enables the company to understand the innovative contribution which they can use to innovate.	✓	✓
<b>22 April: Personal e-mail with request to enrol</b>	The personal e-mail to enrol in the community resulted in two subscribers the next day; one from warrant management (actor 33) and one from the evening shift (actor 23). The last one also added a new idea. After all management attempts, nine individuals are still not present. These un-enrolled individuals are from the ICT department (4 actors, this number is incl. freelancers and trainees), employed at the office duty and finance (5 actors, this number is incl. temporary workers and the evening shift). Other changes in activity can be ascribed to users who already contributed before.	✓	
<b>26 April: Newsletter (3)</b>	The same day the third newsletter was sent, the new employee (actor 44) enrolled in the community. During the weekend, this indirect action resulted in two contributions by the already rewarded actor 8, and a comment on one of these contributions by one of the community managers (actor 4). As a result, actor 8 had given more specifications on Monday. The activities during the weekend shows that the active users' participation is not something they simply turn off when they leave the company (Wenger 1998, p.57). The newsletter did not result in other contributions. This may indicate that rewards have a rupturing effect on participating patterns within the CoP. However, the rewarded actor increased her participation after the newsletter was sent, and not after being rewarded.		✓

Table 6.4 Effects of community managers direct and indirect attempts over time

#### 6.4.4 Influences around management attempts

Analysis of company documentation made clear that not only do management attempts have influence on the CoP development, but also other offline circumstances. These circumstances are the place of work and community managers' participation in the editorial meetings. Regarding the place of work; in general, all active users are surrounded by moderate and active users (see Appendix I for details). One could argue that active users who speak about the online environment motivate other employees to enrol and participate too. For instance, the enrolments of actor 12 (on 15 April) and actor 30 (on 21 April). Initially, there were no causes found which gave rise to these enrolments. The enrolment of actor 12, however, can be explained by the fact that this actor shares his office with individuals who were already present in the online community. Another example is the enrolment of one of the office duties, actor 30, on 21 April. The place of work of this actor is located near the most active community managers (actor 40 and 4) and users (actor 35 and 8). In addition to the place of work, attendance of the weekly editorial meeting has influence on the participation patterns. Of a total of seven meetings, community managers 4, 11, and 40 attended almost all meetings. Community manager 42 was present by half of it, community manager 18 only



once and community managers 27 and 7 were never present. The community managers who attended most meetings were also the most active users among them.

## 6.5 Content analysis

Regarding the content analysis, the total of thirty-two ideas was categorized into exploration and exploitation kind of contributions. Of these thirty-two ideas, thirty were close to existing products and services and did fall into the exploitation category. This resulted in only two ideas for exploration. The reason that the majority of ideas fall all into the category of exploitation is partly ascribed to the questions asked at the start of a challenge. Like; ‘Think about a new name for our obsequies product?’. Some challenges, however, gave some freedom to post exploration types of ideas (like the idea box). Table 6.5 provides a description of the results, including the number of ideas in each category and some typical ideas.

Category	# of ideas	Sample ideas
Exploration	02 (06 %)	<ul style="list-style-type: none"> <li>▪ New insurance products for this company; mortgage insurance (1x) and a bicycle insurance (1x)</li> </ul>
Exploitation	30 (94 %)	<ul style="list-style-type: none"> <li>▪ Teambuilding ideas for next personnel trip (8x + one reward)</li> <li>▪ Positive company descriptions by means of animal metaphors (5x)</li> <li>▪ Extra buttons to improve the existing website (2x + one reward)</li> <li>▪ Provide existing customers with information regarding insurance related topics by sms instead of e-mail (1x + reward)</li> <li>▪ Improve customer relations by giving feedback as quickly as possible (1x)</li> <li>▪ Ask customers’ reason for (abruptly) terminating their insurances, in order to improve existing services (1x + reward)</li> <li>▪ New name for an existing obsequies product (1x + reward)</li> </ul>

Table 6.5 Results of Content analysis

The results of the content analysis do not mean that the exploitation kinds of ideas are not valuable; several exploitation types of ideas are rewarded by the community managers. In addition to the pre-developed categories, the analysis also provided insights into the timeframe during which these ideas were developed. As mentioned, the time frame within which all this occurred was from December 2009 to April 2010. The exploitation types of ideas came in early, the exploration types of ideas at a later stage (end of April). Comments on the ideas were in the manner of; ‘nice idea’. Some comments were to ask for more explanation. These comments, however, did not result in discussions or the creation of new or improved of ideas.

## **7. Results and Main findings**

---

*This chapter presents the study results, grouped according to the four hypothesis. Linking results to the literature is here crucial because the findings rest on only one case (Eisenhardt, 1989, p.545).*

### **7.1 Power**

---

*Hypothesis 1: A CoP in an online setting has the potential to provide a place free from the power construct, which is evident in the formal organizational structure, offering an environment where employees with all sorts of knowledge are encouraged to co-create.*

The interaction patterns revealed by both the macro and micro structural analysis show a possible existence of a core of regular contributors from different departments. Thus, it seems that the online CoP offers a place free from the power constructs of the formal organization. Further analysis, however, shows that there are still a lot of non-participating individuals. In particular, freelancers, temporary workers, trainees, the evening shift and people from the ICT department have less commitment to identify themselves with the system. These groups may have the feeling that they do not belong to or are not accepted by the online CoP. After all, these groups of individuals have, to a large extent, chosen not to participate. Since participation within the CoP is on voluntary basis, the question arises as to why these particular groups of people do not respond to any request for taking part within the co-creation process. A possible explanation may be that the request for help is not from employees in their direct environment (both with regard to physical and functional distance). Related to this explanation is the argumentation that the request for help is not always from people who do have a higher position (more power) than themselves in the formal organizational. This explanation would mean that the CoP of the case study do not offer a place free from power of the formal organizational structure. Besides, a system which makes use of community managers may cause some additional hierarchic structures to occur, which is in conflict with the characterization of a CoP. To conclude, the results of the case study do not agree with the hypothesis about power. The particular online CoP under study is restricted, controlled, and limited by several power constructs which arise from the formal organization. The disagreement with the hypothesis also emerged from the finding that not all groups of employees were involved in co-creation.

### **7.2 Performance and Innovation**

---

*Hypothesis 2: As a result of the structure of an online CoP, this type of CoP is characterized by exploitation types of processes.*

The content analysis confirmed that an online CoP of employees is characterized by mainly exploitation types of ideas. Here it should be noted that the case study's CoP network with a small core of active users had likely negatively affected the overall performance. This negatively affect is in the sense that the community is highly dependent on a few core members for co-creation, which likely decreases the flow of co-creation (Toral et al. 2010, p. 302). This negatively affect may also be in the sense that the network is characterized by regular exit and entry of active users, through

which the stability of the group of active users is rather low. Since some stability is needed to maintain some level of activity, this regular exit and entry may explain why interactions seem not to take place on an ongoing basis. Eventually, a network without a small unstable core of active users may have given other results.

