

# Modelling Participation in Virtual Communities-of-Practice

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## Abstract:

*Mark Say (Say 2006)*, in a recent article for the Government Computing Magazine, reported how a new wave, or in his exact words, a third generation, of knowledge management systems is quickly arriving to modern work places. This third generation is said to be emphasising a more interactive approach focused around community building in the hope of increasing the sharing of tacit knowledge.

Securing strong, consistent and honest participation has always been an area of relevance in knowledge management but the field's new aspirations for increased interaction and knowledge sharing raises the issue to new heights.

This research is based on the belief that a greater understanding of what motivates people to share knowledge in a community is needed in order for organisations to evaluate the feasibility of third generation knowledge management systems (from here on referred to as "*Community Based Knowledge Management Systems*" or CKMS).

This research examines participation in Virtual Communities-of-Practice in the hope that lessons learnt here would provide a generic model that may be used in multiple situations. Such a model may be useful to those charged with planning CKMS solutions in particular organisations.

The model was constructed by utilising a socio-technical framework in order to interpret factors identified through the literature review and semi-structured supporting exploratory interviews. A Delphi study was then conducted to test the relevance and relative importance of these factors. This enabled the portrayal of the circumstances and mechanisms impacting on participation in VCoP.

## **Acknowledgments**

My main concern in commencing this dissertation was that of not finding sufficient, relevant material and expert support. In the event, I was delighted at the encouragement I received from a small but knowledgeable panel who agreed to participate in a Delphi study; who patiently worked through my overlong and inexpert questionnaires, offering valuable advice; and who helped direct me at relevant virtual communities of practice and appropriate material. This thesis would not have been possible without their assistance.

I am equally grateful to the support I received from my tutor, Professor L.P. Willcocks, and others from LSE.

My special thanks go to Becky, for her continual encouragement and constructive criticism, which I hope to be able to reciprocate.

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# 1 Introduction

Information technology has expanded the scope for disseminating information to new boundaries. Communications networks and the internet have increased the pace at which business is undertaken. They have also significantly reduced the limitations caused by geographical spread. This has facilitated the globalisation of business, and heightened its pace.

In the global village, questions about knowledge transfer are therefore more significant than ever. Individuals and firms are more reliant on knowledge processing and dissemination. This increased reliance makes the potential for value creation through research in knowledge management much more plausible, and as a result the topic often ranks highly within management priorities. A key challenge within any knowledge based enterprise is that of ensuring that the firm's full expertise and experience is made available to its staff when and where it is needed; and that it is accessed and used.

## 1.1 Why study Community Based Knowledge Management Systems?

Enterprises have responded to this challenge in myriad manners, and the effectiveness of this response has in turn assisted in coping with other societal pressures – congestion, office space limitations, working mothers – leading to the increased use of the virtual office and home working. However, sophisticated their underlying knowledge-management platforms, enterprises nevertheless face the risk of material gaps.

Geographic dispersion in particular is negatively affecting the transfer of what is referred to as tacit knowledge. It includes know-how and expertise, vital rumours and insider news; knowledge that traditionally is communicated when individuals spend time working together in the same physical space.

Numerous authors (Boud and Middleton 2003, Brown and Duguid 1991, Leonard and Sensiper 1998, Wenger 1998a) have provided insights explaining the criticality of informal learning and tacit knowledge in the training of professionals.

Meetings, conferences and secondments help the dissemination of tacit knowledge, and geographically spread enterprises tend to invest heavily in these activities. IT based Communities-of-Practice (CoP), too, are increasingly serving to help overcome this limitation (Say 2006).

The Author agrees with those experts who believe that by understanding more about how CoP may be encouraged, directed and facilitated, we may develop “Community Based Knowledge Management Systems” (CKMS) which enable new dimensions of tacit knowledge to be more effectively shared. This dissertation will discuss the conditions which impact participation in such communities, focusing on Virtual Communities-of-Practice (VCOP), as discussed below.

## **1.2 A focus on VCoP**

All information systems, whether specifically community-oriented or not, are fundamentally social systems. They are consequently inherently volatile and multilayered, and are rendered more complex by the impact of technology. Such systems are easier to analyse if one can reduce the number of variables impacting upon them.

In trying to describe the mechanisms which govern participation rates in a specific organisation’s CKMS, three broad categories immediately spring to mind - Individual, Technological, and Situational (including the impact of the organisation itself).

Individual factors – what motivates participation – are present in all CoP and have already been the subject of much research. Technological factors, too, are a constant influence, one which organisations may shape themselves. Would it matter if the technology used enforces anonymity? Would the implementation of an identity authentication mechanism encourage or discourage participation? These are questions which organisations will wish to answer.

This dissertation is however more concerned with the third category – the situational factors. Organisational impacts are part of these. Should we examine the extent to which participation may be governed by individual desires to build reputations, we would need to

consider how the organisation's HR policy may attract or discourage "reputation builders". Organisations may well differ significantly in this.

An assessment of relevant situational factors would be more meaningful, and more relevant to different entities, if the organisational impact could be treated as a constant. The approach taken in this dissertation to attain this objective is that of limiting the analysis to VCoP's.

The definition presented in this paper for VCoP entails two fundamental characteristics. Firstly, members within such communities are not in any way dependent on the VCoP for their livelihood. Participation is totally voluntary, never enforced, extremely rarely stimulated through artificial incentives, and requires a conscious desire and effort. Often members from competing organisations are found supporting each other, both emotionally and intellectually, within a VCoP domain.

Thus by choosing to study VCoP, we are essentially holding constant multitude of issues surrounding the organisation hosting a CKMS, and this serves to eliminate a key variable.

The other defining principle of a VCoP is that the community must make use of a virtual infrastructure of sorts. This does not imply that members never meet but that the virtual space is an important part of the community. There is also the underlying assumption that the virtual space is built upon the www platform. This somewhat reduces the variability surrounding the technological factor and allows one to better compare like with like. Having said this, several technological factors remain present on which VCoP could differ markedly.

### **1.3 The Research Question**

The primary objective of this research project is to build a more robust understanding (by researching and testing) of what may be described as the Participation Function in VCoP.

On the basis of the literature review and interviews held, the study has grouped the key motivators into three broad groupings – self development, sense of belonging and reputation development. For these motivators, the study aims at determining, and to the extent possible, quantifying (at least in relative terms), the impact of relevant situational factors. For instance,

to what extent is the self-development motivator influenced by the number of users in a community, or by the availability of alternative sources of knowledge, etc.

The author trusts that the study will be useful to those charged with planning CKMS solutions in particular organisations, by providing a deeper insight into the situational factors which can be moulded so as to enhance participation.

## 2. Literature Review

### 2.1 The Concept of Communities-of-Practice

Lave and Wenger were the first to introduce the concept of a Community-of-Practice (CoP) in 1991 through their paper *Situating Learning in Communities of Practice* (Lave and Wenger 1991). Here the acquisition of knowledge was introduced as a social process through participation in communal learning.

In the same paper, the authors described a Community of Practice as:

“... a set of relations among persons, activity and world, over time and in relation with other tangential and overlapping CoPs” (p98).

In communities, newcomers learn from more experienced members by participating in tasks that relate to the community’s practice.

Over time the newcomer moves from peripheral to full participation. During this process, the knowledge base existing in the community, a set of stories, particular procedural shortcuts, terminology and acronyms, even possibly attitudes towards organisational change, are transferred to the newcomer. Knowledge about the working of the community itself is also transferred.

Lave and Wenger (1991) described how a Community of Practice is “an intrinsic condition for the existence of knowledge”. They specify that learning in such communities is not solely situated learning (practice specific know how), but is Legitimate Peripheral Participation (LPP), where the community’s mentalities, attitudes and culture enhance the maturation process of newcomers.

This constituted a new way of thinking about learning which shifts the focus from understanding how knowledge is transferred from an expert to a novice, to understanding how “the forces of individual development are manifested through broader social phenomena such as integration, cohesion, discrimination and exclusion.” (Owen-Pugh 2003)

Since then the concepts behind LPP have been significantly elaborated on. Wenger now describes CoP in terms of four fundamental dualities: participation vs. reification, designed vs. emergent, identification vs. negotiability and local vs. global (Wenger 1998a). Nonetheless, the original ideas were widely accepted and their simpler understanding is more appropriate for the purposes of this study.

The phenomenon of CoP is not new, but our understanding about it is. Knowledge Management (KM) Systems, especially when bridging geographic dispersion, need to consider the social nature of knowledge (Kimble *et al.* 2001). Any incentives or procedures, whether related to KM or otherwise, any reliance on particular technologies and the design of such technologies may all constrain, heighten or otherwise have unintended effects upon the social dynamics in an organisation's CoP.

The definition of CoP which most accurately envelopes all the other possible interpretations is, in the author's opinion, given by Etienne Wenger on his personal site (Wenger 2006):

“Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.”

This definition, as Wenger explains, encompasses three essential characteristics:

- The Domain: The community must be oriented around a particular interest which stimulates commitment.
- The Practice: A community of practice is not equivalent to a community of interest. Members of a CoP participate in collective knowledge building. They are practitioners who, whether consciously or not, share and learn valuable, workable knowledge.
- The Community: Interaction and discussion among members is a key characteristic. Individuals who work in the same office are not engaged in a CoP unless they, through whatever means, discuss and interact with each other, building relationships which enable them to learn from each other.

Noriko Hara argues that the term “Communities-of-Practice” lacks consistency (Hara 2000a) and uses the following definition to overcome the ambiguity:

“Communities-of-practice are informal networks that support professional practitioners to develop a shared meaning and engage in knowledge building among the members” (Hara 2000b).

Hara maintains that this definition is consistent with Wenger’s (1998a) more elaborate four dualities definition.

The author of this paper subscribes to Hara’s definition as its use of the words “informal networks” emphasise the voluntary nature of participation, a trait emphasised in VCoP.

## **2.2 Defining a Virtual Community of Practice**

Millions of people share knowledge freely and continually in online forums, blogs, e-mail groups and other discussion mediums. Many of these communities fit into Hara’s and Wenger’s definitions for CoP. They are most frequently centred around a particular domain and often involve specific practices. In certain cutting-edge specialised activities, e.g., programmers in search-engine marketing, online communities may for a time constitute the main learning forum, substituting traditional academic environments.

Many researchers debating whether CoP may exist outside of a co-location scenario through the use of ICT technologies have argued that such communities may fail to exhibit significant Legitimate Peripheral Participation (LPP), and hence do not meet the social learning criteria in the definition of CoP. Kimble, Hildreth and Wright in their book chapter “Communities of Practice: Going Virtual” (Kimble *et al.* 2001) noted that VCoP demonstrate a vital boost in participation through the physical meeting of members. They stated that these physical meetings served to generate vital trust and recognition and this was often a fundamental factor contributing to the subsequent success of related VCoP. By implication, therefore, the communities concerned may not have succeeded in generating the characteristics of CoP in a solely virtual domain.

The author's view is that while VCoP activities are largely carried out in a virtual environment, the definition of VCoP does not exclude physical meetings between participants. Such meetings, as argued above, help generate trust, and thus oil the wheels of the community. But the subsequent interaction between members in a virtual forum is the characteristic which helps create the community and which enables LPP.

The following quote from Wenger's website explains (Wenger 2006):

“The claims processors in a large insurance company or students in American high schools may have much in common, yet unless they interact and learn together, they do not form a community of practice. But members of a community of practice do not necessarily work together on a daily basis. The Impressionists, for instance, used to meet in cafes and studios to discuss the style of painting they were inventing together. These interactions were essential to making them a community of practice even though they often painted alone.”

In the author's view, therefore, the existence of VCoP is not negated by the physical separation of members or by the advantages of occasional physical meetings (or equivalent – video conferencing, a virtual medium, also serves to associate a name with a person and to generate a higher degree of mutual trust). The key underlying characteristics of a community remain the interaction created by participation, and the strength of the learning relationships within it.

This point has been researched further in the course of this study. While the research process, which is introduced later on, has focused primarily on the participation function of VCoP, the interviews conducted were also used to gain valuable insights on the extent to which knowledge – tacit knowledge in particular – is transferred in such communities.

As discussed in section 1.2 above, for the purpose of this dissertation, two particular characteristics are being assumed in the definition of VCoP. This study assumes that the community must not be established within any one particular organisation's setting. It is this “unattached” nature of communities such as CpSquare and E-mint<sup>1</sup> that this study aims at examining. A second important characteristic that the author wishes to infer by the usage of the term “Virtual” is that, being independent of specific organisations and also being

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<sup>1</sup> <http://www.emint.org/> and <http://www.cpsquare.org/>

geographically dispersed, such communities can, for all practical purposes, be assumed as perform internet based.

Summarising, therefore, for the purpose of this paper, *Virtual Communities of Practice are informal networks, existing outside of any one particular organisation, that support professional practitioners to develop a shared meaning and engage in knowledge building among their members by providing opportunities for relationship building and interaction through the use of internet based ICT's as well as other methods.*

The table overleaf sets out some examples of communities which fall into this definition.

Name	Practice	Number of Members	Technology Base (+extra note)	Degree of "splicing"	Physical Presence
CPsquare	Community or Practices	Approx 150	Web Crossing Payment Required	Sophisticated and Multiple Channels	Yes
E-Mint	Online Communities	Approx 240	Blogging Infrastructure	Sophisticated and Multiple Channels	Yes
Search Engine Round Table	Search Engine Marketing	?	Group Blog based Infrastructure.  Voted Search Engine Community of the year 2005	Blog Comments, Classic Forum, and "Shoat Box"	No
SelfSEO.com	Search Engine Optimization	?	Discussion Boards and Article Submission	Article Submitting and Classic Forum	No
webmastertalk	Web Development	23564	Discussion Boards + title based reputation system	Classic Forum	No

**Technology Base:** Notes about the ICT technology being applied.

**Degree of Splicing:** A term used to describe how adapt the technology is at allowing the community to segregate and form sub-communities.

**Physical Presence:** Does the community also organise events outside the ICT.

**Table 1: Examples of VCoP**

## 2.3 What Motivates Participation in VCoP?

A summary of reasons why people are motivated to participate in Communities-of-Practice is provided in Wenger's "Cultivating Communities of practice: A quick start-up guide" (Wenger 2006b):

Reasons for prolonged participation	Reason to participate in short term
<ul style="list-style-type: none"> <li>• Personal development</li> <li>• Professional Identity</li> <li>• Network</li> <li>• Marketability</li> </ul>	<ul style="list-style-type: none"> <li>• Help with challenges</li> <li>• Access to expertise</li> <li>• Confidence</li> <li>• Fun with colleagues</li> <li>• Meaningful work</li> </ul>

**Table 2: Extract From Wenger’s Cultivating communities of practice: a quick start-up guide**

Participation is vital to the phenomena of any CoP. Research in VCoP suggests that geographic dispersion and the usage of ICT’s serve to heighten the difficulty of securing interest and participation (Kimble *et al.* 2001), and this is to be expected. Human communication and sharing is always more forthcoming in an environment of physical proximity.

While little literature dealing specifically with VCoP was located by the author, a number of studies are available which give insights relevant to participation within the VCoP domain.

General technological acceptance literature such as Fred Davis and Richard Bagozzi’s Technological Acceptance Model, TAM, (Bagozzi *et al.* 1992, Davis *et al.* 1989), provides a strong platform for predicting the impact of technology, whilst Gouldner’s Social Exchange Theory (Gouldner 1960) and Professor Vroom’s Expectancy Theory (Vroom and Jago 1988) provide crucial insights into understanding why, how and when knowledge is shared and humans cooperate.

Watson and Hewett’s recent paper “*A Multi-Theoretical Model of Knowledge Transfer in Organisations: Determinants of Knowledge Contribution and Knowledge Reuse*” (Watson and Hewett 2006) merges these studies and promulgates a more complex theory about participation in knowledge management systems.

Many of the factors tested in this dissertation are described in Watson and Hewett’s paper. However, this dissertation differs from the said paper as it is based on the concepts of Communities-of-Practice rather than on Social Exchange Theory. Both approaches stress the importance of the social nature of knowledge sharing. But the complex or super theory

provided by Watson and Hewett restricts its range of motivators to notions surrounding cooperation – why co-workers in an organisation share knowledge, for their individual and the common good. The CoP approach on the other hand, includes other factors influencing general participation in a community, such as an interest in the subject and a desire to learn about it, emotional support, and socialising.

This research dissertation also makes use of concepts from a previous paper written by the author, “VCoP: Understanding User Participation” (Zarb, 2006). This paper set about re-analysing a case study done as part of Dr. Hara’s doctoral research at the University of Indiana. This particular case study was chosen because of its extensive documentation and because its subject, a public defender’s office, displays certain characteristics broadly comparable to the “unattached” nature of VCoP. In Hara’s case study, public defenders were not dictated to or structured in a manner aimed at encouraging them to share knowledge. Their work and their evaluation were completely independent from each other. Yet they displayed a vibrant community, on a voluntary basis and out of a strong sense of mission and belonging (Hara 2000a, Hara 2000b, Hara 2001).

Using three different reports about the same case study, the author reinterpreted Hara’s findings into a VCoP participation perspective. Logical filters were applied to eliminate elements that were either organisational or not applicable to a virtual situation. The final results (see Appendix J) were presented as a set of factors which effect participation in VCoP.

With hindsight, the results portrayed in Appendix J proved disorganised and needed re-interpretation (see section 4) in the light of the framework adopted, to define the underlying conditions which impact on participation – what this study refers to as Situational Factors. These factors are introduced below.

## **2.4 Situational factors – the underlying conditions**

A long standing question within the study of IS concerns where agency, the power for change, lies and hence what degree of impact technology has.