### **7.3 Size**

---

*Hypothesis 3: As a result of the structure of an online CoP, this type of CoP is suitable for successful implementation in small and medium-sized enterprises (SME's).*

The analysis made clear that the kind of CoP of this study is suitable for implementation in a SME. Even SME's are able to spare the necessary resources to cultivate an online CoP. The fact that it did not result in the intended goals of co-creation seems not to be caused by the size of the company. Instead of organization size, power issues (and related relations between employees) seem to have a bigger influence on the success of implementation.

### **7.4 Management**

---

*Hypothesis 4: Managers that make no attempt to directly control employees' actions, but merely seek to indirectly influence future interactions will result in a productive online CoP.*

Both the macro and micro structural analysis allowed the identification of the influence of management measures. Looking together at the tables, the following consideration can be highlighted; the size of the community's core with active users is not sufficient to realise a productive online CoP. Both direct and indirect management measures resulted in some higher density. However, the reciprocity findings suggest that it also resulted in more asymmetric relations. The analysis had shown that indirect management attempts affected employees' participation patterns to a somewhat larger extent compared to direct attempts. For instance, the micro analysis had shown that the newsletters and recognitions provided an incentive for (new) members to turn to the community's core of active users. Thus, the analysis shows that organizations can foster participation by indirect management attempts like actively recognition of contributions of organizational members engaged in the online CoP (Wasko and Faraj 200, p.170). The effects of both kinds of direct and indirect attempts, however, were of short duration. Moreover, the analyzed threads suggest that employees joined the community and posted their contributions simply for gaining rewards. These members did not view the community as a place to share knowledge, help and give advice toward other members. Finally, direct and indirect attempts by the management did not (yet) have any influence on participation of freelancers, temporary workers, trainees, the evening shift and people from departments like ICT. Thus besides a low level of interaction among core members, management attempts did not remove participation inequalities. To conclude, the analysis results do not agree with the suggested effectiveness of indirect management attempts.

## **8. Discussion and Managerial Implications**

---

*This discussion chapter offers a generalized account of answering the research questions asked in the introduction. It specifies the kind of managerial implications that are analyzed and explored in the model in order to create a sustainable online CoP for co-creation.*

The purpose of this research was to develop a conceptual framework for understanding and managing internal co-creation in an online setting. To realize co-creation, the study argued that one should establish an online CoP. The related main question and sub questions were as follows:

*What are the important managerial implications to make the implementation of an online CoP a valuable contribution for the facilitation of internal co-creation?*

- ◆ Sub question 1: Why does online CoP facilitate internal co-creation within companies?
- ◆ Sub question 2: How does online CoP facilitate internal co-creation within companies?

To answer both sub questions, the research had studied both the CoP and co-creation concepts, and the way firms can use an online CoP of employees to gain competitive advantage in form of co-creation. Regarding the first sub question, the research identified the structural characteristics of an online CoP which could make internal co-creation more likely to happen (see for example table 1.1). The literature review, with a focus on the constructivist discourse and dialogic discourse, made it further possible to explain why an online CoP could facilitate the establishment of the internal co-creation building blocks. Regarding the second sub question, the reasons *how* an online CoP could make internal co-creation to occur were explained with the hypothesis and conceptual model. The hypothesis yielded an explanation about the online CoP's for co-creation in terms of power, performance, size of a particular organization and the role of management. The conceptual framework was to further explain *how* online CoP facilitates internal co-creation. This framework serves for understanding and managing internal co-creation in terms of the various relationships between online CoP and co-creation. The main variables are the organizational principles as structure and support, and the behaviour of the organization's individuals. This analysis helped to explain how different factors can help to achieve the purpose of internal co-creation. To get more insight into the manner in which an online CoP can be applied for internal co-creation, a single case study was utilized. The case study made it possible to study the relationships between the different components. Moreover, it gave evidence for the second, third and fourth hypothesis. The case study did not support the first hypothesis, since the CoP under study did still exert some hierarchical structure where people have different ranks and positions.

*Resulting from the analysis of the preceding chapters, the following subsections conclude, indicating the limitations and describing managerial implications for online community designers and managers.*

## **8.1 Conclusions**

---

The single case study provided some evidence that online CoP's are a promising source of internal co-creation. Especially, since it gives the opportunity to involve employees from various business departments. In general, the community was characterized by a group of three to seven active participants. It was large enough to accommodate different disciplines, ideas and opinions. Yet, it was too small to represent them all. To measure CoP's performance regarding offering a valuable contribution for internal co-creation, the five criteria mentioned in section 1.1.4 were used. Regarding the first criteria, the CoP did not meet the objective of internal co-creation completely. Namely, the CoP did not provide the dialogue building block of internal co-creation. Indirect management (and to some extent direct) measures can influence employees' behaviour in having a more positive affect on the co-creation processes. These measures, however, did not result in the intended result of an ongoing co-creative behaviour. By providing valuable exploitation kinds of ideas for both the organization and its members, the second and third criteria were met. The rewards for valuable ideas were to satisfy members, but it is not for sure if these rewards were to everyone's satisfaction. Namely, the reward system had a damaging effect on knowledge exchange by devaluing one's ability to start a dialogue concerning ideas of others. The fourth factor is therefore not fully met. The analysis showed that a considerable degree of connection within the CoP is following the thread, without starting a dialogue. In addition, there were not increasingly extensive interactions between diverse ranges of actors. Community members were for a greater part characterized by a rather low level of interaction. Since the community did not exhibit increasingly extensive and repeated interactions, it did not exhibit the behaviour of the virtuous circle. Therefore it cannot be fully defined as a CoP. Accordingly, the fifth criteria about interactions among CoP members was not met. Following the judgement of all criteria, one can conclude that the case study is not characterized by a successful CoP. The process by which the results were obtained (criteria 4-5) did not work in a satisfactory way. In addition, it did not result in the intended impact on co-creation processes (criteria 1-3).

After all, implementation of an online CoP which is valuable for the facilitation of internal co-creation is a challenging task. It is challenging in the sense that it is difficult to involve employees from different function groups. It is also challenging to encourage a sufficient group of active users who co-create on an ongoing basis. Nevertheless, the conceptual model is a valuable starting point to design more effective innovation policies regarding online CoP's and co-creation. In other words, the model is useful to provide managers and designers a better understanding of the dynamics of employee's centred co-creation.

## **8.2 Limitations**

---

One of the main strengths of the research was its potential to generate theory out of a case study where all individuals were included. However, there were also some limitations. First of all, problems related to creating a continuous flow of co-creations are too big to be solved by a model which is tested by values that are based on only one case study. Another limitation is the surprising volume of research in the field of learning and knowledge management that made it impossible to build a conceptual framework which captures everything. Since research already gave evidence for issues as motivation and trust, it was possible to avoid this temptation. This resulted in a framework which is not rich in detail, but gave a better overall perspective compared to other studies. The framework gave the relationship between internal co-creation, online CoP's and the wider organizational context by taking account of issues as power and conflicts, which was not done before. For the same reason that issues as motivation and trust were not investigated in much detail, the methodology used did contain an element to ask participants individually for any evaluation.

## **8.3 Managerial implications**

---

By precisely identifying the nature of the CoP and co-creation processes in the company of the case study, this research was able to design several managerial implications. These implications focus on gaining and developing further competitive advantage by using online CoP's for co-creation, and provides an answer to the research question. The important managerial implications emerging from the research about co-creation by means of online CoP's are as follows:

- *Encourage employees to identify themselves with the CoP*

Analysis of the online CoP supports the argument that employees in these communities are taking part only if they identify themselves with the community. Several factors apparently affected the extent to which these people could identify with the online CoP. Like if an employees' contract was on a temporary basis or not, and if they trusted the terms and conditions. Since a substantial part of the company's employees do not participate, the company of the case study should turn to a policy that makes it more likely that all groups identify themselves with the online CoP. For instance, make it possible that every group is represented in the online system by a representative. Attending offline editorial meetings between these community managers and representatives is of importance. Considering the active behaviour of community managers who are attending the meetings, and the positive influence on physical neighbouring employees they have, this recommended policy could help to serve several groups of actors with co-creation processes. Further, the case study results stress the need for the community managers to act, on an ongoing basis, to sustain the development of the CoP and the related co-creation processes.

Thus the results suggest that, to have a strong long-term effect, it is necessary to implement a policy for all actors involved that remains influential over time.

- *Balance the motivational system with the co-creation process and the parties involved*

Regarding the case study's reward system, reward points were based on the quality of the information within the posted ideas. Consequently, many members seem to prefer the posting of ideas instead of starting any dialogue. It was unforeseen that employees who did identify themselves with the community would participate mainly because they wanted to post ideas in return for rewards. Members nearly appreciate in any online dialog, debate and discussion around ideas and topics of interest (only active community managers did). Thus, participation was simply to succeed at obtaining the reward. This does not mean that members do not succeed at the task at all. They did succeed in the sense of posting ideas. Unfortunately, members did not succeed in contributing information to make contributions of others be subject to the co-creation process. As a result, it was not a whole group of employees which brought the idea forward to prepare the ground for a useful solution. In this way, the rewards system displaces and undermines the interaction process. Interactions are important in highlighting the variations and flaws of any contributed idea. Without this interaction, there is nothing for the users to keep them involved in a challenge after posting their idea. Besides, without interaction the process cannot be characterized as co-creation. Therefore, the company should reconsider the strategy on the extrinsic reward systems and the manner of giving feedback. Here, it should be mentioned that incorporating both employees and customers into the online CoP activities raises problems regarding how to balance the rewarding system for both parties. As shown, systems based on extrinsic rewards could destroy any co-creation process. When this particular reward program stops, however, actors who were motivated by receiving rewards may stop participating. Nevertheless, activity within the community of employees should not decline due to closure of the reward programme. Employees already receive a 'reward' in form of their salary, and may be even more motivated by intrinsic rewards as recognition of their contributions. Therefore, it is advisable to communicate all (planned) idea implementation to the community (e.g. via a newsletter). Problems may arise if the reward system for the public is maintained; users may prefer to contribute to public challenges only. Therefore, the use of tangible rewards contingent on valuable ideas *and* feedback for both employees and the public seems to be more suitable to establish a co-creative organization.

- *Set up independent managerial support*

A wide range of available community managers makes it possible to assign one, with some in-depth knowledge of the subject, to a challenge. This enables the manager to understand and

respond to everything being contributed in order to lead the co-creation process. Besides being capable of the required managerial role, community managers should be as much as possible free of conflicting power relations and the existing hierarchical structure. Challenges in the case study, however, were managed by people who were also colleagues of the community members. This situation made it difficult for participants to keep these roles apart. The responsibilities, aims, or conflicting hidden agendas of a community manager might hinder voluntary contributions by community members. These contributions are just so important for co-creation. The managerial support system within the case study does not distance the employees from daily power constructs (see section 7.1) to properly conduct co-creation. To facilitate co-creation, it seems that challenges ask for independent and neutral managerial support. This also applies to challenges where it is useful to invite external participants (e.g. customers and partners). It means that the managerial support should not represent any company department or functional job. On condition that the role of the community manager should be made clear to all, one can hire external community managers to monitor the co-creation process (Tassoul 2009, p.133-4).

▪ *Combine direct and indirect measures*

The nature of problems that arose with CoP implementation shows that there is no single best managerial implication for all actors in the value chain. Thus, it all depends of the context. Both direct and indirect regulation and motivation instruments are needed to address the goals of co-creation. Indirect measures have the biggest influence on participation patterns. As the network begins to grow, however, there is a need to have some rules and policies (direct measures) to maintain the content quality. Therefore, a combination of the company' current direct and indirect instruments makes it possible to support the network and co-creation processes to develop.

Despite several uncertainties, organizations concerned with co-creation should still consider using an online CoP that can connect employees from several business departments. The greatest difficulty in developing these CoP's will be to encourage all employees to participate and interact within the community. The problem here is not the technology, since the technology can keep track of the structure of the interaction, archive discussions in a searchable format, and display the identities of group members. Instead, managers should pay attention to encouraging interactions.



## **9. Directions for Further Research**

---

*The recommendations, as presented in the previous chapter, can be used for stimulating co-creation. There is, however, still uncertainty about which instruments will work and what kind of obstacles may emerge. Therefore, this final chapter concludes with the scope for further analysis.*

The knowledge that the acquired conceptual model is at a preliminary stage, means that it can never include everything that is needed or relevant. It is, for instance, possible to specify managerial support in much more detail. Among other things, managerial support can be specified by explaining the selection techniques one should apply to recognise the quality of the added ideas. This means providing a process to select the relevant and useful ideas. Thus, to go from many to less ideas. The selection techniques, in turn, should help to elaborate (co-create) on the chosen ideas even further. This process should lead to a conclusion which can be used for implementation. To give more details on managerial support, it is suggested to start with acquiring an overview of different converging techniques (study for instance Tassoul 2009).

After all, one of the main tasks ahead is the development of more accurate parameters for the model. The current model describes several variables in a very broad manner; a future model could go into these descriptions. In addition to more detailed characterizations, the conceptual model did not take into account issues such as time and proximity. Time could give an additional explanation for the absence of particular groups of people. Participation in the online CoP can be time consuming. Therefore, slack time may be the reason that particular employees (like time-starved ICT experts) do not participate. Related to this factor of time is that the likelihood of immediate personal benefit is low. Rewarding takes place on a later point of time, and a co-creative answer takes time to develop. Another issue is the proximity to other individuals. The case study made clear that individuals with a close proximity and related face-to-face contact with active users were more likely to participate. A possible explanation is that these active users act as an energetic promoter of the system to make it become popular. Further analysis should therefore comply with issues as time and proximity.

Once the more specified and additional parameters are acceptable, the model can be used to investigate different phenomena in co-creation by means of online CoP's. In this way, further analysis should provide more clarity if continuous co-creation among employees from the entire company is possible in practice. The task of developing precise parameters requires a variety of empirical studies. Since the present study centred on a single case study, it will be complementary to repeat the study in other online CoP's. These additional studies are needed to explore the dynamics of online CoP's and company's co-creation performances in more detail. Repeating the study in other online CoP's does include the applicability of online CoP's within other types of institutions.