Technological determinism is “... the belief that technical forces determine social and cultural changes” (Thomas P. Hughes)<sup>2</sup>. Technological determinism argues that society’s, and thus an organisation’s, control over the technological element is very limited. Market forces dictate its implementation. Technology is seen as an unstoppable force for change.

Social Constructivists on the other hand argue that technology does not determine human action but that human forces control technology (Bijker and Hughes 1987). Gibbon’s Structuration Theory in particular, places agency undisputedly within the structure of social systems themselves arguing that all persons have a certain effect on the social systems they live in which in turn creates technology (Giddens 1986). Technology itself is said to have very little influence on social structures. Orlikowski adds to the theory so as to morph the notion of embedded properties for enactment (use) (Desanctis and Poole 1990, Orlikowski 2000). As they interact with a technology, people enact structures which shape their emergent and specific use of that technology.

Actor-Network Theory (Callon 1986) provides a clear half way mark between the two positions, arguing that both the technological and human artefacts could be considered equal in agency.

The author prefers the argument put forward by J.Rose and M.Jones in their paper “The double dance of agency: A socio-technical account of how machines and humans interact” (Rose and Jones 2005).

Here both the technology and the organisation are considered to have the capacity to influence. However it is accepted that since the technology is not a conscious being, it may not be reasonably referred to as an agent; its design, however, is said to limit or delimit the power of other agencies.

Furthermore, the framework recognises that technological and human factors form a “dance” in which the two are constantly interacting and are thus hard to separate.

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<sup>2</sup> Quote taken from webpage introducing “Technological Determinism Revisited” (Martin 1996)

## The Double Dance of Agency

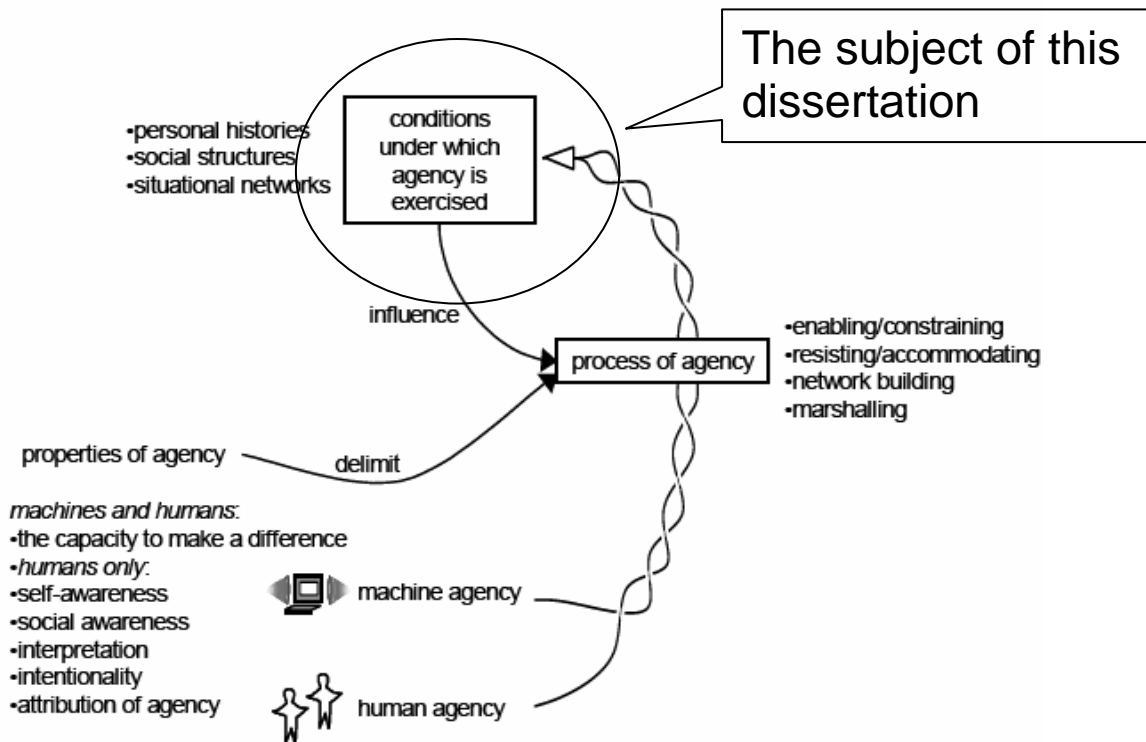


Figure 1: J.Rose & M.Jones's "The Double Dance of Agency"

Under the above framework the participation function may take the form of “I want to participate in the VCoP because I want to develop a reputation (motivator – human agency) since in my industry (situational) reputations are very important. A VCoP with a strong reputation mechanism (eg., a peer review voting system – the machine agency) is thus preferred for my needs.”

This dissertation is focused on better understanding the motivational impact of different situational factors, the conditions under which agency is exercised. By directing the research on VCoP, one key situational factor – the organisational impact – is eliminated; the objective being to draw conclusions which can be relevant to more than one organisation.

## 2.5 Delphi Study Method

Given the nature of the subject matter, a Delphi study was used in this research project for the purpose of obtaining expert opinions on the relative importance of different situational factors. For instance, how important is the novelty of the practice compared, say, to the strength of its reputation defining mechanisms?

Fowles' "*Handbook for Future Researchers*" argues that in fields that have not yet established scientific laws (in Fowles' case forecasting), expert opinion could be justified to constitute knowledge if harvested correctly (Fowles 1978).

A Delphi study provides a means of collecting and merging expert opinions. It constitutes a sound technique which significantly mitigates the risks associated with over-reliance on expert opinion.

While the method's accuracy is subject to the quality and quantity of selected experts, the value of the whole is higher than the sum of the individual parts. Any singular expert may suffer from bias and may have knowledge gaps. Delphi studies are designed to overcome these limitations.

Expert opinions may suffer from "follow the leader" syndromes and other effects of group dynamics which may diminish accuracy (Fowles 1978, Gatewood and Gatewood 1983). To counter this the Delphi Study Method places the researcher as an intermediary between the experts thus guaranteeing anonymity, making sure comments may not be attributed to any particular expert, and forcing participants to form and express an independent opinion.

The Delphi Study Method also minimises risks associated with miscommunication between expert and researcher, and of survey ambiguities, by allowing for an iterative survey process and for the mediating researcher to be allowed to control and limit feedback options.

## 2.6 Appropriateness to the research objective

Many authors stress the importance of testing for appropriate usage of the Delphi Study methodology before committing. Adler and Ziglio provided the following three questions which, they argue, should be considered before opting to conduct a Delphi Study (Adler and Ziglio 1996).

- *What kind of group communication process is desirable to explore the research question?*

The complexity and degree of judgement inherent in the domain makes it hard to create clear surveys. The Delphi Study Method's use of an iterative survey process aids by allowing the researcher to analyse results, identify obvious misinterpretations, and modify the survey accordingly for use in the next round.

Such an iterative process not only helps achieve a more collectively agreed upon final result but also enables greater opportunity to clarify the experts' understanding regarding the questions asked.

- *Are experts in the field accessible to the researcher?*

Before deciding on the survey methodology, the author contacted a number of participants to ensure research interest in the topic and to test the plausibility for conducting a Delphi Study.

Keen responses were received and the research was thus given the go ahead from this particular angle.

- *Can alternative techniques be utilised effectively?*

An alternative approach to the Delphi study would be a case study within a group of relevant VCoP, comparing and contrasting the results with a view of reaching conclusions which are not perhaps specific to one community.

Such research is possible, and suitable potential case studies were identified (see also Chapter 6). It was felt, however, that these case studies required time resources going beyond those available for this study.

### 3 Research Process

In this research project, the underlying principles of the Delphi Method - statistical results, anonymity, controlled feedback, iterative survey process - were implemented as a mechanism to test and filter knowledge already acquired through a detailed examination of a particular case study, Hara's, and through a set of initial investigatory interviews. The process is illustrated in figure 2 below:

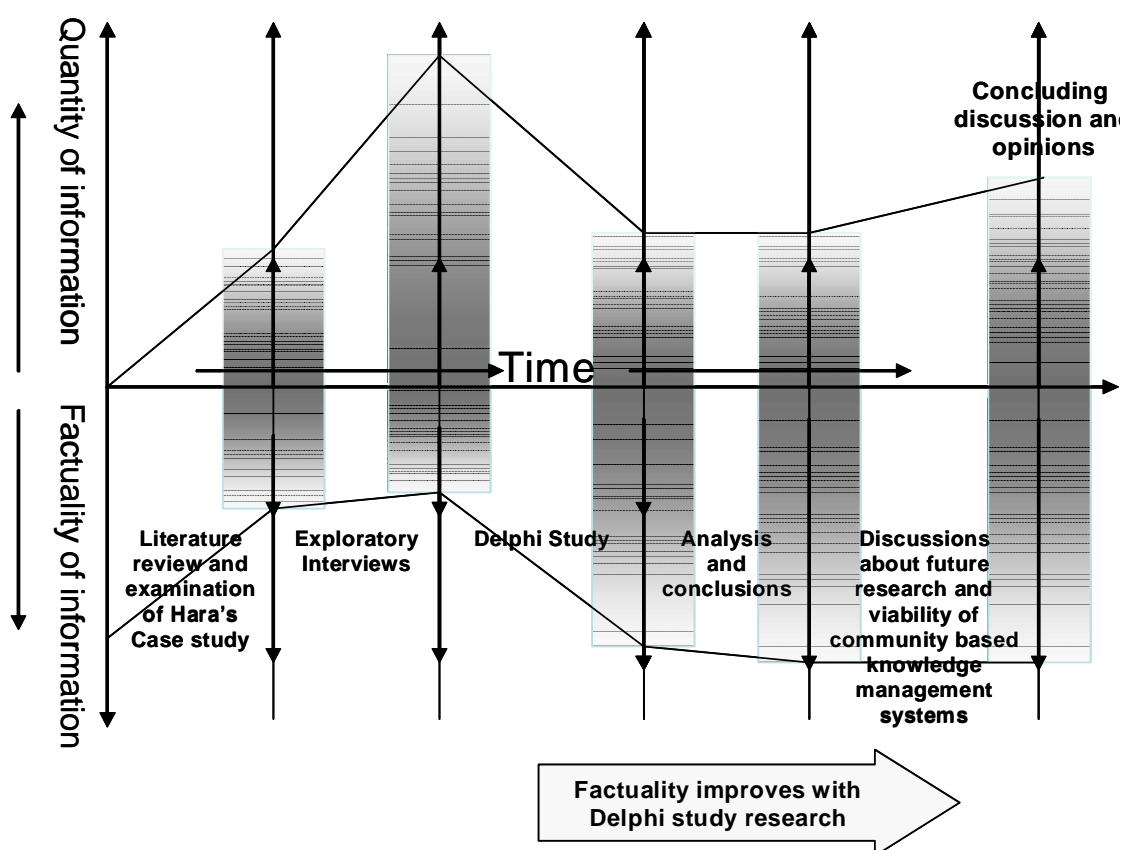


Figure 2: The Research Process

Section 2.3 introduced the background essay based on Hara's case study, and the list of factors relevant to participation in VCoP which was developed by the author (Appendix A). As a starting point to the research process, these factors need to be re-organised in order to better demonstrate the relationships between them and determine their nature, i.e. whether the factor is a Motivator (eg., reputation development), a Situational Factor (eg., importance of

reputation within the member's environment), or a Technical Determinant (eg: a VCoP's reputation mechanism).

These factors were re-organised in terms of the double-dance framework illustrated in figure 1. Moreover, interviews were held with five experts who participated early in the study to help clarify the more ambiguous situations. Appendix B introduces these five experts and explains their area of expertise.

These interviews were semi-structured, where the interviewees were asked specific but open ended questions. The results of one interview were allowed to influence the questions of the next interview so that, although all interviewees were asked very similar questions, the interviewer repeated (without revealing identities) particularly interesting comments to the next interviewee. This technique for contrasting responses and allowing interviewees to evaluate each other's responses was adopted to help identify the relationships between the variables and, furthermore, to identify additional relevant factors.

When asked to conclude about the importance of any said factor, the interviewees often replied by asking for more information or by highlighting a dependency on other characteristics. This process helped reveal new "machine agents", which limit or delimit the importance of motivators or the effect of a situational factor. By probing other interviewees to comment about these "agents" the author was able to elaborate on these new variables.

The questions asked to the interviewees may be found in Appendix C.

The insight gained from these interviews added to the literature review and formed the basis of the questionnaire used for the first round of the Delphi study (Appendix F). At the same time, the author contacted various parties and organisations with an interest in VCoP, and on this basis 12 experts in the field, listed in table 3 below, accepted to participate.

<b>Participant's Profile</b>	<b>Expertise</b>	<b>Rounds Participated</b>
<b>Name:</b> William Borg Barthet	<b>Expertise:</b> Software Developer Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Rosalind Cannell Member of the Emint Community	<b>Expertise:</b> Community Facilitator / Manager / Owner	First Round: Yes Second Round: No Third Round: No
<b>Name:</b> Mike Cushman <b>Organisation:</b> London School of Economics	<b>Expertise:</b> Knowledge Management Academic	First Round: Yes Second Round: No Third Round: No
<b>Name:</b> Dan Dixon <b>Organisation:</b> Digital Dust Member of the Emint Community	<b>Expertise:</b> Collaboration Solutions Consultant Knowledge Man Consultant	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Lilia Efimova <b>Organisation:</b> Telematica Instituut KM related PhD Researcher	<b>Expertise:</b> Knowledge Man Consultant Knowledge Man Academic Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Lizzie Jackson <b>Organisation:</b> BBC Online Community PhD Researcher	<b>Expertise:</b> Knowledge Man Consultant Knowledge Man Academic Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: No
<b>Name:</b> James Pullicino <b>Organisation:</b> BBC Designer and Owner of many BBS	<b>Expertise:</b> Software Engineer / IT Manager	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> John D. Smith <b>Organisation:</b> Learning Alliances Facilitator of CPsquare	<b>Expertise:</b> Collaboration Solutions Cnslt Community Facilitator / Manager / Owner	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Jin Tong <b>Organisation:</b> Cranfield University KM related PhD Researcher	<b>Expertise:</b> Knowledge Man Academic	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Will Venters <b>Organisation:</b> LSE Took part in initial survey	<b>Expertise:</b> Knowledge Man Academic	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Etienne Wenger Helped coin the term CoP	<b>Expertise:</b> Social Learning Theorist	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Nancy White <b>Organisation:</b> Full Circle Associates	<b>Expertise:</b> Collaboration Solutions Cnslt Community Facilitator / Owner Knowledge Man Consultant Representative Member of VCoP Online facilitation	First Round: Yes Second Round: Yes Third Round: Yes

**Table 3: Experts participating in the Delphi study**

The results of the first questionnaire immediately highlighted inaccuracies in the manner in which some questions were drafted and in the way the model was communicated to participants.

The first survey ineffectively utilised a particular variation to the standard Delphi Method known as the Cross-Impact Model. This was used to enquire on the impact of “machine agents” or technological determinants. For example, participants were asked to comment on how the usage of password protected user profiles affected the relevance of reputation mechanisms (such as Title Hierarchy).

The manner in which certain questions were posed did not allow the respondents to notify the direction of the effect. The results from the questions concerned were thus haphazard and inconclusive. The relevant data was accordingly scrapped and, in the formulation of the survey for the second round, the questions were reiterated using a clearer, single directional questioning method. Participants were asked to comment about the truth in statements, before and after a technological determinant was introduced.

Hence the second survey consisted of requests to comment on the accuracy of average scores generated from the first survey along with a reiteration of the more complex questions.

The second survey was also accompanied with a reference sheet (Appendix I) in order to give a more clear description of the model and a definition of the terms used.

Three participants were introduced directly into the second survey, and since two first round participants were on holiday, the second round was participated in by 13 experts.

No new participants were allowed to enter directly into the final round, which was participated in by 12 people as another expert was absent for a holiday break. This last round followed up questions that had been first re-iterated in the second round. This limitation in scope was possible as, for many questions, variations in opinions recorded during the second round were minimal. It was thus possible to eliminate these questions from the questionnaire.

The normal procedure for a Delphi study would be to continue repeating rounds until full consensus is reached (i.e. till variations in the results are within accepted statistical levels of confidence). This research was limited to the 3 survey rounds just described, at which point a high degree of consensus – even if not a full one – was recorded by respondents. The iterative survey method was in fact mainly selected for the opportunities it gave to clarify the model rather than for its ability to reach more accurate quantitative results.

This study thus does not claim that statistical application of its results will provide accurate estimates for participation. It is designed to create a priority list of the most relevant factors; and to define a participation function which includes only factors that experts collectively agree to be significant.

The final participation function model, along with variables dropped as not significant, were subsequently discussed with George Sammut, an IS Advisory partner with PwC Malta. Mr Sammut had the benefit of being able to comment on the study at the end of the Delphi Study and the associated analysis. The author's interview process, too, was at this stage facilitated by the knowledge gathered through the investigatory and testing process just completed. This made it easier for the interview to identify gaps or areas that needed more attention.

Throughout the study, valuable insights were gained in relation to the question as to whether tacit knowledge could truly be passed on effectively in VCoP, and hence in an organisation's CKMS. A study in relation to the motivational factors impacting such communities would lack utility unless there was broad consensus on their ability to facilitate knowledge transfer. The insights gained on this topic during the research process are discussed at the end of the study.