## References

---

- Amin, A. and J. Roberts (2008) Knowing in action: Beyond communities of practice, *Research Policy* 37(2), p.353-369
- Ardichvili, A., V. Page and T. Wentling (2003) Motivation and barriers in to participation in virtual knowledge-sharing communities of practice, *Journal of Knowledge Management*, 7(1), p.64-77
- Bogenrieder, I. and B. Nooteboom (2004) Learning Groups: What Types Are There? A Theoretical Analysis and an Empirical Study in a Consultancy Firm, *Organization Studies*, 25(2), p.287-313
- Bogner, W.C. and P. Bansal (2007) Knowledge Management as the Basis of Sustained High Performance, *Journal of Management Studies*, 44(1), p.165-188
- Boland, R.J. and R.V. Tenkasi (1995) Perspective Making and Perspective Taking in Communities of Knowing, *Organization Science*, 6(4), p.350-372
- Borgatti, S.P., M.G. Everett, and L.C. Freeman (2002) *Ucinet for Windows: Software for Social Network Analysis*, Harvard, MA: Analytic Technologies
- Bourhis, A. and L. Dubé (2010) 'Structuring spontaneity': investigating the impact of management practices on the success of virtual communities of practice, *Journal of Information Science*, published online, p.1-19
- Benner, M.J. and Tushman, M.L. (2003) Exploitation, exploration, and process management: The productivity dilemma revisited, *Academy of Management Review*, 28(2), p.238-256
- Birkinshaw, J. and C. Gibson (2004) Building ambidexterity into an organization. *MIT Sloan Management review*, Summer 2004, p.47-55
- Brown, J.S. and P. Duguid (1991) Organizational learning and communities of practice: toward a unified view of working, learning, and innovation, *Organization Science*, 2(1), Special Issue: organizational learning, p.40-57
- Brown, J.S. and P. Duguid (1998) Organizing Knowledge, *California Management Review*, 40(3), p.90-111
- Burrell, G. and G. Morgan (1979) *Sociological Paradigms and Organizational Analysis*, London: Heinemann. ISBN: 0-435-82130-X
- Contu, A. and H. Willmott (2003) Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory, *Organization Science*, 14(3), p.283-296
- Dubé, L., A. Bourhis and R. Jacob (2006) - Towards a typology of virtual communities of practice, *Interdisciplinary Journal of Information, Knowledge, and Management* 1, p.69-93
- Duguid, P. (2008) Community of Practice then and now, Prologue in Amin, A. and J. Roberts (2008) *Community, Economic Creativity, and Organization*, New York: Oxford University Press, ISBN: 978-0-19-954550-6
- Damanpour, F. (1991) Organizational innovation: a meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34(3), p.555-90.
- Easterby-Smith, M. and A. Lyles (2003) *The Blackwell handbook of organizational learning and knowledge management*, Oxford: Blackwell Publishing, ISBN: 0-631-22672-9
- Eisenhardt, K.M. (1989) Building theories from case study research, *The academy of management review*, 14(4), ABI/INFORM Global, p.532-550.
- European Commission (2009) *Report on implementation of the SME definition*, Brussels: European Commission, website last accessed on 15 March 2010, published in digital form at [http://ec.europa.eu/enterprise/policies/sme/files/sme\\_definition/sme\\_report\\_2009\\_en.pdf](http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_report_2009_en.pdf)
- Fahey, R., A.C. Vasconcelos and D. Ellis (2007) The impact of rewards within communities of practice: a study of the SAP online global community, *Knowledge Management Research & Practice*, 5(3), p.186-198
- Fox, S. (2000) Communities of practice, Foucault and actor-network theory, *Journal of Management Studies*, 37(6), p.853-868
- Frigo, M.L. and V. Ramaswamy (2009) *Co-Creating Strategic Risk-Return Management*, Strategic Finance, Cover story, p.25-33
- Granovetter, M.S. (1973) The strength of weak ties, *American Journal of Sociology*, 78(6), p.1360-1380
- Handley, K., A. Sturdy, R. Fincham and T. Clark (2006) Within and Beyond Communities of Practice: Making Sense of Learning Through Participation, Identity and Practice, *Journal of Management Studies* 43(3), p.641-653

- Hanneman, R.A. and M. Riddle (2005) *Introduction to social network methods*. Riverside, CA: University of California, Riverside, website last accessed on 31 May 2010, published in digital form at <http://faculty.ucr.edu/~hanneman/>
- Hansen, M. T. (1999) The search-transfer problem: the role of weak ties in sharing knowledge across organization subunits, *Administrative Science Quarterly*, 44(1), p.82-111.
- Hara, N. P. Shachaf and S. Stoerger (2009) Online communities of practice typology revisited, *Journal of Information Science*, 35(6), p. 740–757
- Hara, N. (2007) Information technology support for communities of practice: how public defenders learn about winning and losing in court, *Journal of the American Society for Information Science*, 58(1), p. 76–87
- Hislop, D. (2005) *Knowledge management in organisations: a critical introduction*, 1<sup>st</sup> edition, Oxford: Oxford University Press, ISBN: 978-0-19-926206-9
- Hislop, D. (2009) *Knowledge management in organisations: a critical introduction*, 2<sup>nd</sup> edition, Oxford: Oxford University Press, ISBN: 978-0-19-953497-5
- Hughes, J., N. Jewson and L. Unwin (2007) *Communities of practice. Critical perspectives*, London: Routledge, ISBN: 978-0-415-36474-4
- ICICKM (2010) *7th International Conference on Intellectual Capital, Knowledge Management & Organisational Learning - Mini Track: Communities of practice*, website last accessed on 2 February 2010, <http://academic-conferences.org/icickm/icickm2010/icickm10-minitrack.htm#CoP>
- Jewson, N. (2007a) Cultivating network analysis. Rethinking the concept of ‘community’ within ‘communities of practice’, Chapter 6 in: Hughes, J., N. Jewson and L. Unwin, *Communities of practice. Critical perspectives*, London: Routledge.
- Jewson, N. (2007b) Communities of practice in their place: some implications of changes in the spatial location of work, Chapter 13 in: Hughes, J., N. Jewson and L. Unwin, *Communities of practice. Critical perspectives*, London: Routledge
- Johnson, J.M. (2001) A survey of current research on online communities of practice, *Internet and Higher Education*, 4, p.45-60
- Kogut, B. and U. Zander (1992) Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology, *Organization Science*, 3(3), Focused Issue: Management of Technology, p. 383-397
- Lam, A. (2005) - Organisational Innovation, Chapter 5 in J. Fagerberg, D. Mowery and R. Nelson, *The Oxford Handbook of Innovation*, Oxford University Press, p.115-147
- Lave, J. and E. Wenger (1991) *Situated Learning: Legitimate Peripheral Participation*, Cambridge: Cambridge University Press, ISBN: 0 521 42374 0
- Lave, J. (2008) Situated Learning and Changing Practice, Epilogue in: Amin, A. and J. Roberts (2008) *Community, Economic Creativity, and Organization*, New York: Oxford University Press, ISBN: 978-0-19-954550-6
- Mutch, A. (2003) Communities of Practice and Habitus: A Critique, *Organization Studies*, 24(3), p.383-401
- Nonaka, S. and N. Takeuchi (1995) *The knowledge creating company. How Japanese Companies Create the Dynamics of Innovation*, Oxford: Oxford University Press, ISBN: 0-19-509269-4
- Nooteboom, B. (2009) *A cognitive theory of the firm*, Cheltenham UK: Edward Elgar, ISBN: 978 1 84844 210 8
- OECD (2000) *Small and Medium-sized Enterprises: Local Strength, Global Reach, Policy Brief*, website last accessed on 15 March 2010, published in digital form at <http://www.oecd.org/dataoecd/3/30/1918307.pdf>
- Porter, M.E. and V.E. Millar (1985) How information gives you competitive advantage, Chapter 3 in Porter, M. E. (2008) *On Competition – Updated and Expanded version*, Boston: Harvard Business Review
- Porter, M.E. (2001) Strategy and the Internet, Chapter 4 in Porter, M. E. (2008) *On Competition – Updated and Expanded version*, Boston: Harvard Business Review
- Prahalad, C.K. and V. Ramaswamy (2000) Co-opting Customer Competence, *Harvard Business Review*, 78(1) p.79-87
- Prahalad, C.K. and V. Ramaswamy (2002) The co-creation connection, *Strategy and Business*, 27, p.1-12