## 4. Defining the participation function in VCoP

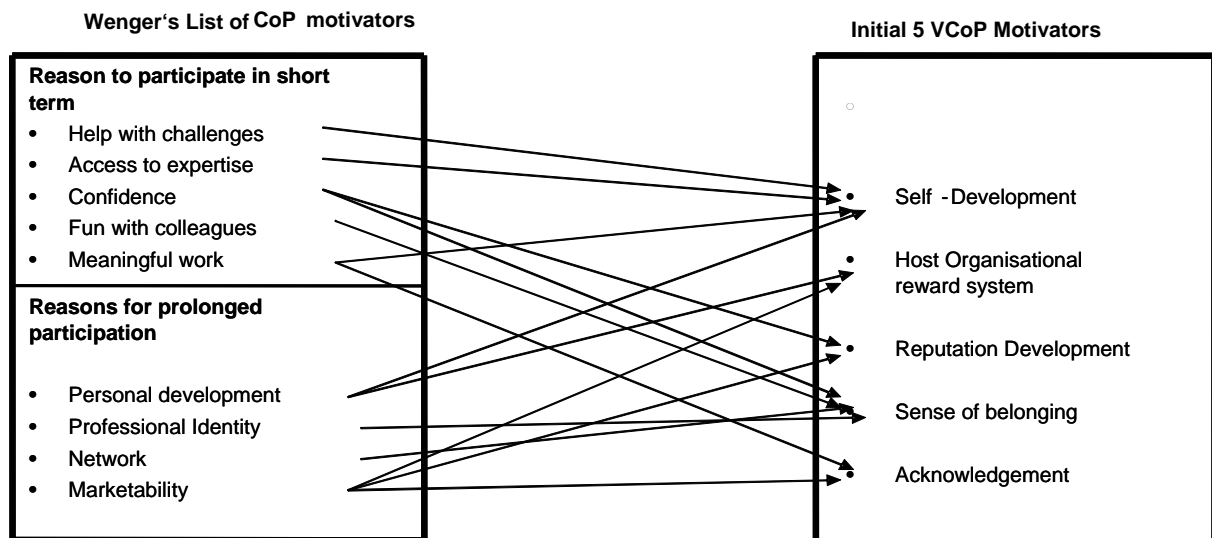
The research process explained, we may begin to re-organise, explain and expand upon the factors introduced in the background essay on Hara's case study (see section 2.3 above). These factors need to be re-organised into a form resembling a participation function in terms of the double-dance model (figure 1), using the following logic:

“I want to participate in the VCoP because I want to (Motivator) since in my particular practice/profession, (Situational factor) are very important. VCoP's with (Technological determinant) are thus preferred for my needs”

This exercise identified the following possible main motivators within the background essay:

- “I want to develop myself (ambition and self-development)”
- “I want to benefit from the host organisation's reward system” (e.g. advert revenue sharing)
- “I want to develop my reputation”
- “I want to feel a sense of belonging”
- “I want acknowledgement for my work”

As a test for completeness we may check whether all of Wenger's “reasons to participate” are covered in these 5 motivators (Figure 3).



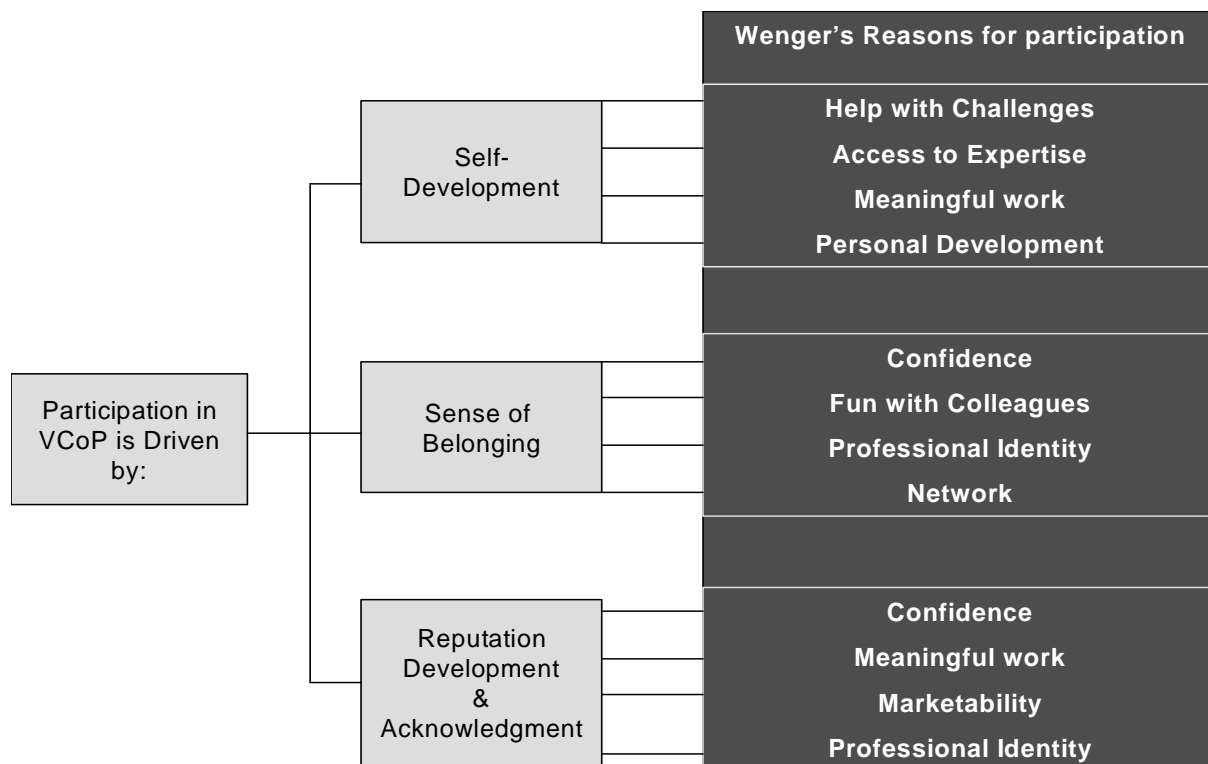
**Figure 3: Linking Wenger's Reasons to the initial 5 Motivators**

There is an inevitable element of overlapping in the five motivators listed and the author has preferred to group certain motives, and to drop one factor, in order to simplify the presentation of the Delphi questionnaires. By defining the motivators more broadly and subsequently focusing on the most important ones, the major part of their meaning would be captured and explained whilst making the function more manageable and easier to communicate.

The motivator dropped is “Host Organisation’s Reward Systems”. This is entirely dependant on the existence of reward systems in the entity hosting the VCoP, which is by no means common to all communities, and its inclusion could make the findings less objective. Indeed, out of Wenger’s “reasons to participate”, only two may be said to have elements which fall into this category - Marketability and Personal Development - and neither of these is solely linked to the said motivator. These two factors are in fact more closely linked, in figure 3 above, to Self-Development, Reputation and Acknowledgement.

The importance of the other four factors was explored during the initial exploratory interviews, and these quickly indicated that “Acknowledgement” and “Reputation” are better grouped into one motivator as their concepts are closely related.

Thus the three “envelope” motivators become:



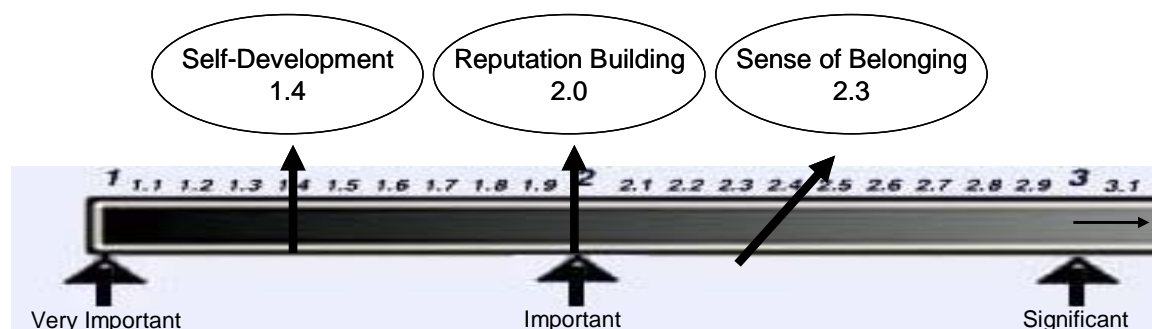
**Self-Development:** Learning skills and acquiring knowledge. Using VCoP to find people to collaborate with or participate in projects, and to get solutions to particular problems.

**Sense of Belonging:** To a particular profession or elite group. It refers to a desire to expand social networks relating to the person’s interest/practice and to socialise. It involves people seeking to gain emotional support and a desire to gain confidence and progress the profession as a whole.

**Reputation Dev & Acknowledgement:** The use of VCoP to exhibit expertise and to build or expand a reputation. Using VCoP as a means to gain acknowledgement for particular works and make quantifiable claims of expertise.

**Figure 4: The three principal motivator groupings as defined in Delphi study**

The Delphi study tested for the overall importance of these motivators. Figure 5 below illustrates the results of the first Delphi round.



**Figure 5 : Illustration of scale used and results for the 3 motivators**

Figure 5 exhibits the same scale used in the second and third rounds of the Delphi study. Self-Development was clearly voted to be the most important motivator with a score of 1.4.

While the high score awarded to self-development was indeed expected, the other two scores were less so. In Hara's case studies (Hara 2000a, Hara 2000b, Hara 2001), a key factor in ensuring cooperation and knowledge sharing was a shared meaning and a strong community-induced professional identity; factors which are more easily connected to sense of belonging rather than self-development. Hence the author expected 'Sense of Belonging' to rate more highly. The survey however placed it as the least important factor. Nonetheless, it remains a significant motivator.

On the same note, an initial inspection of Hara's work would suggest that 'Reputation Building' is greatly important in motivating participation. Though a score of 2 hints that it should be treated as an important factor, the author expected it to score closer to 1.5.

Hara's case study however itself portrays a particular situation which places considerable bias towards sense of belonging and reputation building. The nature of the practice (public defenders) yields a greater amount of individual exposure and responsibility. This, the study suggests, places a large reliance upon informal reputation. Likewise, the practice entails a high emotional content and practitioners were found to be highly dedicated to the actual cause of helping people.

These elements were understood by the author when discussing the situational factors. However, their impact upon motivation was underestimated, as the expert panel views clearly illustrated.

#### **4.1 "Splicing" and other factors**

Once the motivators were isolated, their respective situational factors, as well as their technological determinants, needed to be identified.

Not all factors could be easily placed by simply asking "which factors make self-development in VCoP more important" or "which factors would deter or aid the occurrence

of self-development in VCoP". The introduction of the double-dance framework and its implications to the treatment of technology morphs some factors into each other. Moreover, certain factors are applicable to all three motivators. The interviews helped clarify these issues.

*Experience Distribution / Grounded Ontology / Cultural Diversity morphed into Specificity of Community*

In the background essay, it was speculated that the community would benefit if its members were of a similar academic orientation (ontology) as they would share similar means of communication and have a shared terminology.

Likewise, the essay had suggested that having too much diversity in experience and culture would hamper communication and act as a barrier in vital relationship building.

This study does not prove or dispute the veracity of these assertions. However, the interviews revealed that from the perspective of a VCoP's participants, these issues may be better described in terms of how specific the community is.

By adopting this way of thinking, and thus grouping all the three factors into "Specificity of Community", the study is made more understandable and thus more easily illustrated to the Delphi study's participants. In the questionnaire, the same term was introduced in each of its different angles.

For instance, with regards to Self-Development, the factor was described as follows:

**Specificity of Community:** It is suspected that if a community is very focused around a tightly knit subject it may offer increased learning opportunities. A more specific community would increase its ability to delve into deeper discussions, and offer less "amateur" interruptions such as clarifying the subjects' jargon. Hence such a community may be perceived as offering more learning opportunities. It also decreases the "noise to signal ratio".

Interviewees noted an important technological determinant surrounding this factor - that when a community allows itself to be spliced into smaller sub-communities, it reduces the

negative connotations of being too “topic broad”. One interviewee mentioned that in his experience, when participants stray off topic it is vital for the community’s facilitators to divert the rogue discussion to a more appropriate area. In doing so, the facilitators effectively splice the community into sub-communities.

Online facilitation literature stresses the importance of doing this, to reduce the noise to signal ratio so as to not alienate participants (Kim. 2006, Rheingold 1998).

However after examining differences in the technologies used by a number of communities, the author suggests that while the management quality of a community is an invaluable resource in encouraging sub-communities, the technological design also matters.

In the questionnaire, the general ability of the community to encourage sub-communities is referred to as “Splicing” and the extract below shows the definition introduced in the second survey round.

"SPLICING" refers to a community's ability to encourage sub-communities. Literature and some interviewees suggest that such an ability is improved by the management style and choice of the community's technological infrastructure. An excellent example is provided by E-Mint, as it allows users to own a blog space within its community, providing an alternative venue where people of particularly specific interests may interact without adding too much noise to the rest of the community. CPsquare also offers a nice variety of venues including the option of creating a folder in already designated sub-communities.

In the survey I use "Without splicing" to signify situations where the community is organised in such a way that it does not encourage "splicing" - such as the typical static online forum. "With Splicing" identifies situations where the community actively encourages sub-communities by for example offering users the option to create their own research folder, their own blog, offering a well categorised forum, allowing personal messages, allowing chat suites etc...

### *Number of Participants*

For reasons similar to those regarding “Specificity of the community” the number of participants that the community supports was also raised as a possible factor to consider.

With regards to self-development, it was suggested that the amount of participants operating in the community impacted upon the overall learning opportunities. In arguing this point, one participant gave as an example an extreme situation in which the learning potential of a 2 member strong community was compared to a community with 100 members.

This notion is a specific illustration of the effects of “perceived usefulness” proposed under the Technology Acceptance Model (TAM); with the difference being that although the logic behind the “number of participants” has elements of expectations, this study suggests that the actual learning potential of the community is affected by the amount of participants.

When this variable was presented to the rest of the interviewees they noted that it may also have effects on “Sense of Belonging”. A larger amount of participants in a community may mean more opportunities to socialise. Too large a membership, however, could have a significant and negative effect upon the depth of relationships within a community. It is generally accepted that in small towns and island societies people are friendlier than in large cities. “Why should this notion not hold in the virtual realm?” suggested one interviewee.

#### *IT Requirements of Practice*

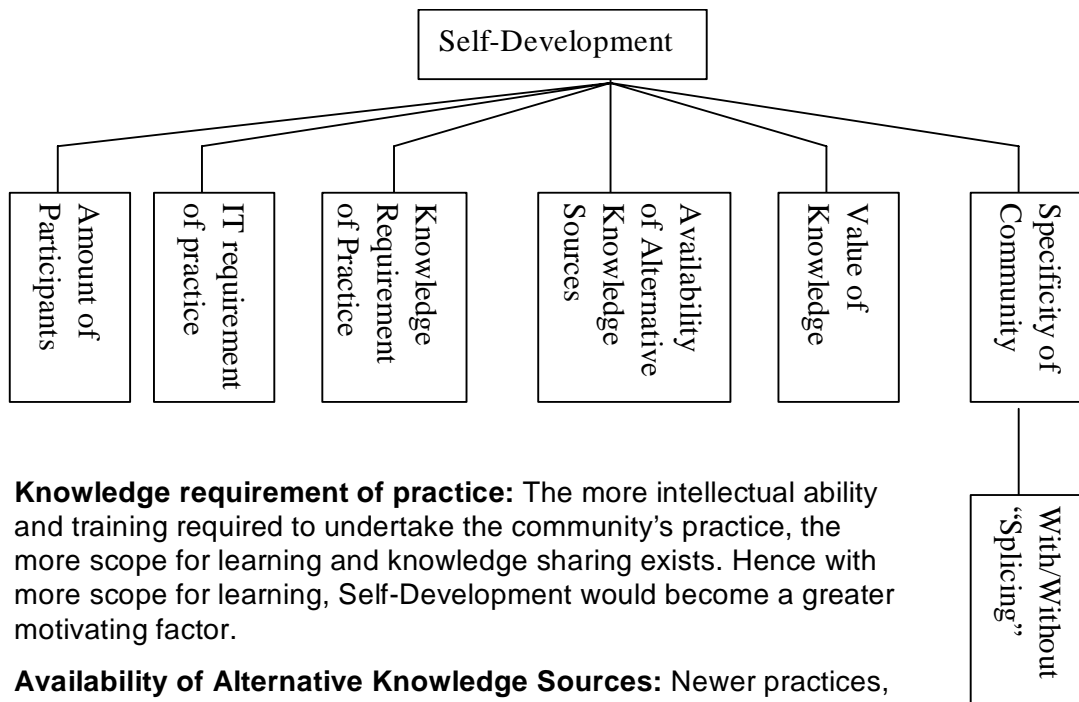
In the background essay, it was argued that a person’s ability to acquire tacit knowledge online must in the first instance be dependant on the person’s ability to use a computer.

Interviewees felt that this factor could impact both the Self-Development and Sense of Belonging motivators. Hence this factor too was interpreted twice in two different circumstances.

## **4.2 Self-Development**

The rest of the factors were easier to place and describe within the suggested framework.

Figure 6 overleaf illustrates all the factors relevant to Self-Development and provides the definitions used in the questionnaire for the more easily explained ones. This is followed by a more detailed description of the factors and then by an analysis of the relevant Delphi results.



**Knowledge requirement of practice:** The more intellectual ability and training required to undertake the community’s practice, the more scope for learning and knowledge sharing exists. Hence with more scope for learning, Self-Development would become a greater motivating factor.

**Availability of Alternative Knowledge Sources:** Newer practices, such as search marketing and social computing, are currently making great use of VCoP. One explanation would be that these new practices lack formal professional bodies to organise and legislate the professions’ knowledge requirements. It is thus suspected that should a community’s practice have many alternative sources of knowledge, such as well founded professional bodies and academic curriculum, people may be less likely to use the VCoP to learn since some would prefer learning from the alternative sources. The same would work in reverse, where, for example, because of the novelty of a practice, knowledge has not yet been formalised and a VCoP becomes one of the only sources for learning.