- Prahalad, C.K. and V. Ramaswamy (2004) Co-Creating unique value with customers, *Strategy and Leadership*, 32(3), p.4-9
- Ramaswamy, V. (2009) Leading the transformation to co-creation of value, *Strategy and Leadership*, 37(2) p.32-37, DOI 10.1108/10878570910941208
- Roberts, J. (2006) Limits to Communities of Practice, *Journal of Management Studies* 43(3), p.623-639
- Schultze, U. and C. Stabell (2004) Knowing What You Don't Know? Discourses and Contradictions in Knowledge Management Research, *Journal of Management Studies* 41(4), p.549-573
- Suzaki, K. (1987) *The new manufacturing challenge, techniques for continuous improvement*, Printing number 25, New York: The Free Press, ISBN: 0-02-932040-2
- Swan, J., S. Newell, H. Scarbrough and D. Hislop (1999) Knowledge management and innovation: networks and networking, *Journal of Knowledge Management*, 3(4), p.262-275
- Swan, J., H. Scarbrough and M. Robertson (2002) The construction of 'communities of practice' in the management of innovation, *Management Learning*, 33(4), p.477-496
- Tassoul, M. (2009) *Creative Facilitation*, 3rd edition, Delft: VSSD, ISBN:-13 978-90-6562-200-6
- The Economist (2009) Getting togetherness: The pitfalls of trying to create a collaborative workplace, *The Economist online*, website last accessed on 27 March 2010, [www.economist.com/business-finance/displaystory.cfm?story\\_id=13435337](http://www.economist.com/business-finance/displaystory.cfm?story_id=13435337)
- Thompson, M. (2005) Structural and epistemic parameters in communities of practice, *Organization Science*, 16(2), p.151-164
- Tidd, J. and J. Bessant (2009) *Managing innovation: integrating technological, market and organizational change*, 4th ed., Chichester: Wiley, ISBN 978-0-470-99810-6
- Toral S.L., M.R. Martínez-Torres, F. Barrero (2010) Analysis of virtual communities supporting OSS projects using social network analysis, *Information and Software Technology*, 52(3), p.296-303
- Tsang, E.W.K. (1997) Organizational Learning and the Learning Organization: A Dichotomy Between Descriptive and Prescriptive Research, *Human Relations*, 50(1), p.73-89
- Usoro, A., M.W. Sharratt, E. Tsui and S. Shekhar (2007) Trust as an antecedent to knowledge sharing in virtual communities of practice, *Knowledge Management Research & Practice*, 5, 199-212
- van Wijk, R., J.J. P. Jansen, M.A. Lyles (2008) Inter- and Intra-Organizational Knowledge Transfer: A Meta-Analytic Review and Assessment of its Antecedents and Consequences, *Journal of Management Studies* 45(4), p.830-853
- Vera, D. and M. Crossan (2003) Organizational learning and knowledge management: Toward an integrative framework, Chapter 7 in Easterby-Smith, M. and A. Lyles (2003) - *The Blackwell handbook of organizational learning and knowledge management*, Oxford: Blackwell Publishing, ISBN: 0-631-22672-9
- Wasko, McLure M. and S. Faraj (2000) It is what one does: why people participate and help others in electronic communities of practice, *Journal of Strategic Information Systems* 9(1), p.155-173
- Wenger, E. (1998) *Communities of Practice. Learning, Meaning, and Identity*, New York: Cambridge University Press, 18<sup>th</sup> printing, ISBN: 978-0-521-66363-2
- Wenger, E., R. McDermott, and W.M. Snyder (2002) *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Boston: Harvard Business School Press. ISBN 1-57851-330-8
- Womack, J.P., D.T. Jones (2003) *Lean Thinking. Banish waste and create wealth in your corporation*, New York: The Free Press. ISBN: 0-7432-4927-5
- Zhang, X. and R. Chen (2008) Examining the mechanism of the value co-creation with customers, *International journal of production economics*, 116, p.242-250