**Figure 6: Self-Development Expanded**

‘Specificity of Practice’, ‘Amount of participants’ and ‘IT Requirement of Practice’ have already been introduced.

With regards to Value of Knowledge, it was noted, both in the background essay as well as in Watson and Hewett’s paper (Watson and Hewett 2006) that the value of the knowledge being transferred is adversely related to the probability of it being shared. In particular, when the knowledge is singular in nature, such that it loses value when shared, participants are more inclined to hoard it. Hence it is speculated that in situations where the practice is very highly dependent on knowledge asymmetries, the collective knowledge building is less likely to occur.

In the survey the factor was described as follows:

**Value of Knowledge:** When individuals value a particular knowledge highly they may well forego the advantages of trying to build on it collectively in order to benefit from it singularly. This may better explain why academic institutions are not sufficiently represented in VCoP. Academics earn their living off formalising information. To share it freely on the internet may help increase their knowledge pool but it also depreciates the value of the knowledge assets they possess.

What do the results of the Delphi study tell us about these variables?

Figure 7 below illustrates the results of the Delphi study in relation to “Self-Development” situational factors.

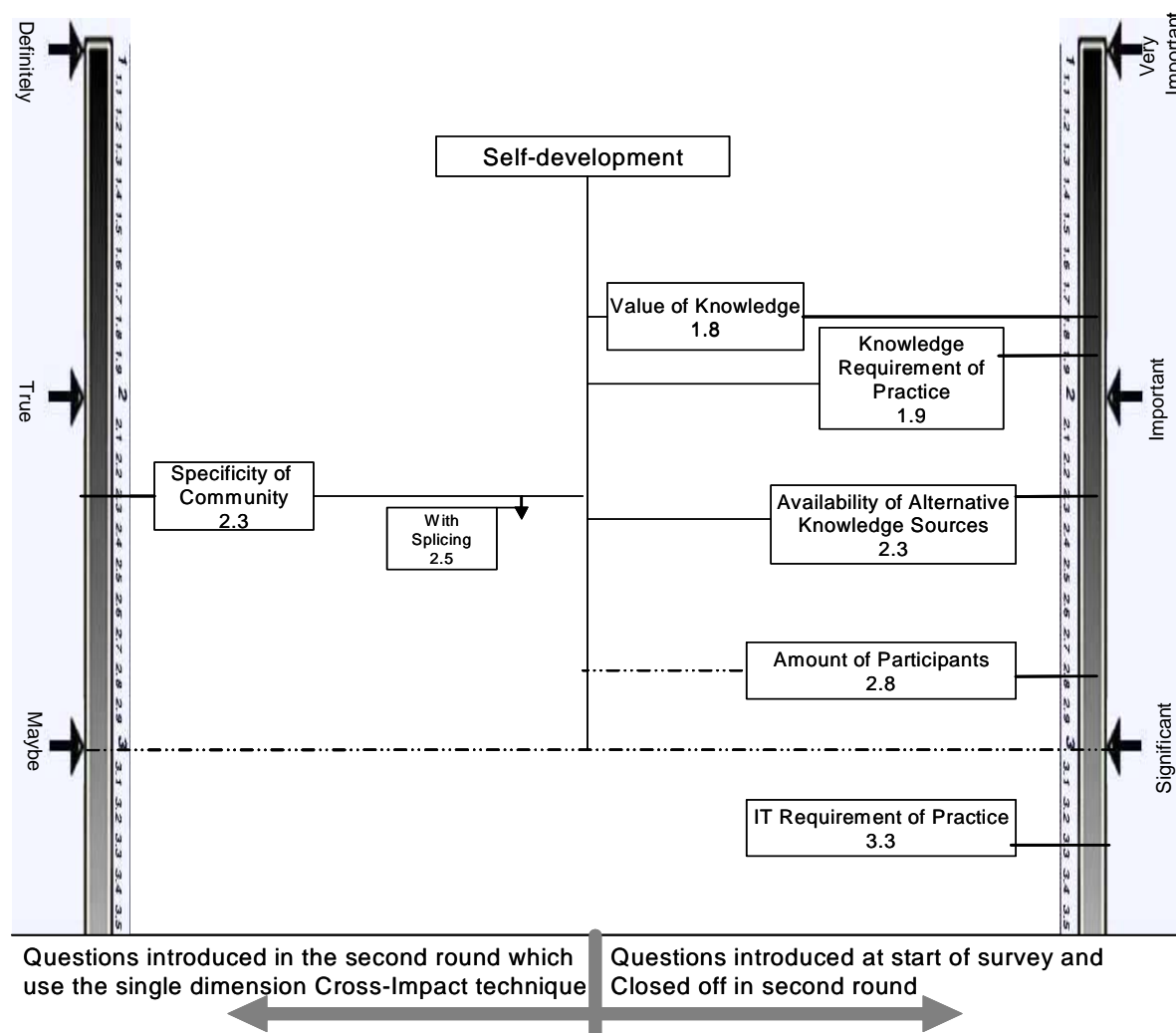


Figure 7: Delphi results for Self-Development

Value of knowledge was highlighted by participants as being the most important factor.

The “Knowledge Requirement of the Practice” was a close second. Interestingly, two of the initial interviewees had played down the importance of the “Knowledge Requirement of the Practice” by illustrating examples of VCoP which do not require a great deal of training.

“Availability of Alternative Knowledge Sources” and “Specificity of Community” were both placed as being in the borderline of important. The former perhaps illustrates that knowledge sources act in competition and that providing more venues is not always cost effective - a point many authors have been stressing recently. It may provide further arguments for integrating knowledge systems rather than simply adding new ones as a firm evolves.

The “Specificity of community” factor is harder to translate into an organisational setting, but its rated importance is of particular relevance to multi-disciplined firms. If the community’s interests become too dispersed, depth and learning opportunities, along with collective knowledge building, LPP and participation will suffer.

A rating of 2.5 was given to the effect “splicing” has on the above factor. This result indicates that although it is important that a community remains focused, topic diversity may exist when the community is managed correctly as to encourage sub-communities.

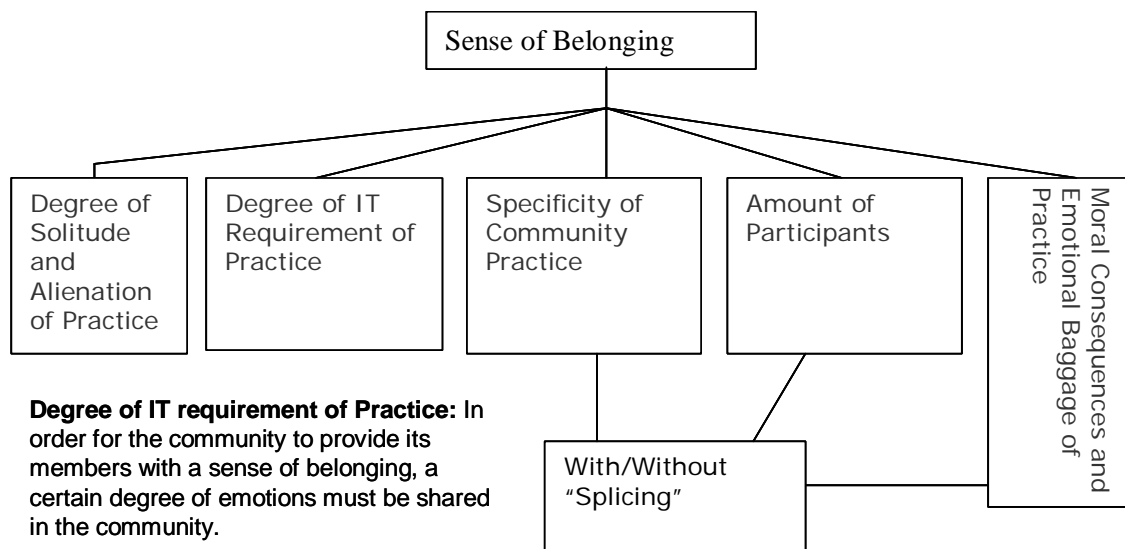
The most interesting result must be the very low score of “IT Requirement of Practice”. The importance of the factor had been doubted in the initial exploratory interviews, and this view was subsequently reinforced. The low score could signify that, at least in developed countries, IT has become so ingrained in every aspect of life and in every sector of society that technophobia is less of an inhibitor. Indeed one participant noted specifically:

“I have found that online life is the same as offline. Just as you would want to have a good reputation in a line dancing class, so you would want to have a good reputation in a virtual community about line dancing. I also think the real and virtual worlds are mixing now.”

However, recent work and increased interest in the technological divide does not support this argument. A more likely explanation is that since the study regards VCoP, participants assumed that community members would automatically have a working knowledge of the internet. This condition, however, cannot be assumed in an organisational setting, where IT familiarity may assume added importance.

### 4.3 Sense of Belonging

Figure 8 below illustrates all the factors relevant to Sense of Belonging and provides the exact definitions used to describe the “IT requirement of practice” factor.



It is speculated that when users are fearful of the technology or they simply do not understand the more intricate techniques such as emoticons, they may be less able to communicate emotions. It is further hypothesised that such an understanding of IT is related to the degree to which the practice itself is dependent on IT.

Figure 8: Expanding on Sense of Belonging

#### *Degree of solitude and alienation of practice*

Hara’s case study made specific references to the particular practice – public defenders’ office – being somewhat alienated from the rest of the civil service and society in general. From Hara’s quotes of her interviewees, it is clear that this alienation brought the community together.

This note was echoed during the exploratory interviews, when an interviewee (a PhD researcher) mentioned how the solitude inherent in her chosen discipline makes VCoP more appealing.

### *Specificity of communities*

In the background essay, Experience Distribution and Cultural Differences were mentioned as possible barriers to effective communication and relationship building, as these factors are all already determined by the specificity of the community.

The statement that participants were asked to rate is:

Based on the description of "Specificity of Community Topic" from the first survey (refer to section 3.2), please indicate how true you feel this statement is: "The more specific a community is, the more opportunity for the formation of closer relationships and the greater the sense of belonging generated"

### *With/Without Splicing*

Participants were asked to rate the truth of the following statement in relation to the impact of splicing with regards to Sense of Belonging:

Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is: "Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may tend to be less specific in its root practice without risking having too much interest diversity, which may lead to a reduction in the generation of Sense of belonging"

### *Amount of Participants*

It was suggested in the questionnaire that the greater the amount of participants, the less opportunity for deeper relationship building. In regards to any effect of "Splicing", the following statement was then used:

23. Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is: "Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may expand to a large size without risk of becoming shallow and commercial, and without suffering a reduction in its generation of Sense of belonging"

*Moral Consequences and Emotional Baggage of Practice:*

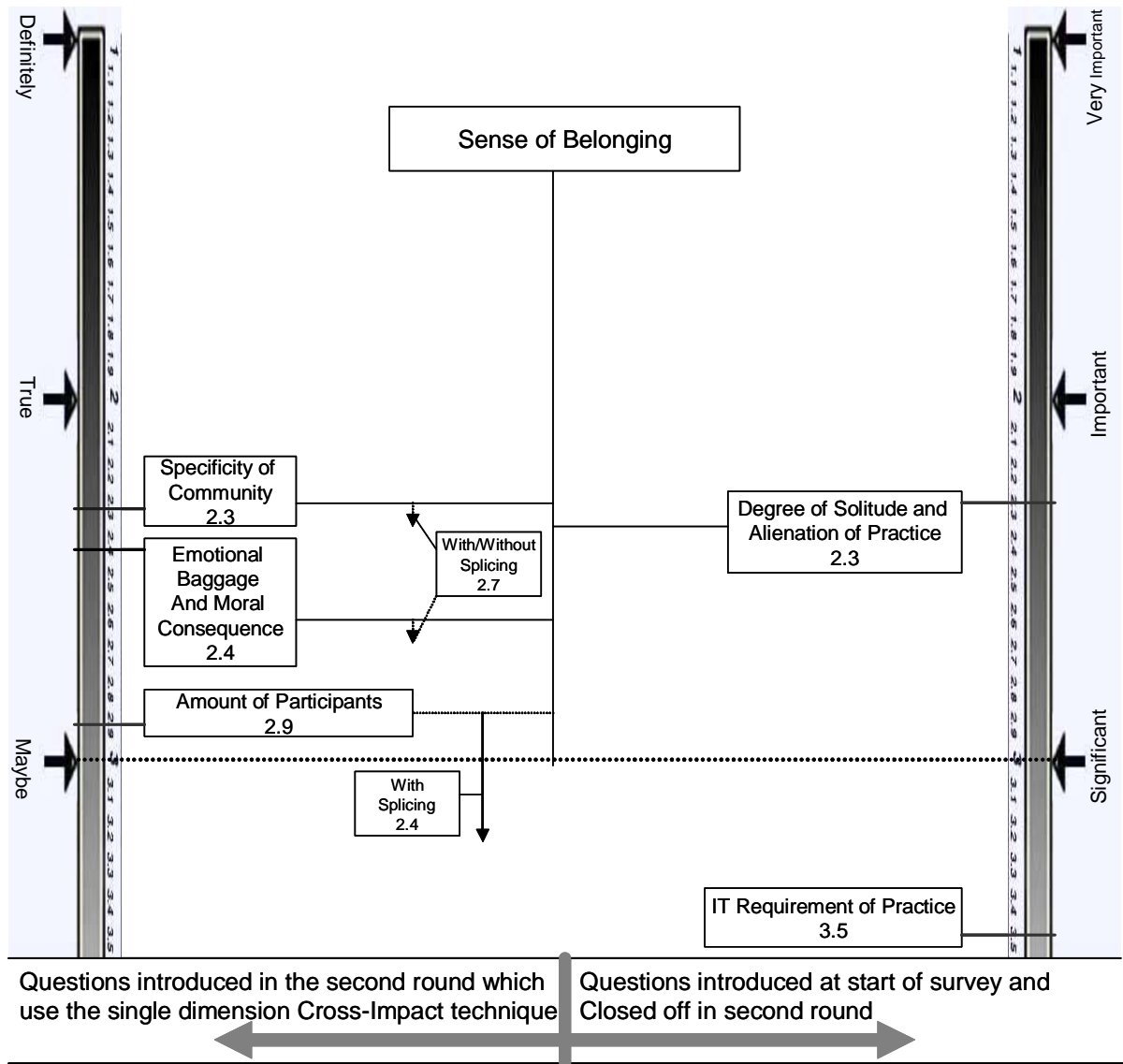
In Hara's case study, the moral consequence of error (failing to properly represent a defendant) helped create the community. This factor was tested in the Delphi study as follows:

Based on the description of "Moral Consequences and Emotional Baggage of Practice" from the first survey (refer to section 3.2), please indicate how true you feel this statement is: "The more emotional baggage and the more moral consequences associated with a practice, the more opportunity and need for its respective virtual community to generate a Sense of Belonging"

Splicing was also tested in relation to the above.

*What do the results of the Delphi study tell us about these variables?*

Figure 9 below illustrates the results of the Delphi study in relation to "Sense of belonging" situational factors.



**Figure 9: Delphi results for Sense of Belonging**

All factors in relation to this motivator attracted have lower scores than those recorded for self-development. This correlates with the lower score attributed the motivator itself. The replies received raise some concerns about how able participants were at evaluating the factors' effect to the motivator independently of the broader picture. Having said this, the results permit us to compare all factors across the whole of the participation function.

Moreover, all factors apart from IT Requirement of Practice were ranked very closely, exhibiting a lesser differentiation than that evidenced in figure 7.

“Degree of Solitude and Alienation of Practice” received a lower score than the author expected, and this could be due to the combining of two factors which, while closely related, are by no means identical. It is meaningful that all three PhD students (a notoriously lonely practice) within the expert panel assigned the value of 2 (important) to the factor, 13% higher than the final score of 2.3. Maybe this factor is too personal, in that one must experience it before understanding its relevance.

Participants again rated “specificity of community” as a notably significant factor. However the effect of splicing was considered to be significantly less in this context. At 2.7, the effect of splicing on how specificity affects a community’s overall sense of belonging cannot be written off.

Similarly, “Moral Consequences and Emotionally Charged Practice” was deemed as significant but not important by participants. Here again, splicing is seen as having an active but small role. One participant noted:

“Re: specificity and splicing- for me "sense of belonging" comes from relationships between people, which are not necessarily defined by their "topical proximity".”

Nonetheless, this study suggests that it would be wise for any managers seeking to invest in a CKMS to consider whether their prospective participants may benefit from a venue to share emotions, beat isolation and generally enjoy a greater sense of belonging. Ignoring this would lead to a missed opportunity to improve the working environment and to generate a more vibrant CoP.

A most interesting result is attributed to “Amount of Participants”; not because the low score of 2.9 was unexpected but because of the perceived impact of splicing. The factor was introduced into the study as an educated guess. It had little more than a quick mention in a single interview.

By attributing a score of 2.4, participants suggested that with splicing enabled, the community would suffer less of the negative effects relating to over-population. Since the majority of communities would automatically enable splicing, the importance of “Amount of Participants” as a separate factor is significantly reduced .

#### 4.4 Reputation Development and Acknowledgement

Figure 10 below illustrates the factors relevant to “Reputation Development and Acknowledgement” and provides the definitions used in the questionnaire for the more easily explained factors. This is followed by an amplification of the other factors listed.

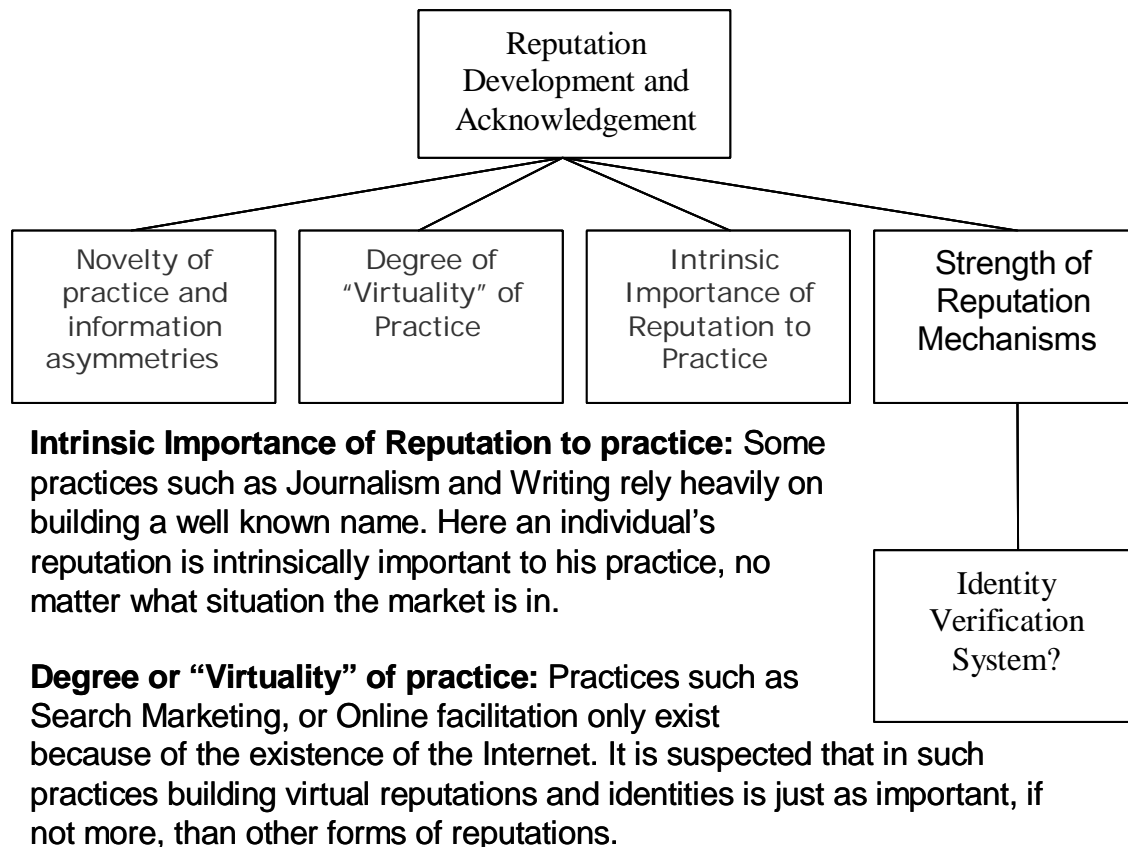


Figure 10: Expanding on “Reputation Development and Acknowledgement”

*Novelty of Practice and Information Asymmetries:*

This factor is best described by extracting the description used in the survey, which is reproduced overleaf:

**Novelty of practice and information asymmetries:** It is hypothesised that where a practice is still novel and slightly misunderstood by other industries, greater information asymmetries exists in the market place, leading to situations similar to those described by the “Lemons Principle” - All services would be classified as being of average quality, as quality is indistinguishable for customers. Hence higher quality professionals may be undervalued. It is suspected, that in such situations, the high quality professionals will put reputation building as a high priority as it provides the consumer with a signal which they may understand even if they don't fully understand the practice or service.

This factor is suspected to combine with the fact that novel products and services are more likely to be investigated virtually by customers.

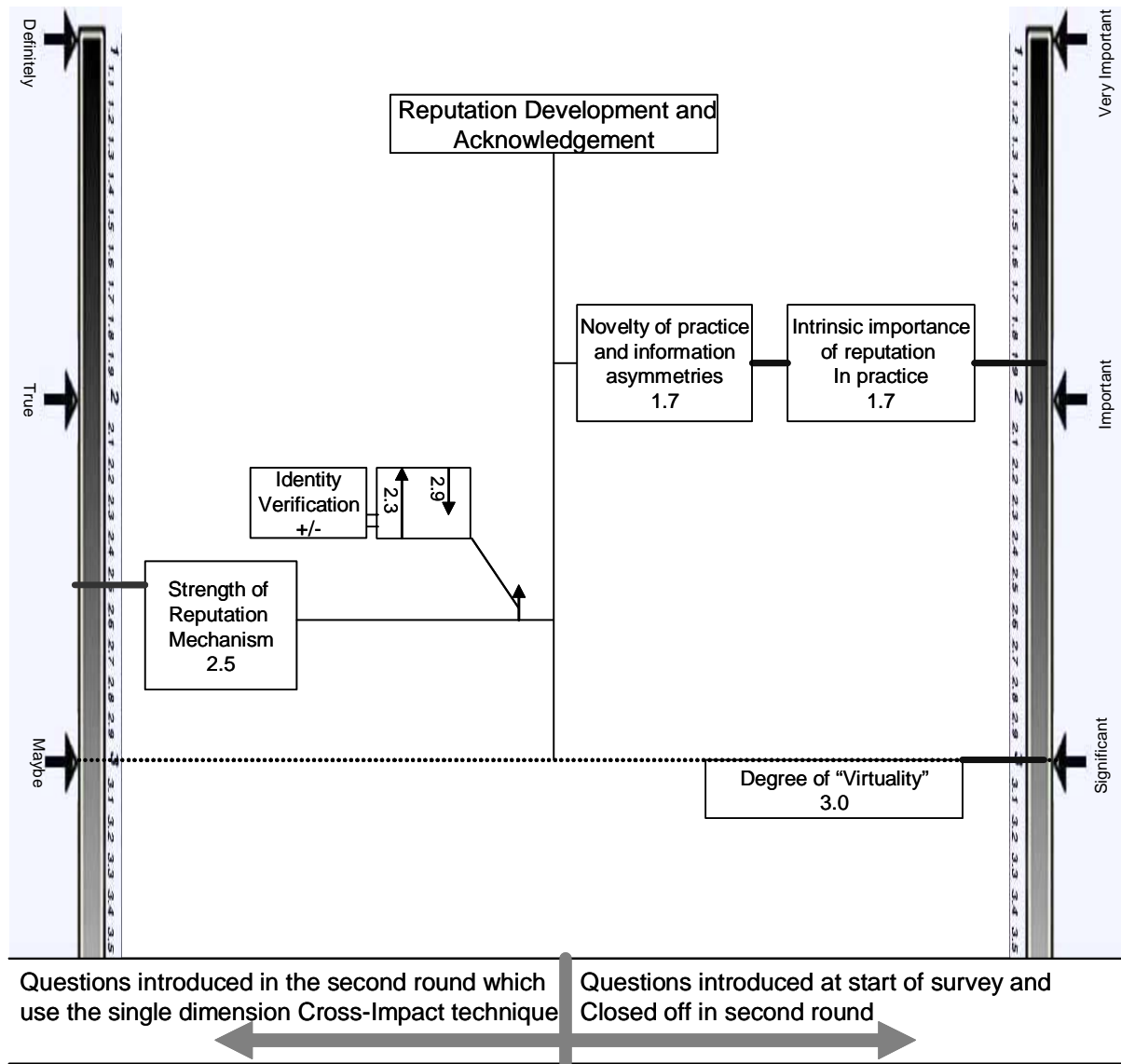
#### *Strength of Reputation Mechanisms:*

This factor was missed by the background essay as well as by the exploratory interviews, but it was suggested a number of times by participants of the first Delphi round. It was subsequently debated with one of the interviewees, Rebecca Gauci-Maistre, who is researching The Organisation of Identity Management Systems, to determine technological determinants relevant to this factor.

Miss Gauci-Maistre elaborated on the concepts behind Identity Authentication and Identity Verification. It was concluded that the Delphi study should test for the effect of this factor, but in both directions – examining the possibility of negative impact, and not just testing for the presence or otherwise of a positive result. Questions on the topic were accordingly worded using a different question format, i.e. asking respondents to comment on the truth of a statement.

#### *What do the results of the Delphi study tell us about these variables?*

Figure 11 below illustrates the results of the Delphi study in relation to “Sense of belonging” situational factors.



**Figure 11: Delphi results for Reputation Building and Acknowledgement**

As expected, “Novelty of Practice and Information Asymmetries” along with “Intrinsic Importance of Reputation in Practice” were considered strong factors. This suggests that enabling a well-thought out and transparent reputation mechanism will help structure a community to take full advantage of the aspirations of more ambitious persons.

The positive effects of Identity Verification, e.g. increased ability to link virtual identity with the physical world, received a score of 2.3 whilst the negative effects, a possible undermining of reputation signals, received the markedly lower score of 2.9. The overall effect of Identity Verification is thus positive, to some extent proving the obvious. Interpreting these results in an organisational setting, anonymity diminishes the validity of using a CKMS as a reputation-

building mechanism, even it serves to facilitate discussion of more delicate but highly valuable topics - resistance to change, discontent etc.

#### **4.5 Research Limitations.**

Throughout the analysis of the Delphi results various limitations regarding the method of application were noticed. This section groups and presents them in terms of their underlying cause.

##### *Effects of time limitations underestimated*

The author modified the Delphi procedure by restraining the amount of rounds. This was justified because although the study desired accurate results it did not expect, or need, to provide precise estimates. This approach assumed that the survey would be sufficiently clear to participants to enable its conclusion in two rounds. In the event, a third round was necessary on a number of topics.

##### *More experts required*

The author would have liked to work with a larger expert panel and should the experiment be repeated, more time would be allocated to recruiting participants.

Furthermore, some factors, most notably in the realm of “Sense of Belonging” and particularly “Solitude and Alienation of Practice” may have been judged better using personal opinions rather expert ones.

##### *Too novel a topic*

The author encountered difficulties finding relevant literature within the academic domain. Some extremely relevant pieces were in fact located whilst exploring CoP’s themselves rather than through the LSE library. The risks associated with the topic were perhaps underestimated.

##### *Lack of Survey Design Methodology*

Designing a clear survey proved harder than expected and, with hindsight, this topic deserved a higher degree of preparation.

In the first survey, the author dedicated time to researching the initial factors to be tested and less so to the survey design. This resulted in the initial survey being ineffectual in parts, requiring clarifications. More time was dedicated to research survey design techniques prior to designing the second survey.

## 5 Can VCoP enable tacit knowledge sharing?

In a recent article in the Government Computing Magazine, Mark Say described how a large amount of research is currently aimed at developing so-called “third generation” knowledge management systems which will focus on enabling the sharing of tacit knowledge (Say 2006). In the same issue, Nikki Lewis, who has been chairing the Knowledge Management National project, outlined how such efforts are focusing on the development of active communities. Steve Dale from the Improvement and Development Agency (IDeA) agrees with the need and importance of community building, stating that one of IDeA’s priorities is that of breaking down the “silo mentality” of local and regional groups by encouraging more active collaboration.

The value of informal learning and the possibility of it being enhanced through communities underpin the utility of this dissertation’s research agenda.

The question needs to be considered, therefore, whether tacit knowledge, which is notorious for being hard to share, may be communicated by means of a technology which is, at the end of the day, based upon the written word. Is there any fundamental difference between writing a blog post and writing a report? What is it about virtual communities that may facilitate the transfer of tacit knowledge?

While the research process has focused primarily on the participation function of VCoP, the interviews held were utilised as well to gain valuable insights in relation to the above question. The interviews with five members of the expert panel in particular (in some instances quoted below with their permission) dwelt at length on this topic. Some of the insights gained, together with author’s own views, are discussed below.

### *Transfer of soft skills*

All but one interviewee made reference to soft skills as falling in the extreme ranges of the tacit domain, but there was consensus that such skills may not be realistically acquired through informal, distance learning. This opinion was reinforced when interviewees were asked to exclude the possibility of video and voice calling.

Russel JF Kirk of Grey Convergence however argues that anything that may be learnt through a book may be learnt online; and that some exceptional books, even though not specifically soft skills related text books, manage to impart certain social skills through good writing and rich social settings.

This point is valid for the traditional interpretation of what soft skills are. However from speaking to a number of people participating in virtual communities, the author has formed the opinion that there are internet-specific soft skills which in fact may only be acquired informally, through experience in an online environment. Net-etiquette is a good example of this; another would be the ability to properly communicate by e-mail, which requires a degree of experience and an awareness of the misunderstandings that the technology is so prone to.

### *Personal experiences*

Two of the expert panel interviewees mentioned how personal experiences, with all their emotional underpinnings, are particularly hard to share and make explicit. The expert panel members came to the conclusion that this type of tacit knowledge, although almost impossible to learn in a formal way, may be shared informally in VCoP. However the extent of this learning is heavily dependent on situational and individual factors (apart from technological and other influences already discussed in this study).

Personal issues surrounding the situation in which the knowledge is being shared, such as interpersonal or office politics, confidentiality issues, and a fear of offending people in the real world, will all impact on the sharing of personal experiences. All of the interviewed experts, for example, made reference to confidentiality as being a major hurdle in the sharing of personal experiences.

The character of the individuals concerned inevitably matters. How willing and able are the particular persons to personalise their comments and postings? How able are they to share their emotions in this way, and also, on the other side of the coin, how able are the readers to read between the lines in interpreting a particular experience described? How open are such readers to listening to advice communicated in this manner, and how motivated and dedicated are they to reading through a large amount of postings in order to get a full picture?

### *Obtaining feedback*

All five interviewees stated that one of the most useful ways in which they extracted value from participating in a VCoP was by asking for and receiving second opinions about either their written work pieces or even about decisions they have made. This sort of knowledge would usually fall within the tacit knowledge domain - the underlying characteristic of constant, quick and effective communication is not typical of the explicit knowledge domain. The quick and easy comment system in blogs and the interactive environment provided in online forums provides a clear means by which this type of tacit knowledge may be easily shared.

Miguel Cornejo Castro in his paper entitled “Revisiting Communities of Practice: from fisherman’s guild to the global village” pinpoints how the virtual environment helps the feedback mechanism by firstly reducing the cost of communication and secondly by reducing the cost of storing and effectively retrieving informal feedback (Castro).

### *Sensitive judgement calls*

In certain situations, knowledge is not made explicit by choice, since formalising the knowledge would change its status and impact. Will Venters, a lecturer at the LSE, explained how even if it would be possible to write an effective formal document describing a procedure for the correct marking of exam papers, the existence of such a procedure would negatively impact the learning experience provided by his course. Students would change their behaviour to reflect the examination scheme, rather than focusing on learning all they could. Such situations rely on a constant stream of tacit knowledge sharing rather than explicit documents.

As Castro explained, the virtual community setting reduces the cost of such communication. We may speculate that community oriented knowledge management systems would have a positive impact on the sharing of this type of tacit knowledge.

It may possibly be argued that by achieving such discussions, a VCoP would automatically make such knowledge explicit. On the other hand, the informal context in which the achieved discussion is set would not convey the certainty that would be attributed to an explicit formal document. In the previous example, if students find such an online discussion, they might debate its significance, speculating that it may be hearsay, or that it might be

outdated. This uncertainty would not negate the existence of ‘knowledge’ – students would have been given a useful pointer, but one which is not so firm as to condition their behaviour in an excessive manner. A VCoP environment is useful in such circumstances.

*Gossips, rumours and latest available information*

James Pullicino noted that when engaged in programming activity, he would have frequently relied on tacit knowledge originating from online communities in the form of gossip, rumours or tips. In some cases, published information about the latest product would not yet be available. He went on to say that in certain cutting edge technologies, when such publications were finally printed, the science would typically again have moved forward. In such situations, explicit knowledge is continually a step behind.

Blogs and online forums elevate the publication barrier and make the sharing of information much easier, faster and cheaper. Tacit knowledge which would be shared spontaneously in an office, about either the latest technology or latest the inside news, finds a natural home in a virtual environments.

## 6 Conclusions and suggestions for further research

The expert panel feedback just reported, and the supporting literature, have illustrated how tacit knowledge may be transferred effectively through a VCoP. We may even speculate that certain dimensions of tacit knowledge are shared more effectively using community based knowledge management systems.

Knowledge is a key asset to all organisations, for some possibly more than others. Many modern organisations depend on the effective deployment, and continual enhancement, of their knowledge base to maintain a competitive edge. They are concerned with better acquiring, storing and sharing relevant expertise, and the effective deployment of CKMS becomes a priority. The author would suggest that a number of the insights gained in the study should be useful to those who are charged, within specific organisations, to design such systems.

No doubt, however, there exists much scope for deepening the research conducted in this study, possibly taking alternative approaches.

For instance, in the course of examining whether a Delphi study was suited to the project, the author made contact with two plausible case study organisations. One of these case study opportunities involved analysing highly interesting registration documentation of a well established VCoP, CPsquare, which is approximately 150 members strong. The data involved questions specific to what people expected from the community, as well as quarterly reports on participation rates. The data covered three years and thus offered an opportunity for accurate research through correlating changes in the VCoP design to participation rate movements. The community also keeps information regarding reasons for members leaving its ranks.

The author believes that a small group of case studies of this type would in due course create a deeper insight into the topics covered by this dissertation.

When it comes to interpreting the results of this study in an organisational setting, the reader must allow for various nuances which will no doubt interact with the situational, human and technological factors which all impact on participation.