## Notes

---

- <sup>1</sup> To illustrate that the problem of making and managing internal connections of employees across an organization exists already for a long time, the following illustrates what firms have done to close this gap throughout history. Tidd and Bessant (2009, p.115) gives in their volume, about managing innovation, an example about the Denny's shipyard in Dumbarton (Scotland) in 1871. This shipyard had a system to ask workers and rewarded them for any change by which work was rendered either superior in quality or more economical in costs. Although recognition of the kind of improvement due to employee involvement received already attention in the late nineteenth century, considerable publicity was mainly given in the late twentieth century, associated with models such as continuous improvement (Suzaki 1987) and lean thinking (Womack and Jones 2003). For example, the manufacturing consultant Suzaki (1987), who built on basic techniques from Japanese industrial philosophy and procedures, developed a methodology about continuous improvement. Suzaki's 1987 volume highlights the importance of utilizing the workers' ability to improve the company's capabilities. According to Suzaki (1987, p.205-6); *"I believe that everybody can contribute something to improve the quality of work. Nevertheless, in many companies the reward system and structures do not seem to have addressed this point well. As a result, there is typically a lack of motivation or incentive for improvement"* and; *"I view the number of suggestions offered by employees as a good measure of the direct link between improvement and motivation. Yet I have observed many cases where suggestion programs are dormant or inoperable as a result of a cumbersome and overly long evaluation process, or because employees feel they cannot trust their managers."* This description clearly shows that the problem did not change much during the past decade. Therefore, it could be stated that the waste of underutilized people's skills and capabilities is a long-standing problem. This unsatisfactory situation affects the creation of organizations capable of continuous problem solving and innovation.
- <sup>2</sup> Prahalad and Ramaswamy introduced the business concept of co-creation in 2000. In their review, they argue that largely through the internet customers can play an active role in a dialogue with producers of products and services. Furthermore, they argue that customers can become a new source of competence for corporations. This competence can be created by bringing their knowledge and skills they have, their willingness to learn and experiment, and their ability to engage in an active dialogue. To make use of these advantages - in other words to co-create value with customers - they propose that the company process should be enhanced by including customers (Prahalad and Ramaswamy 2000). Since then, there has been a widespread adoption of new technologies that permit customers, employees and other stakeholders to continuously participate in value creation. Still, the research in the area is in an early stage (Zhang and Chen 2008). In a more recent article by Ramaswamy (2009), he argues that becoming a co-creative organization requires enabling organizational linkages between employee (internal co-creation), customer (community co-creation) and partner (network co-creation). In reality, the co-creation process always begins inside the organization. In order for the organization to co-create a unique customer experience, it must thus co-create an empowered employee experience inside the organization. This joint approach affects the extent to which employees support co-creation solutions in general. This recommendation especially goes for established organizations. The article describes the initial co-creation initiatives by the computer company HCL, which aimed at learning from and communicating with employees. The recent reasoning by Ramaswamy, that implementation of the co-creation model always begins inside the organization, legitimizes the internal focus of the current research.
- <sup>3</sup> This study will build on renewed efforts of multinational corporations which deal with the problem of internal employee linkages by means of the concept of CoP (Tidd and Bessant 2009, p.260; Ardichvili et al. 2003, p.64). One example of these renewed efforts is Procter & Gamble's (a consumer-goods giant) creation of more than twenty CoP's. These CoP's bring together volunteers from different parts of the company and focus on a specific area of expertise, like packaging. The CoP's meet and share ideas, and other employees can put questions to them via the company's intranet. Many of this company's products have already benefited from innovations brought about through internal co-operation and knowledge-sharing (The

---

Economist 2009). Since the academic construct of CoP is still under active construction, it is only misleading when the renewed efforts of the current research are presented as a seamless continuation of the concept's initial ideas (Duguid 2008, p.4). Therefore, this study will *redirect* the original concept of CoP.

- <sup>4</sup> Undesirable conflict within an organization has several drawbacks. Too high conflict may result in information hoarding, open aggression, or employees lying or exaggerating about their real needs. These conditions could be caused by both personal and professional power struggles. By too low conflict, however, individual or groups of employees may lack motivation or interest in their tasks, and meetings are about one-way communication or reporting, rather than discussions and debate (Tidd and Bessant 2009, p.549).
- <sup>5</sup> The building blocks for internal co-creation reflects the author's interpretation of the concept found in the literature. In particular, the characterization is based on the key building blocks of community co-creation, as identified by Prahalad and Ramaswamy (2004, p.6-9; 2002, p.9-11). Community co-creation is aimed at co-creation between customers. These community co-creation building blocks are (1) Dialogue, (2) Access, (3) Risk assessment, and (4) Transparency (DART). The first building block, *dialogue*, encourages both knowledge sharing and a shared level of understanding between customer and company. It helps companies to understand the emotional, social and cultural contexts and provides knowledge that companies can use to innovate. The building block *access* begins with information and tools, which is needed to participate effectively. It challenges the notion that ownership of the product is the consumers' only way to experience value. By focusing on access to value at multiple points on the value chain, companies can broaden their view of business opportunities. The building block of *risk assessment* refers to the probability of harm to the customer. It assumes that as individuals become more involved in co-creation and companies reveal more information about potential risks of goods and services, individuals may be willing to bear more responsibility for dealing with those risks. The fourth building block is *transparency* of information about firms' prices, costs, profit margins, products, technologies, systems etc. Transparency is required to create trust between institutions and individuals. In addition, it enhances the individual's ability to make informed choices (Prahalad and Ramaswamy 2004, p.6-9; 2002, p.9-11). Through engagement platforms that are DART enabled, organizations can actively involve all stakeholders (including internal stakeholders such as operations and marketing employees) in co-creation (Frigo and Ramaswamy 2009, p.26).
- <sup>6</sup> The level of interaction among CoP members can as best be characterized as 'community traffic', which in a study by Ardichvili et al. (2003, p.67) was measured by the number of postings, permanent knowledge entries and various online activities.
- <sup>7</sup> A cognitive repertoire refers to the resources within relationships that provide shared representations, interpretations, and systems of meaning. Research suggests that a shared vision and cultural distance are important cognitive elements because they influence knowledge transfer to increase (van Wijk et al. 2008).
- <sup>8</sup> The practice-based view on knowledge suggests that organizational knowledge bases are in fact fragmented and dispersed, being made up of specialized and specific knowledge communities, which have some degree of overlapping common knowledge (Hislop 2009, p.43; Kogut and Zander 1992, p.384).
- <sup>9</sup> This research talks about a *relatively* closed membership. This means that the CoP has, to a certain degree, closed membership, especially to members outside the organization. To justify the focus on *relatively* closed membership refer to a study by Dubé et al. (2006). They developed a typology of online CoP's through literature reviews and empirical research on eighteen online CoP's implemented in fourteen different organizations. Regarding closed interest groups, the authors found that a closed membership policy would give more control over online CoP members, but prevent, for an organization, wide knowledge sharing among employees (Dubé et al. 2006, p.78). This last characteristic is the focus of the current study, which makes a closed membership policy not an option.
- <sup>10</sup> Strong inter-personal ties can be defined as ties between people who have intensive, regular interactions through common work (Ardichvili et al. 2003, p.73). These strong ties yield shared experience (Bogenrieder and Nooteboom 2004, p.293).

- 
- <sup>11</sup> A virtuous circle means that once one action starts happening, other things happen (e.g. learning), which cause the first thing to continue. This can also be characterized by the activity theory of knowledge in which action and learning feed each other (Bogenrieder and Nootboom 2004, p.289).
- <sup>12</sup> This section is based on an article by Porter (2001) where key topics are addressed, leading to the conclusion that the internet should be viewed as a complement of the traditional ways of competing, instead of a stand alone entity of the whole business operation.
- <sup>13</sup> Tacit knowledge is not full encoded and intangible. As a result, this kind of knowledge is not easily imitated by competitors, but it may also not be fully visible to all members of an organization (Tidd and Bessant 2009, p.548). Research shows that the more tacit the underlying knowledge in an organization, the less easily it can be transferred (van Wijk et al. 2008, p.838).
- <sup>14</sup> Epistemology can be defined as philosophy of science which addresses the nature of knowledge. It is concerned with questions like; '*Is knowledge objective and measureable?*' and '*Can knowledge be acquired or is it experienced?*' (Hislop 2009, p.16).
- <sup>15</sup> Power can be defined as the ability or capacity to achieve something, whether by influence, force, or control (Roberts 2006, p.626).
- <sup>16</sup> SME's are non-subsidary, independent firms which employ fewer than a given number of employees. This number - which varies across national statistical systems - is in the context of this research the most frequent upper limit of 250 employees (same as in the European Union). Some countries, however, set the limit at 200 employees, while the United States considers SME's to include firms with fewer than 500 employees. Small firms are generally those with fewer than 50 employees, like the firm in the case study. Financial assets can also be used to define SME's. In the European Union, medium-sized companies must have an annual turnover of €50 million or less and/or a balance-sheet valuation not exceeding €43million. In addition, small-sized companies must have an annual turnover of €10 million or less and/or a balance-sheet valuation not exceeding €10 million (European Commission 2009, p.2-3; OECD 2000, p.2).
- <sup>17</sup> In contrast to centralization, one of the main trends in management over the past decade has been to decentralise organizations (The Economist 2009). A decentralized structure reflects the extent to which decision-making autonomy is dispersed in an organization. In other words, it involves moving down the hierarchy. It is usually measured by the degree of organizational members' participation in decision making or by the degree of authority and freedom organizational members have to make their own decisions (Damanpour 1991, p.589). Prior research has mainly suggested a positive relationship between decentralization and organizational knowledge transfer (van Wijk et al. 2008, p.834). Meta-analytic results of a study by van Wijk et al. (2008, p.839-40), however, shows that there are no significant mean correlations between decentralization effects on organizational knowledge transfer in intra-organizational contexts. Since a co-creative organization does not only focus on intra-organizational contexts, a decentralized structure is still likely to engender the mentioned advantages.
- <sup>18</sup> If community members are characterized by a symmetrical relationship, there is no centrality (Bogenrieder and Nootboom 2004, p.305).
- <sup>19</sup> Besides the online system by RedesignMe, there are other similar systems available, like Lotus Connections (<http://tinyurl.com/5nahg7>); Alfresco (<http://tinyurl.com/673lbj>); SharePoint (<http://tinyurl.com/24p5up>);
- <sup>20</sup> The terms and conditions set out the standard rules and conditions which apply when an individual enters the online environment. These terms describe the responsibilities and limitations for each participant. It will allow community members to resolve conflicts by themselves (Johnson 2001, p.51). The terms and conditions were as follows. By participating in co-creation challenges one confirms that: (1) You are the original creator of the idea, concept or design (now called: the work), and the visual aids uploaded by you. (2) You guarantee you did everything in your power to make sure you are the original creator. (3) You fully transfer all transferable rights of the work to the challenge owner. (4) For all non-transferable rights, an unlimited license is provided by you to the challenge owner. (5) You agree that by submitting your work to the online system, the challenge owner can use this idea in any way they want, for example to make a

---

product out of it, even if they did not reward you for it. (6) The company reserves the right to use your content, in its original or edited form, for promotional activities. (7) You have an obligation to indemnify: You have to hold the company and the challenge owner from and against any third party claims, arising out of any of the content you have submitted. (8) The company reserves the right to refuse participation to any participant at any time, and to withdraw content and/or to terminate the services provided. (9) You are not allowed to advertise your own products or services when participating in challenges. However, you can do that on your profile page. (10) Any form of spam, discrimination, swearing, etc. will be removed from the site. Your account will be closed if you perform any of these things. (11) The online environment is provided “as is” with no warranties whatsoever. Also products bought in the online shop come without warranty. (12) You cannot derive any rights from the possibility of not being able to connect to [name website] as this is beyond the direct control of the company. (13) The company sends periodically a newsletter to all registered users within the online system. (14) Terms and conditions may change without notice. (15) Articles in the online shop which are placed “with reservation” may appear to be not available. *In short*, the terms and conditions describe that the company wants to have the exclusive ownership of the contributions.



## Appendix I. Office Plan

Figure A2 (see next page) shows an overview of the actors' place of work within the company of the case study. Figure A1 is illustrative for the network relations among them.

*Comments:*

- All actors are represented by a number.
- Numbers are assigned based on an alphabetically arranged list.
- Employees employed after 1 March 2010 are assigned with a new (unique) number and their box is marked with a dotted line. Actor 44 joined on 1 April 2010, actor 45 on the 20<sup>th</sup> of April.
- Actor 22 and 32 were discharged as from 1 April 2010, the internship of actor 24 and 36 ended on 29 April 2010; these boxes are marked with a cross
- Actor number 2, 11, 31 and 43 have more than one function.
- Actors with more than one function are assigned to the department in which they perform their main activities
- The different shadings are illustrative for the different functions and roles of the individuals
- Within the context of this figure, an active user is someone who is enrolled in the community through a registration process. During the period of study, this particular user had given information towards the online community and/or acquired information.
- Actors who work in the evening shift normally do not have face-to-face contact with the other actors and vice versa.