To begin with, the underlying objective is different. This study has implicitly assumed that, in the context of a VCoP, knowledge may be defined as information which adds value to the individual. An organisation would however define knowledge in terms of the utility added to the organisation as a whole (including the individual concerned). This implies that it is crucial to align employee personal ambitions to the organisation's own before trying to extract value from a CKMS.

There are hence a whole host of organisational issues which need to be discussed, for instance, how flat an organisation's structure is and how this impacts motivation; the reward systems it adopts; and its attitude towards emotional displays.

George Sammut moreover pointed out that firms are rarely as dispersed as members in a VCoP; in that even in a geographically spread organisation, people would be working in groups. This may serve to reduce participation in CKMS, as people are unlikely to want to discuss online what they may simply ask to their neighbouring colleague.

Three obvious questions therefore arise which could fruitfully be the topic of considerable research. What experiences have different organisations gained in encouraging participation in CKMS? How do these experiences compare? And what conclusions could be drawn from such a comparison which could be applied across organisations, to the extent that this is practicable?

This study lacks the subjective depth that only interpretative case studies may provide. Hopefully, it may provide future researchers an initial set of factors they could elaborate on.

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## 9 Appendices

### Appendix A: Factors introduced from background essay

<b>Dr. Hara's Core Components</b> (A descriptive set of essential components for any CoP)	<b>Motivational Factors</b> (Factor relating to the individual)	<b>Conditional Factors</b> (Factors relating to the condition/situation)	<b>Factors dropped after transition to VCoP scenario</b>
Practice		Grounded Ontology Learning Requirements Tacit vs Explicit nature of Practice Degree of IT required for Practice	
Collective Knowledge Building		Power of Knowledge	Progressing Power Struggles Intra-Organisational Competition
Shared Meaning	Willingness to expand cultural and scholarly perspectives	Experience Distribution Cultural Diversity Attracted Intellect Knowledge Resources	
Shared Vision: "Personalisation of Practice"		Moral Consequences of Practice	
Autonomy	Ambition and Self Development	Host organisation's Structure : Reward systems and other encouragements	Role Responsibility and Ambiguity Organisational Structure : + Reward systems and other encouragements, - excess formal learning and micromanagement
Professional Identity	Reputation Development Sense of Belonging Acknowledgement	Importance of virtual reputation to practice Practice related feelings of alienation. Lack of organisational acknowledgement	Importance of reputation : Self-organising units and flatter organisations.
Supportive Culture: "Emotional Displays"	High Emotional Intelligence	Emotionally Charged Practice Organisation's Emotional Norms	Geographic Boundaries and "Pi"

## Appendix B: Introducing the initial 5 interviewees

Participant's Profile	Role/Expertise Description	Participated in initial exploratory interviews.
<p><b>Name:</b> Russell JF Kirk  <b>Organisation:</b> Grey Convergence            Organisation focuses on collaboration solutions.</p>	<p><b>Position:</b> CTO            Defines IT and services strategy and acts as technology consultant to client base.</p>	<p>Online Forums : Yes            Reads Blogs : Yes            Writes Blogs : Yes            Newsgroups : Yes</p>
<p><b>Name:</b> Anna Pluta  <b>Organisation:</b> Grey Convergence            Organisation focuses on collaboration solutions.</p>	<p>Position : HR/Finance/Project Management            General Back office work (start up)</p>	<p><b>Participated in initial exploratory interviews.</b>            Online Forums : Yes            Reads Blogs : Yes            Writes Blogs : Yes            Newsgroups : Yes</p>
<p><b>Name:</b> William Venters  <b>Organisation:</b> London School of Economics and Political Science            Prestigious University            Focused on social sciences</p>	<p><b>Position:</b> Systems Development and Knowledge Management Lecturer            PhD about KM and CoP in large organisations.</p>	<p><b>Participated in initial exploratory interviews and all rounds of Delphi Study</b>            Online Forums : Yes            Reads Blogs : No            Writes Blogs : No            Newsgroups : Yes</p>
<p><b>Name:</b> James Pullicino  <b>Organisation:</b> BBC            The British national Broadcasting Channel.</p>	<p><b>Position:</b> Project Manager/ Software Developer            Experience in developing and managing online communities.            Project Manager for online com`</p>	<p><b>Participated in initial exploratory interviews and all rounds of Delphi Study</b>            Online Forums : Yes            Reads Blogs : Yes            Writes Blogs : No            Newsgroups : Yes</p>
<p><b>Name:</b> Rebecca Gauci-Maistre  <b>Organisation:</b> Cranfield University            Post Graduate Military Defence Academy</p>	<p><b>Position:</b> PhD Researcher            Completing first year of a doctoral program researching the Organisation of Identity Management Systems</p>	<p><b>Participated in initial exploratory interviews.</b>            Online Forums : Yes            Reads Blogs : Yes            Writes Blogs : Yes            Newsgroups : No</p>

## Appendix C: Initial Interviews Structure

### Understanding Participation in a VCoP

#### Why is the research project relevant: Initial Survey

##### Survey details

Survey Number:

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Date:

---

Place:

---

Dictaphone filename:

---

##### Survey Permissions

Allow for direct quoting?

---

Chatham House Rules?

---

Allow for others to read  
and comment on this  
survey?

---

Allow interview to be  
recorded?

---

Other?

---

---

---

Name and Signature:

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**About the Interviewee**

Name: \_\_\_\_\_

Organisation: \_\_\_\_\_

Position: \_\_\_\_\_

Description of work \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Do you use any of the following?

Online Forums? \_\_\_\_\_

Read Blogs? \_\_\_\_\_

Write Blogs? \_\_\_\_\_

Own personal website? \_\_\_\_\_

News Groups? \_\_\_\_\_

Other Online Communities? \_\_\_\_\_

**Section A: Informal Learning**

Q1) Boud & Middleton (2003) argued that “only through an understanding of formally unmediated learning can secure understandings of mediated learning develop.” To what extent do you agree with this statement? How important do you feel informal learning is in the work place?

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Q2) What could managers do to promote informal learning within their organisation?

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Q3) How important are the following factors in promoting informal learning?

**Type of practice/organisation:** \_\_\_\_\_  
(Educational and professional diversity,  
A more knowledge intensive practice,  
reliance on individuals’ skill and  
reputation) \_\_\_\_\_

**Organisation’s Culture:** \_\_\_\_\_  
(Tolerance to Emotional displays,  
Friendly helpful atmosphere,  
Degree of micromanagement  
and degree of control) \_\_\_\_\_

**Organisational Form and  
Autonomy:** \_\_\_\_\_  
(Reward systems, employee  
empowerment, Ambition) \_\_\_\_\_

Q4) Wegner (1998) expressed that informal learning comes with its share of disadvantages in that management may lose control of employee’s knowledge. Informal learning has been said to encourage procedural shortcuts which are often seen as a mixed virtue. Do you think this is true, and do you believe it is a considerable problem? What is your opinion regarding procedural shortcuts?

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**Section B: Tacit/Latent knowledge versus Explicit Knowledge**

1) Many authors argue that informal learning in traditional communities of practice are vital because they enable intrinsically tacit knowledge, such as group dynamics and informal working systems to develop and be shared. Some argue that such knowledge, skill and experience may never be made explicit, i.e. it may not be easily written and taught through books and formal training, it needs to be gained from working with peers directly. Others argue that knowledge may never be intrinsically tacit, and the nature of knowledge is determined by the situation in which it exists as well as the people and the technologies involved in its usage or transfer. By the same token, many argue that informal learning across virtual communities is hampered by limitations inherent in the usage of the technology. To what extent do you think that the use of technology acts as a barrier to making knowledge explicit?

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2) What may distinguish a particular technology, both in terms of its function and basic design, to allow knowledge to be made more explicit?

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3) Owen-Plugh (2003) proposes that through discussion, knowledge is made more explicit as common terminology and key arguments become more shared and understood. Do you feel that Owen-Plugh's argument is correct? To what extent can virtual discussion be used in this way?

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### Section C: Utility of existing VCoP's

The internet has encouraged the birth of many virtual communities dedicated to promoting knowledge sharing about particular practices. Most commonly they take the form of forums and news groups but blogging communities are also on the rise. In many ways these communities may be seen as virtual communities of practice (VCoP) however their lack of organisational settings raise questions about their reliability and about the participant's motivation.

1) Please describe any direct or indirect experiences you may have had using virtual communities of practice.

2) To what extent would you rely on information acquired from such sources, and what is your rationale behind this level of trust?

3) Do you feel that such digital communities may exist and be useful within an organisational setting? If so what form may (or should) they take?

**Section D: Where does this research stand in terms of industry's needs?**

There has been talk about knowledge management and retention becoming a top priority for knowledge intensive firms in the immediate future. Many have mentioned the items below as major influencing factors, please comment about the general situation and about the individual factors.

A) An aging population. \_\_\_\_\_  
\_\_\_\_\_

B) An increased dependency on individual's knowledge. \_\_\_\_\_  
\_\_\_\_\_

C) An increasingly mobile work force. \_\_\_\_\_  
\_\_\_\_\_

D) Increased opportunity of "poaching" through increased intra-firm collaborations. \_\_\_\_\_  
\_\_\_\_\_

Could you suggest any other factors?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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## Appendix D: Introducing the Delphi study's initial participants

<b>Participant's Profile</b>	<b>Expertise</b>	<b>Rounds Participated</b>
<b>Name:</b> William Borg Barthet	<b>Expertise:</b> Software Developer Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Rosalind Cannell Member of the Emint Community	<b>Expertise:</b> Community Facilitator / Manager / Owner	First Round: Yes Second Round: No Third Round: No
<b>Name:</b> Mike Cushman <b>Organisation:</b> London School of Economics	<b>Expertise:</b> Knowledge Management Academic	First Round: Yes Second Round: No Third Round: No
<b>Name:</b> Dan Dixon <b>Organisation:</b> Digital Dust Member of the Emint Community	<b>Expertise:</b> Collaboration Solutions Consultant Knowledge Man Consultant	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Lilia Efimova <b>Organisation:</b> Telematica Instituut KM related PhD Researcher	<b>Expertise:</b> Knowledge Man Consultant Knowledge Man Academic Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Lizzie Jackson <b>Organisation:</b> BBC Online Community PhD Researcher	<b>Expertise:</b> Knowledge Man Consultant Knowledge Man Academic Representative Member of VCoP	First Round: Yes Second Round: Yes Third Round: No
<b>Name:</b> James Pullicino <b>Organisation:</b> BBC Designer and Owner of many BBS	<b>Expertise:</b> Software Engineer / IT Manager	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> John D. Smith <b>Organisation:</b> Learning Alliances Facilitator of CPsquare	<b>Expertise:</b> Collaboration Solutions Cnslt Community Facilitator / Manager / Owner	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Jin Tong <b>Organisation:</b> Cranfield University KM related PhD Researcher	<b>Expertise:</b> Knowledge Man Academic	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Will Venters <b>Organisation:</b> LSE Took part in initial survey	<b>Expertise:</b> Knowledge Man Academic	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Etienne Wenger Helped coin the term CoP	<b>Expertise:</b> Social Learning Theorist	First Round: Yes Second Round: Yes Third Round: Yes
<b>Name:</b> Nancy White <b>Organisation:</b> Full Circle Associates	<b>Expertise:</b> Collaboration Solutions Cnslt Community Facilitator / Owner Knowledge Man Consultant Representative Member of VCoP Online facilitation	First Round: Yes Second Round: Yes Third Round: Yes

**Appendix E: Delphi participants introduced in second round**

Participant's Profile	Expertise	Rounds Participated
<p><b>Name:</b> Marcia E. Daumen  <b>Organisation:</b> CIRRIE            (Center for International Rehabilitation Research Information and Exchange)</p>	<p><b>Expertise:</b> Knowledge Man Academic</p>	<p>Second Round: Yes            Third Round: Yes</p>
<p><b>Name:</b> Joann Starks  <b>Organisation:</b> SEDL's (NCDDR)            (National Center for the Dissemination of Disability Research)</p>	<p><b>Expertise:</b> Community Facilitator / Manager / Owner</p>	<p>Second Round: Yes            Third Round: Yes</p>
<p><b>Name:</b> Julie Walker  <b>Organisation:</b> BlueYonder             Masters Dissertation about the marketing opportunities in online communities</p>	<p><b>Expertise:</b> Business Strategy Consultant             5 years of experience researching communities of practice from a marketing perspective.</p>	<p>Second Round: Yes            Third Round: Yes</p>

## Appendix F: The first round survey

### Zarb's VCoP Participation Function

#### 1. Introduction and Personal Details

Thank you for accepting to participate in this Delphi Study. In this questionnaire (5 pages) you will be asked to rate the importance of 3 "motivators" which are being hypothesised as being the most influential reasons for participating in virtual communities of practice (VCoP).

Following this, you will be asked to rate the influence of factors which in turn limit or delimit the importance of the particular "Motivator".

These factors are designed to be used to build a model which will help estimate how effective (and how frequented) a particular community-oriented knowledge management solution would be in the particular organisation seeking the solution.

The term 'Virtual Communities of Practice' is taken to signify communities of practice which operate an online environment but whose members are not necessarily tied in to the community by employment contracts. They are "unattached". Good examples are E-Mint and the Cpsquare, where members are sometimes competing outside the community, yet still share knowledge within its domain.

This research project assumes that by exploring participation in these environments, a basic, "foundation type" participation model may be constructed free of unnecessary complications related to the organisation's setup and structure.

This model may then be built upon further and tested, possibly again by use of a Delphi study, in order to add more complexity and completeness.

At times it may be hard to make judgments about a particular factor without making assumptions regarding the technology being used. The most obvious of these situations will include sub questions to solve the dilemma, but otherwise, please try to picture the "average" virtual community of practice technological setup and base your answer on that.

The research has allocated appropriate space to investigate how the choice of technology itself, and the management of the technology interacts with participants motivations, but at this stage, it is necessary to leave the variable fixed.

**1. It is interesting to link different views with different individuals and their set of expertise. For this reason, I would appreciate if you would provide me with some personal information about your area of expertise. I will be the only one to view this information and will always seek your authorisation before quoting you. Should you not want to divulge any of this information, simply skip the**

question.

What is your Name?

**2. If you have a biography which I may access to learn more about your area of expertise, please indicate it below and then feel free to skip to the next page.**

**3. Which categories best represent your Industry/Expertise.**

- Collaboration Solutions Consultant
- Community Facilitator/Manager/Owner
- Knowledge Management Consultant
- Knowledge Management Academic
- Representative Member of VCoP
- Other (please specify)

**4. Please indicate any other relevant expertise or achievements**

## 2. The 3 "Motivators"

Although there are many other "Motivators", this research will focus on exploring what are considered to be the three main reasons why people participate on VCoP. These are deemed to be;

Self Development: Learning skills and acquiring knowledge.

Sense of Belonging: To a particular profession or elite group. Desire to expand social network relating to person's interest/practice, gain emotional support, desire to progress profession as a whole.

Reputation Development and Acknowledgment: The use of VCoP to exhibit expertise and to build or expand a reputation. Gaining acknowledgement of expertise.

### \* 5. Please rank the factors in order of importance/significance.

	Most Important	Second	Least Important
Self Development	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sense of Belonging	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Reputation Development and Acknowledgment	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

### \* 6. Please rate how significant each one is.

	Important	Significant	Dubious	Insignificant
Self Development	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sense of Belonging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Reputation Development and Acknowledgment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

### 7. Please indicate any other factors which you feel are important.

### 3. Expanding on Self Development

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the degree to which Self Development may be a motivating factor for participation in a VCoP.

**Amount of Participants:** It is suspected that communities which have a large amount of participants may be deemed as better learning opportunities by participants.

**Specificity of Community topic:** It is suspected that if a community is very focused around a tightly knit subject it may offer increased learning opportunities. A more specific community would increase its ability to delve into deeper discussions, and offer less "amateur" interruptions such as clarifying the subjects' jargon. Hence such a community may be perceived as offering more learning opportunities. It also decreases the "noise to signal ratio".

**Knowledge requirement of practice:** It is suspected that the more intellectual ability and training is required to undertake the community's practice, the more scope for learning and knowledge sharing exists. Hence with more scope for learning, Self Development would become a greater motivating factor.

**Degree of IT requirement of Practice:** Since we are examining communities of practice which make use of a virtual environment, it is suspected, that a practice which itself makes great use of Information Technology would be less effected by technophobia and its members would generally be more accustomed to learning and communicating in a virtual setting.

**Availability of Alternative Knowledge Sources:** Through interviews it has become evident that newer practices, such as search marketing and social computing, are more likely to make use of VCoP. One explanation would be that these new practices lack formal professional bodies to organise and legislate the professions knowledge requirements. It is thus suspected that should a community's practice have many alternative sources of knowledge, such as well founded professional bodies and academic curriculums, people may be less likely to use the VCoP to learn since some would prefer learning from the alternative sources. The same would work in reverse, where for example because of the novelty of a practice, knowledge has not yet been formalised and VCoP become one of the only sources for learning.

**Value of Knowledge:**  
When individuals value a particular knowledge highly they may well

forego the advantages from trying to build on it collectively, in order to benefit from it singularly. This may better explain why academic institutions are not sufficiently represented in VCoP. Academics earn their living off formalising information. To share it freely on the internet may help increase their knowledge pool but it also depreciates the value of the knowledge assets they possess.

**\* 8. Please indicate how significant each factor is in its effect on the overall importance of "Self Development" as a motivator.**

	Very Important	Important	Significant	Dubious	Insignificant
Amount of Participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge Requirement of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Degree of IT Requirement of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of Alternative Knowledge Sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Value of Knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**\* 9. Specificity of Community Practice: In the initial set of interviews, it became apparent that individuals were hard pressed to judge the importance of this said factor without being given an assumption about the technology being used.**

They expressed that in a situation where the community allows existence on a variety of different avenues, (such as individual blogs, one to one chat mechanisms, thread folders etc..) sub-communities may emerge and this allows for the overall community to support a larger scale of practice specifics.