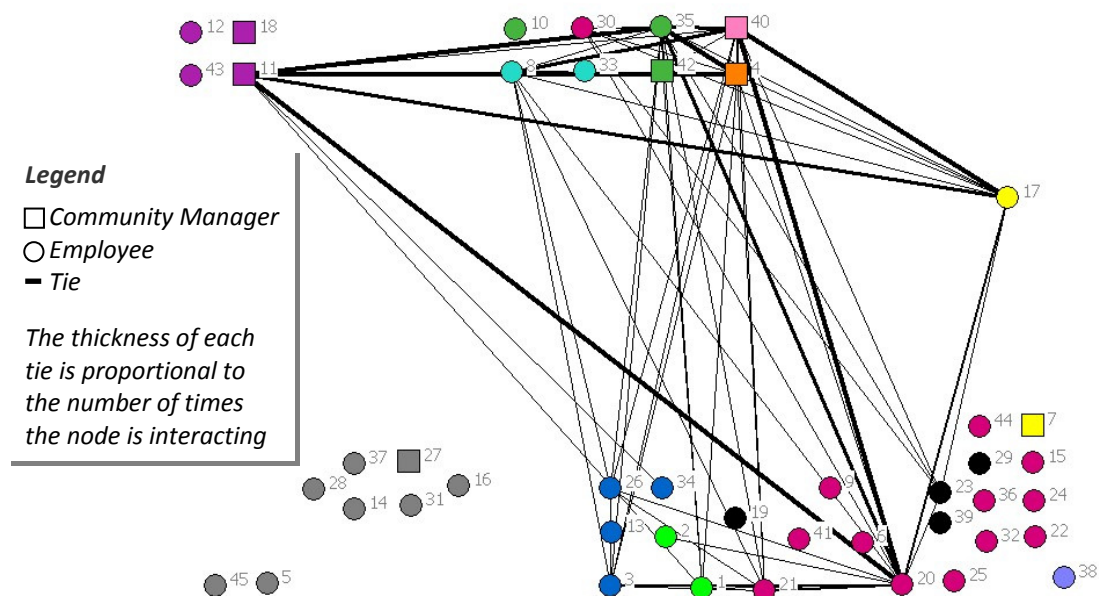


Figure A1.1 Network relations distributed on work place

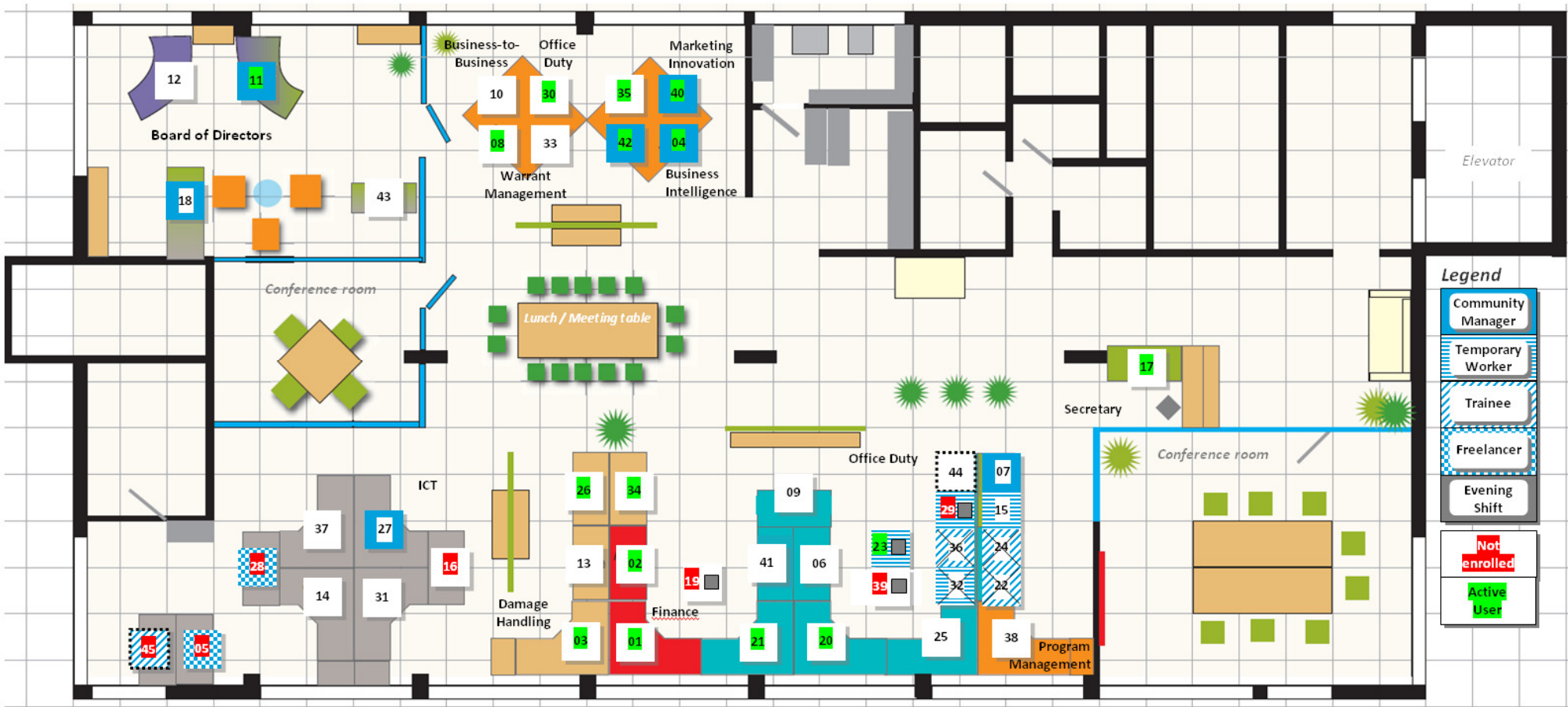


Figure AI.2 Office Plan Self-Assured (30 April 2010)



















## **Appendix III. Degree Centrality**

Table A1 (next page) details the centrality measures corresponding to the threads of contributors in the online CoP. The table shows the centrality for each active participant by taking into account the direction of ties (out-degrees and in-degrees).

### *Comments:*

- There are about 43 actors. The table, however, lists only the actors with an out-degree *or* in-degree of 1 or higher.
- The numbers in grey indicate where there is no change with regard to the date before.
- The marked boxes show where there is a change in out-degree with regard to the date before.
- The last five rows in the table describe the population as a whole, on macro level. Like in the first case, the out-degree graph centralization is 5.3% and the in-degree graph centralization is 3.6% of the maximum possible concentration.
- The high in-degree figures for community manager number 11 and 40 are caused by the fact that these actors started most of the challenges. That is, most threads refer to these actors.
- The low level of out-degree by actor 35 during the latter dates of measurement can be explained by her absence due to pregnancy leave.
- The table shows an initial group of users which begin to interact. Over time, more members have joined the community and the community begins to develop. According to the table, however, the community already faces a combination of poor participation and transient membership. One should prevent this community losing momentum and member interest completely and therefore dying young.

Date	02 March		09 March		17 March		23 March		31 March		07 April		09 April		14 April		22 April		26 April		30 April		Ideas	
Degree	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	#	
Actor 35	7	5	8	5	8	6	8	6	15	6	15	6	15	6	18	7	18	10	18	10	18	12	8	
Actor 04*	5	3	6	6	7	6	11	9	11	9	11	9	11	9	11	9	13	10	14	11	15	11	0	
Actor 42*	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	
Actor 11*	2	4	6	6	6	6	6	6	6	7	6	7	6	8	8	10	8	12	8	12	8	15	0	
Actor 20	2	1	2	2	5	2	7	7	8	8	8	8	8	8	13	10	13	13	13	13	13	17	16	6
Actor 40*	2	2	2	2	2	6	2	9	2	10	2	10	2	11	2	13	2	18	2	19	10	21	2	
Actor 01	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	
Actor 08					2	1	4	6	4	7	4	7	4	7	4	7	4	7	7	8	7	8	4	
Actor 26							5	0	5	1	5	1	5	1	5	1	5	1	5	1	5	1	1	
Actor 03							5	2	5	3	5	3	5	3	5	3	5	3	5	3	5	3	1	
Actor 21							3	5	3	6	3	6	3	6	3	6	3	6	3	6	3	6	1	
Actor 02							1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	
Actor 17													1	0	1	3	8	5	8	6	10	11	4	
Actor 34													1	0	1	0	1	0	1	0	1	0	1	
Actor 23																	5	0	5	0	5	0	1	
Actor 30																	4	2	4	2	4	2	1	
Mean	0.512	0.512	0.651	0.651	0.791	0.791	1.326	1.326	1.488	1.488	1.524	1.524	1.571	1.571	1.810	1.810	2.186	2.186	2.279	2.279	2.756	2.756	Total	
St dev	1.404	1.264	1.777	1.612	1.960	1.850	2.639	2.630	3.202	2.872	3.231	2.897	3.216	3.017	3.881	3.417	4.082	4.260	4.200	4.437	4.818	5.263	32	
Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Max	7	5	8	6	8	6	11	9	15	10	15	10	15	11	18	13	18	18	18	19	18	21		
Network Centralization	5.272 %	3.647 %	4.478 %	3.260 %	4.393 %	3.175 %	5.896 %	4.677 %	8.234 %	5.187 %	8.418 %	5.294 %	8.388 %	5.889 %	10.113 %	6.990 %	9.637 %	9.637 %	9.623 %	9.014 %	9.766 %	11.688 %		

\* = Community Manager

Table AIII.1 Degree centrality  
(Calculated by means of Borgatti et al. 2002)