Please rate how significant you think "Specificity of Community Practice" is in influencing the overall importance of "Self-development" as a motivating factor.

**IMPORTANT NOTE: "SPLICING"** refers to a community's ability to encourage sub-communities. Literature and some interviewees suggest that such an ability is improved by the management style and choice of the community's technological infrastructure. An excellent example is provided by E-Mint, as it allows users to own a blog space within its community, providing an alternative venue where people of particularly specific interests may interact without adding too much noise to the rest of the community. CPsquare also offers a nice variety of venues including the option of creating a folder in already designated sub-communities.

In the survey I use "Without splicing" to signify situations where the community is organised in such a way that it does not encourage "splicing"; Such as the typical static online forum. "With Splicing" identifies situations where the community actively encourages sub-communities by for example offering users the option to create their own research folder, their own blog, offering a well categorised forum, allowing personal messages, allowing chat suites etc...

	V. Important	Important	Significant	Dubious	Insignificant
Specificity of Community Practice (Without "splicing")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specificity of Community Practice (With "splicing")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.**

#### 4. Expanding on Sense of Belonging

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the degree to which achieving a Sense of Belonging may be a motivating factor for participation in a VCoP.

**Degree of IT requirement of Practice:** Participants need to be comfortable with the technology for them to effectively “read between the lines” and avoid miscommunications if they are to share knowledge online. Should they wish to share emotions, the need becomes even greater. It is suspected that if the community’s practice has a strong connection with IT then participants are likely to have such comfort.

**Specificity of Community topic:** It is suspected that if a community is very focused around a tightly knit subject it may increase the sense of belonging that it could offer, as the community becomes more elite.

**Amount of Participants:** It is suspected that communities which have a large amount of participants may feel a reduction in any sense of belonging which they generate as it may reduce any sense of intimacy.

**Moral Consequences and Emotional Baggage of Practice:** It is suspected that practices which either have particular moral consequences or have a large amount of emotional baggage may find communities help lighten these burdens.

**Degree of Solitude and alienation of Practice:** Practices, such as PhD research for example, which require a great deal of solitary work may amplify the importance of “Sense of Belonging” as a Motivating Factor. Also practices which carry with them a sense of alienation from the rest of the organisation (for example IT staff in an Accounting firm) or even from society (for example public attorneys) may also be more susceptible to VCoP.

**\* 11. Please Indicate how significant each factor is in its effect on the overall importance of “Sense of Belonging” as a motivator.**

	V. Important	Important	Significant	Dubious	Insignificant
Degree of Solitude and alienation of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Degree of IT requirement of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**12. Splicing and Specificity of Community Practice: In the initial set of interviews, it became apparent that individuals were hard pressed to judge the importance of this said factor without being given an assumption about the technology being used.**

They expressed that in a situation where the community allows existence on a variety of different avenues, (such as individual blogs, one to one chat mechanisms, thread folders etc..) sub-communities may emerge and this allows for the overall community to support allow the community to offer a greater sense of belonging as the emerging sub-communities would be smaller and tighter.

**Please rate how important you think “Specificity of Community Practice” in this context.**

	V. Important	Important	Significant	Dubious	Insignificant
Specificity of Community Practice (Without Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specificity of Community Practice (With Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. Splicing and Amount of Participants: In the initial set of interviews, it became apparent that individuals were hard pressed to judge the importance of this said factor without being given an assumption about the technology being used.**

They expressed that splicing will allow for the deeper relationships to form even though the community has grown large.

**Please rate how important you think the Amount of Participants is when individuals are seeking a sense of belonging, in this context.**

	V. Important	Important	Significant	Dubious	Insignificant
Amount of Participants (Without Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount of Participants (With Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. Splicing, Anonymity and Emotional Baggage:**

**Kindly rate how important you think the “Moral Consequences and Emotional Baggage of Practice” are in the two separate contexts listed below.**

	V. Important	Important	Significant	Dubious	Insignificant
Moral Conseq. & Emotional Bag. of Practice (Without Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moral Conseq. & Emotional Bag. of Practice (With Splicing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moral Con. & Emot. Bag. of Practice (With Identity Verification)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moral Conseq. & Emotional Bag. of Practice (With Anonymity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**15. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.**



## 5. Expanding on Reputation Building and Acknowledgment

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the degree to which "Reputation Building and Acknowledgement" may be a motivating factor for participation in a VCoP.

**Novelty of practice and information asymmetries:** It is hypothesised that where a practice is still novel and slightly misunderstood by other industries, greater information asymmetries exists in the market place, leading to situations similar to those described by the "Lemons Principle" - All services would be classified as being of average quality, as quality is indistinguishable for customers. Hence higher quality professionals may be undervalued. It is suspected, that in such situations, the high quality professionals will put reputation building as a high priority as it provides the consumer with a signal which they may understand even if they don't fully understand the practice or service.

This factors is suspected to combine with the fact that novel products and services are more likely to be investigated virtually by customers.

**Degree or "Virtuality" of practice:** Practices such as Search Marketing, or Online facilitation only exist because of the existence of the Internet. It is suspected that in such practices building virtual reputations and identities is just as important, if not more, than other forms of reputations.

**Intrinsic Importance of Reputation to practice:** Some practices such as Journalism and Writing rely heavily on building a well known name. Here an individual's reputation is intrinsically important to his practice, no matter what situation the market is in.

- \* 16. How significant do you think the factors below are in effecting the overall importance of "Reputation Building and Acknowledgement" as a motivating factor.

	V. Important	Important	Significant	Dubious	Insignificant
Novelty of practice and information asymmetries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Degree of "Virtuality" of practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intrinsic Importance of Reputation to practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.

## **6. Thank You Very Much**

Thank you very much for your time and patience. I assure you that your efforts will be multiplied by as much as possible to guarantee that the research project is valuable to the industry.

The second round of the Delphi study will be with you in approximately four to five days. The next survey will ask you to perfect the average rank of each factor, so you would not have to reread the entire set of factors again, hence it should take half the time.

In the mean time, if you are interested in discussing this research further, results from this survey and interviews will be published shortly on a dedicated blog ( <http://digitalcop.blogspot.com> ) - hopefully a healthy discussion will progress there.

## Appendix G: The second round survey

### Zarb's VCoP Participation Function Round 2

#### 1. Modification to the first survey

Thank you for your responses to the first survey and for accepting to participate in the second round. This survey should take approximately 10 minutes to complete and is designed to be completed with the assistance of the appropriate Reference Sheet (which may be downloaded from [www.digitalCoP.blogspot.com](http://www.digitalCoP.blogspot.com))

The first survey had some crucial mistakes. Please excuse its inefficiency at describing what was meant by "splicing", and for some unclear questions.

Hopefully you all now have understood what is meant by "splicing", if not please refer to section 1.4. in the reference sheet provided. Some questions have also been reworded in an effort to make them clearer.

A factor has also been added to the "Reputation Development and Acknowledgement" Motivator. Descriptions are provided here as well as in section 3.3

**Strength of Community's Reputation Mechanism:** Many communities have enabled a variety of techniques which are supposed to help individuals build online reputations. In their most simple form they may appear as simple titles given to participants based upon how long they have participated in the community. However more sophisticated mechanisms exist associating a variety of moderating powers to higher reputations. Some communities adopt peer review systems, others simply allow users to view all the previous posts made by the person.

It is speculated that the existence and strength of these mechanisms may provide a direct vehicle for participants willing to create an online reputation, making the factor more relevant.

It is also believed that the existence of Identity Verification systems may strengthen the importance of such a mechanism.

**Identity Verification Systems:** This refers to the community's ability to verify its participants' identity by, for example, requiring a credit card payment or necessitating usage or work e-mails.

Thank you, and good luck!!

1. Kindly enter your name.

\* 2. Have you completed the first survey?

Yes

No

## 2. Introduction and Personal Details

Thank you for accepting to participate in this Delphi Study. In this questionnaire (5 pages) you will be asked to rate the importance of 3 "motivators" which are being hypothesised as being the most influential reasons for participating in virtual communities of practice (VCoP).

Following this, you will be asked to rate the influence of factors which in turn limit or delimit the importance of the particular "Motivator".

These factors are designed to be used to build a model which will help estimate how effective (and how frequented) a particular community-oriented knowledge management solution would be in the particular organisation seeking the solution.

The term 'Virtual Communities of Practice' is taken to signify communities of practice which operate in an online environment but whose members are not necessarily tied in to the community by employment contracts. They are "unattached". Good examples are E-Mint and the CPsquare, where members are sometimes competing outside the community, yet still share knowledge within its domain.

This research project assumes that by exploring participation in these environments, a basic, "foundation type" participation model may be constructed free of unnecessary complications related to the organisation's setup and structure.

This model may then be built upon further and tested, possibly again by use of a Delphi study, in order to add more complexity and completeness.

At times it may be hard to make judgments about a particular factor without making assumptions regarding the technology being used. The most obvious of these situations will include sub questions to solve the dilemma, but otherwise, please try to picture the "average" virtual community of practice technological setup and base your answer on that.

The research has allocated appropriate space to investigate how the choice of technology itself, and the management of the technology interacts with participants motivations, but at this stage, it is necessary to leave the variable fixed.

**3. If you have a biography which I may access to learn more about your area of expertise, please indicate it below and then feel free to skip to the next page.**

## 4. Which categories best represent your Industry/Expertise.

- Collaboration Solutions Consultant
- Community Facilitator/Manager/Owner
- Knowledge Management Consultant
- Knowledge Management Academic
- Representative Member of VCoP
- Other (please specify)

## 5. Please indicate any other relevant expertise or achievements

### 3. The 3 "Motivators"

If you have not completed the first survey kindly read the provided Reference Sheet before continuing.

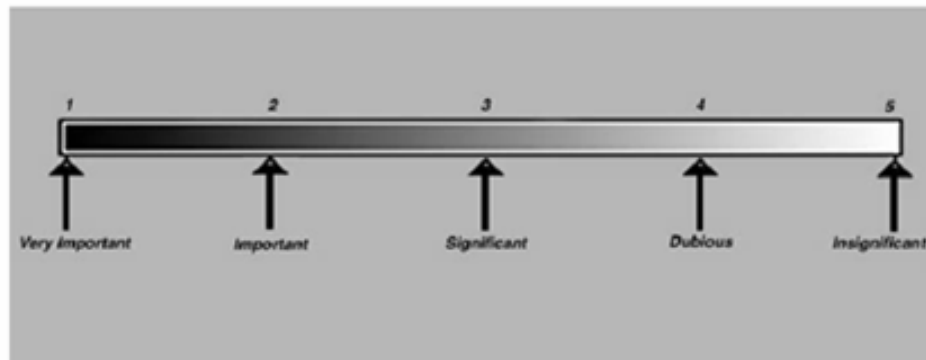
Descriptions of the Model and the Motivating factors are provided in section 3 of the Reference Sheet.

6. If you have completed the first round kindly ignore this question.

Please rank the factors in order of importance/significance.

	Most Important	Second	Least Important
Self Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sense of Belonging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation Development and Acknowledgement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Throughout the survey, you will be asked to comment on the accuracy of the result the previous survey. Please use this scale to visualise the numerical results.



\* 7. Self-Development received a score of 1.54. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 8. Sense of Belonging received a score of 2.15. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 9. Reputation Development and Acknowledgement received a score of 2.38. Please visualise this score on the scale provided and then answer the following question.

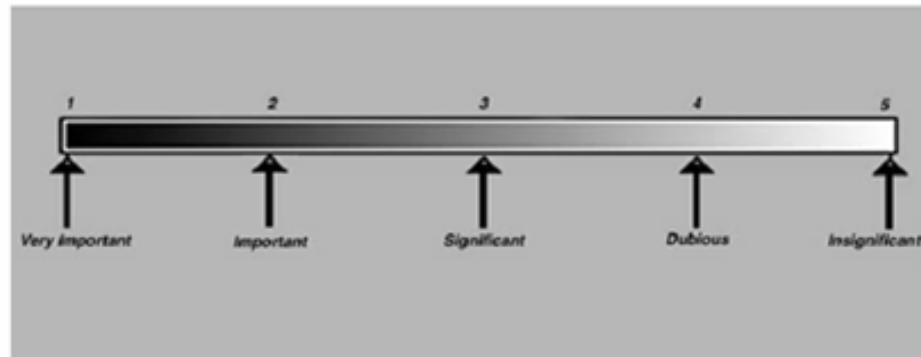
Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

#### 4. Expanding on Self Development

Descriptions of the factors said to influence the motivational value of Self-Development may be found in section 3.1 of the Reference Sheet

Please use this scale to visualise the numerical results.



\* 10. Amount of Participants received a score of 2.85. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 11. Knowledge Requirement of Practice received a score of 1.85. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 12. Degree of IT Requirement of Practice received a score of 3.23. Please

visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 13. Availability of Alternative Knowledge Sources received a score of 2.46. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 14. Value of Knowledge received a score of 1.77. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 15. Based on the description of "Specificity of Community Topic" from the first survey (refer to section 3.1), please indicate how true you feel this statement is:

"The more specific a community is, the more opportunity for self-development"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

\* 16. Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is:

"Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may be less specific in its root practice without losing depth of discussion or risk deteriorating the noise to signal ratio"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

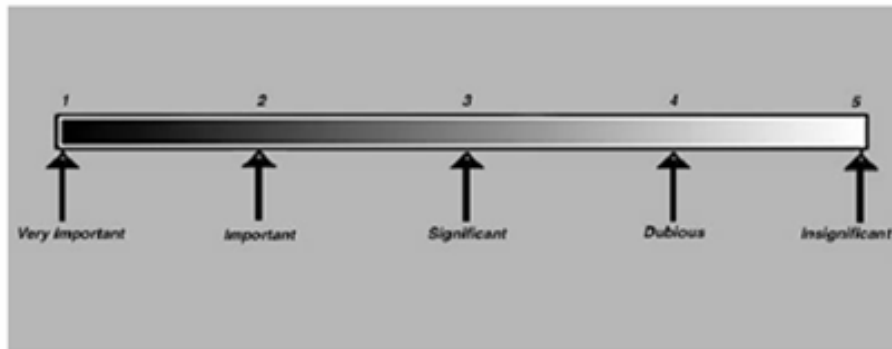
17. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.



## 5. Expanding on Sense of Belonging

Descriptions of the factors said to influence the motivational value of Sense of Belonging may be found on section 3.2 of the Reference Sheet

Please use this scale to visualise the numerical results.



- \* 18. Degree of Solitude and Alienation of Practice received a score of 2.08. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 19. Degree of IT requirement of Practice received a score of 3.15. Please visualise this score on the scale provided and then answer the following question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 20. Based on the description of "Specificity of Community Topic" from the first

survey (refer to section 3.2), please indicate how true you feel this statement is:

"The more specific a community is, the more opportunity for the formation of closer relationships and the greater the sense of belonging generated"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

- \* 21. Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is:

"Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may tend to be less specific in its root practice without risking having too much interest diversity, which may lead to a reduction in the generation of Sense of belonging"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

- \* 22. Based on the description of "Amount of Participants" from the first survey (refer to section 3.2), please indicate how true you feel this statement is:

"The larger the community, the less opportunity for the formation of deep relationships and the less sense of belonging generated"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

- \* 23. Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is:

"Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may expand to a large size without risk of becoming shallow and commercial, and without suffering a reduction in its generation of Sense of belonging"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

\* 24. Based on the description of "Moral Consequences and Emotional Baggage of Practice" from the first survey (refer to section 3.2), please indicate how true you feel this statement is:

**"The more emotional baggage and the more moral consequences associated with a practice, the more opportunity and need for its respective virtual community to generate a Sense of Belonging"**

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

\* 25. Based on the description of "splicing" provided in the first survey (refer to section 1.4), please indicate how true you feel this statement is:

**"A virtual community of practice which successfully encourages "splicing" would better provide secluded spaces where members may become emotional without being seen as generating noise in the community. This in turn enables a "splicing" VCoP to generate a greater sense of belonging."**

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

26. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.

## 6. Expanding on Reputation Building and Acknowledgment

Descriptions of the factors said to influence the motivational value of Reputation Building and Acknowledgement may be found on section 3.3 of the Reference Sheet.

As already mentioned in the introduction to this survey, a new factor has been added to this section. I have repasted a description here, should you need to refresh your memory.

**Strength of Community's Reputation Mechanism:** Many communities have enabled a variety of techniques which are supposed to help individuals build online reputations. In their most simple form they may appear as simple titles given to participants based upon how long they have participated in the community. However more sophisticated mechanisms exist associating a variety of moderating powers to higher reputations. Some communities adopt peer review systems, others simply allow users to view all the previous posts made by the person.

It is speculated that the existence and strength of these mechanisms may provide a direct vehicle for participants willing to create an online reputation, making the factor more relevant.

It is also believed that the existence of Identity Verification systems may strengthen the importance of such a mechanism.

**Identity Verification Systems:** This refers to the community's ability to verify its participants' identity by, for example, requiring a credit card payment or necessitating usage or work e-mails.

- \* 27. Based on the description of "Strength of Community's Reputation Mechanism" provided (refer to section 3.3), please indicate how true you feel this statement is:

"The attitude of one participant of a VCoP towards another is effected by any and all reputation and trust signals available. Strong Reputation Mechanisms are thus valuable tools for reputation building and communities offering stronger mechanisms may encourage the participation of such aspiring reputation builders."

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

- \* 28. Based on the provided description of "Identity Verification Systems" (refer to section 3.4), please indicate how true you feel this statement is:

"When a VCoP offers recognisable identity verification system, reputations built on the community become more valuable as they are easily linked to the physical world"

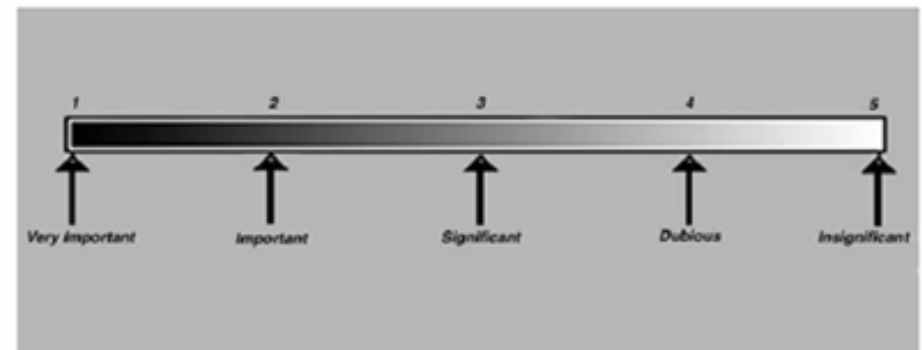
- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

- \* 29. Based on the provided description of "Identity Verification Systems" (refer to section 3.4), please indicate how true you feel this statement is:

"The positive effects provided by "strong reputation mechanisms" are somewhat mitigated by the existence of Identity Verification Systems. This is because people credentials and trust signals originating from one's real name superscede those originating from other reputation mechanisms"

- Definitely
- True
- Maybe
- Doubtful
- False
- N/A

Please use this scale to visualis the numerical results.



- \* 30. Novelty of practice and information asymmetries received a score of 1.77. Please visualise this score on the scale provided and then answer the following

question.

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

**\* 31. Degree of "Virtuality" of practice received a score of 3.15. Please visualise this score on the scale provided and then answer the following question.**

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

**\* 32. Intrinsic Importance of Reputation to Practice received a score of 1.69. Please visualise this score on the scale provided and then answer the following question.**

Do you believe this score is:

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

**33. Feel free to use the space provided below to comment on the questions above or to suggest other factors which should be investigated.**



## **7. Thank You Very Much**

Thank you very much for your time and patience.

This round will be closed on Tuesday the 8th or sooner if enough participants respond to the survey early.

In the mean time, if you are interested in discussing this research further, research notes are being published on a dedicated blog ( <http://digitalcop.blogspot.com> ) – hopefully a healthy discussion will progress there.

Because some results from the first survey have had to be scraped, one more survey round is required and may be expected on the 10th.

## Appendix H: The final round survey

### Zarb's VCoP Participation Function Final Round

#### 1. Modification to the first survey

Thank you for all your participation in the two survey rounds already completed and for accepting to fill in this third and final round. This last and briefer questionnaire is limited to following up issues which were introduced in the second round, and the number of questions has accordingly been reduced from 21 to 11.

There have been no major changes to the model and hence the reference sheet provided for the second round remains relevant. This may be found from the project's dedicated blog:  
<http://www.digitalCoP.blogspot.com>.

Thank you again for your continued participation.

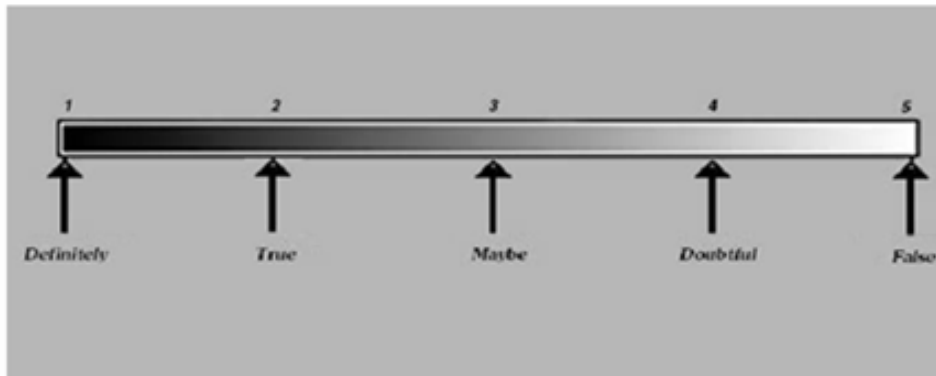
Best Regards,  
Michael

#### 1. Kindly enter your name.

## 2. Expanding on Self Development

Descriptions of the factors said to influence the motivational value of Self-Development may be found in section 3.1 of the Reference Sheet. This may be downloaded from <http://www.digitalCoP.blogspot.com>

Please use this scale to visualise the numerical results.



- \* 2. When discussing the description of "Specificity of Community Topic", the respondents in the last survey were asked to rate the truth in the statement "The more specific a community is, the more opportunity for self-development".

The truth of this statement was rated at an average score of 2.42. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 3. When discussing the effect that "splicing" may have on the description of "Specificity of Community Topic", the respondents in the last survey were asked to rate the truth in the statement "Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may be less specific in its root practice without losing depth of discussion or risk deteriorating the noise to signal ratio".

The truth of this statement was rated at an average score of 2.58. Please visualise this score on the scale provided and indicate how accurate you feel it is.

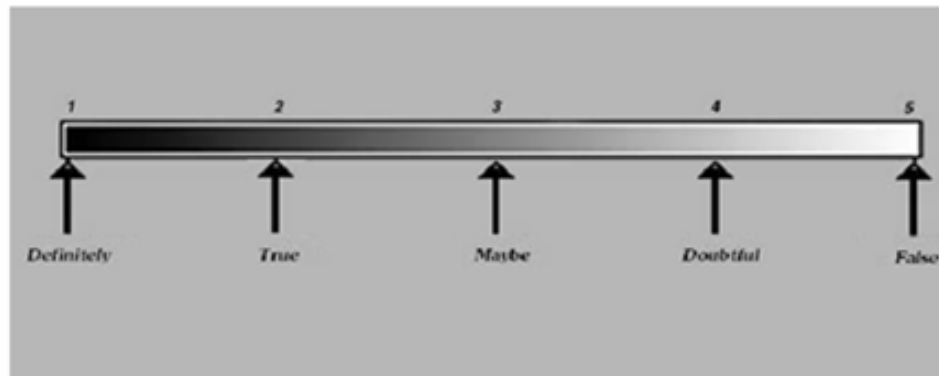
- Accurate

- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

### 3. Expanding on Sense of Belonging

Descriptions of the factors said to influence the motivational value of Sense of Belonging may be found on section 3.2 of the Reference Sheet

Please use this scale to visualise the numerical results.



- \* 4. When discussing the description of "Specificity of Community Topic", the respondents in the last survey were asked to rate the truth in the statement "The more specific a community is, the more opportunity for the formation of closer relationships and the greater the sense of belonging generated".

The truth of this statement was rated at an average score of 2.33. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 5. When discussing the effect that "splicing" may have on the description of "Specificity of Community Topic", the respondents in the last survey were asked to rate the truth in the statement "Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may be less specific in its root practice without suffering from having too much interest diversity, which may lead to a reduction in the generation of Sense of belonging".

The truth of this statement was rated at an average score of 2.7. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate

- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 6. When discussing the description of "Amount of Participants", the respondents in the last survey were asked to rate the truth in the statement "The larger the community, the less opportunity for the formation of deep relationships and the less sense of belonging generated".

The truth of this statement was rated at an average score of 2.64. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 7. When discussing the effect that "splicing" may have on the description of "Amount of Participants", the respondents in the last survey were asked to rate the truth in the statement "Because of the emergence of sub-communities, a virtual community of practice which successfully encourages "splicing" may expand to a large size without risk of becoming shallow and without suffering a reduction in its generation of Sense of belonging".

The truth of this statement was rated at an average score of 2.55. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

- \* 8. When discussing the description of "Moral Consequences and Emotional Baggage of Practice", the respondents in the last survey were asked to rate the truth in the statement "The more emotional baggage and the more moral consequences associated with a practice, the more opportunity and need for its respective virtual community to generate a Sense of Belonging".

The truth of this statement was rated at an average score of 2.45. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 9. When discussing the effect that "splicing" may have on the description of "Moral Consequences and Emotional Baggage of Practice", the respondents in the last survey were asked to rate the truth in the statement "A virtual community of practice which successfully encourages "splicing" would better provide secluded spaces where members may become emotional without being seen as generating noise in the community. This in turn enables a "splicing" VCoP to generate a greater sense of belonging."

The truth of this statement was rated at an average score of 2.36. Please visualise this score on the scale provided and indicate how accurate you feel it is.

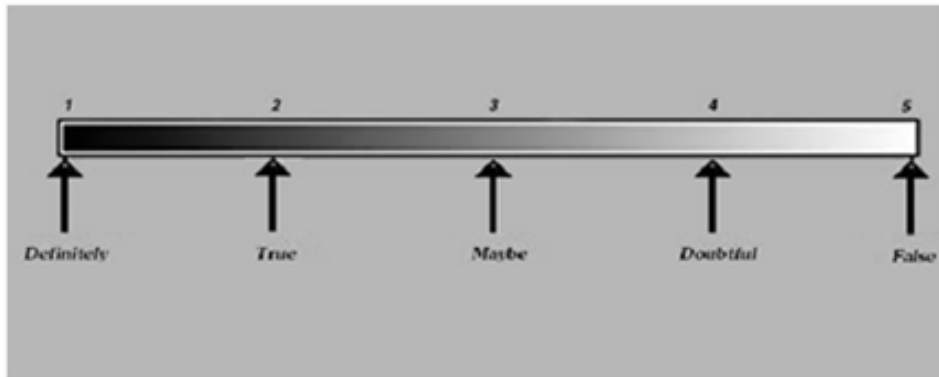
- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

#### 4. Expanding on Reputation Building and Acknowledgment

Descriptions of the factors said to influence the motivational value of Reputation Building and Acknowledgement may be found on section 3.3 of the Reference Sheet.

Please note that what was previously referred to as "Identity Verification Systems" is now being called "Identity Authentication". This term suits the description provided more accurately yet the modification is slight and did not warrant a recirculation of the reference sheet which still uses "identity verification".

Please use this scale to visualise the numerical results.



\* 10. When discussing the description of "Strength of Community's Reputation Mechanism", the respondents in the last survey were asked to rate the truth in the statement "The attitude of one participant of a VCoP towards another is effected by any and all reputation and trust signals available. Strong Reputation Mechanisms are thus valuable tools for reputation building and communities offering stronger mechanisms may encourage the participation of such aspiring reputation builders."

The truth of this statement was rated at an average score of 2.45. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 11. When discussing the effect that "Identity Verification" may have on the description of "Strength of Community's Reputation Mechanism", the

respondents in the last survey were asked to rate the truth in the statement "The positive effects provided by "strong reputation mechanisms" are somewhat mitigated by the existence of Identity Authentication Systems. This is because people credentials and trust signals originating from one's real name supersede those originating from other reputation mechanisms".

The truth of this statement was rated at an average score of 2.75. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

\* 12. When discussing the description of "Identity Verification", the respondents in the last survey were asked to rate the truth in the statement "When a VCoP offers recognisable identity verification systems, reputations built on the community become more valuable as they are easily linked to the physical world".

The truth of this statement was rated at an average score of 2.25. Please visualise this score on the scale provided and indicate how accurate you feel it is.

- Accurate
- Much less than it should be (Much less important: +1)
- Less than it should be (less important: +0.5)
- More than it should be (more important: -0.5)
- Much more than it should be (much more important: -1)

## Zarb's VCoP Participation Function Final Round

### 5. Thank You Very Much

Thank you very much for your time and patience.

This final round will be closed on Friday the 18th, and you may expect to receive an electronic copy of the final dissertation on the first of September.

I am currently looking for experts willing to be interviewed (by phone or face to face) about the research method and final results. Should you be interested please contact me at [michael.zarb@gmail.com](mailto:michael.zarb@gmail.com) .

Again thank you very much for you patients and time. Without your contributions this research project would not have been possible.

## **Appendix I: The reference sheet used in the second and third round.**

Please read and observe the following guidelines before attempting the survey.

1. If you have not undertaken the first round please dedicate 20 minutes to carefully reading this document. Failure to do so may seriously jeopardise the accuracy of this study. Remember the method favours quality versus quantity.
2. Before answering the questions keep in mind that the study specifically focuses on virtual communities of practice, not on any online community. For a definition on VCoP refer to section 1.1
4. Please keep this document handy when completing the survey so that you may refer to it should you need further explanations about a particular factor or question.

Thank you very much for your participation and time!!

## **Table of Contents**

### **1. Introduction and key terminology**

- 1.1. Introducing research agenda and VCoP**
- 1.2. About Survey**
- 1.3. Note about the technological variable**
- 1.4. An explanation of "Splicing"**

### **2. Modification to the first survey**

### **3. Description of Model**

- 3.1. Self-Development Expanded**
- 3.2. Sense of Belonging Expanded**
- 3.3. Reputation Development and Acknowledgement Expanded**

## **1.1 Introduction to the Research**

The term 'Virtual Communities of Practice' is taken to signify communities of practice which operate an online environment but whose members are not necessarily tied in to the community by employment contracts. They are "unattached". Good examples are E-Mint and the CPsquare, where members are sometimes competing outside the community, yet still share knowledge within its domain.

This research project stipulates that by exploring participation in such seemingly voluntary knowledge sharing environments, a foundation model may be constructed which reflects the most basic and unconditional factors which would influence any attempts at using community based knowledge management systems.

This model may be then built upon further and tested, possibly again by use of a Delphi study, in order to add more complexity and completeness.

## **1.2 About the Survey**

The survey aims at testing and rating the importance of a variety of factors which are said to influence the overall relevance of what are considered to be the 3 main motives from participation.

These factors are designed to be used to build a model which will help estimate how effective (and how frequented) a particular community-oriented knowledge management solution would be in any particular organisation.

## **1.3 Setting the Technological Variable as a constant**

It is often hard to make judgments about particular factors without knowing certain key characteristics regarding the technological setup supporting the VCoP.

The survey is designed to elevate the most obvious situations by asking the same question in the extremes of the technological characteristic.

## **1.4 About "Splicing"**

"SPLICING" refers to a community's ability to encourage sub-communities. Literature and some interviewees suggest that such an ability is improved by the management style and choice of the community's technological infrastructure. An excellent example is provided by E-Mint, as it allows users to own a blog space within its community, providing an alternative venue where people of particularly specific interests may interact without adding too much noise to the rest of the community. CPsquare also offers

a nice variety of venues including the option of creating a folder in already designated sub-communities.

In the survey I use "Without splicing" to signify situations where the community is organised in such a way that it does not encourage "splicing" - such as the typical static online forum. "With Splicing" identifies situations where the community actively encourages sub-communities by for example offering users the option to create their own research folder, their own blog, offering a well categorised forum, allowing personal messages, allowing chat suites etc...

## **2. Modification to the first survey**

The first survey had some crucial mistakes. Please accept apologies for its inefficiency at describing what was meant by "splicing", and for not better describing question 14.

Hopefully you all by now have understood what is meant by "splicing" - if not please refer to section 1.4. Some questions have also been reworded in an effort to make them clearer.

A factor has also been added to the "Reputation Development and Acknowledgement" Motivator.

*Strength of Community's Reputation Mechanism:* Many communities have enabled a variety of techniques which are supposed to help individuals build online reputations. In their most simple form they may appear as simple titles given to participants based upon how long they have participated in the community. However, more sophisticated mechanisms exist associating a variety of moderating powers to higher reputations statuses. Some communities adopt peer review systems, others simply allow users to view all the previous posts made by the person.

It is speculated that the existence and strength of these mechanisms may provide a direct vehicle for participants willing to create an online reputation, making the factor more relevant.

It is also believed that the existence of Identity Verification systems may strengthen the importance of such a mechanism.

*Identity Verification Systems:* This refers to the community's ability to verify its participants' identity by, for example, requiring a credit card payment or necessitating usage or work e-mails.

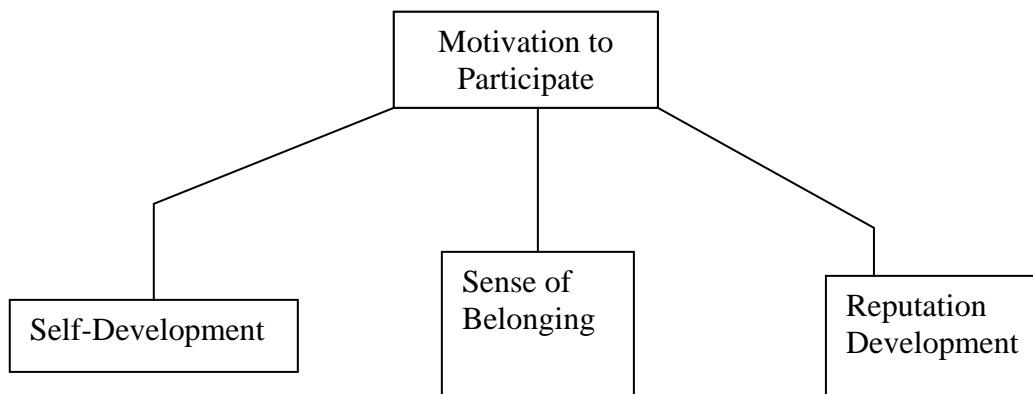
### 3. Description of Model

Although there are many other “Motivators”, this research will focus on exploring what are considered to be the three main reasons why people participate on VCoP. These are deemed to be:

*Self Development:* Learning skills and acquiring knowledge. Using VCoP to find people to collaborate with or participate in projects.

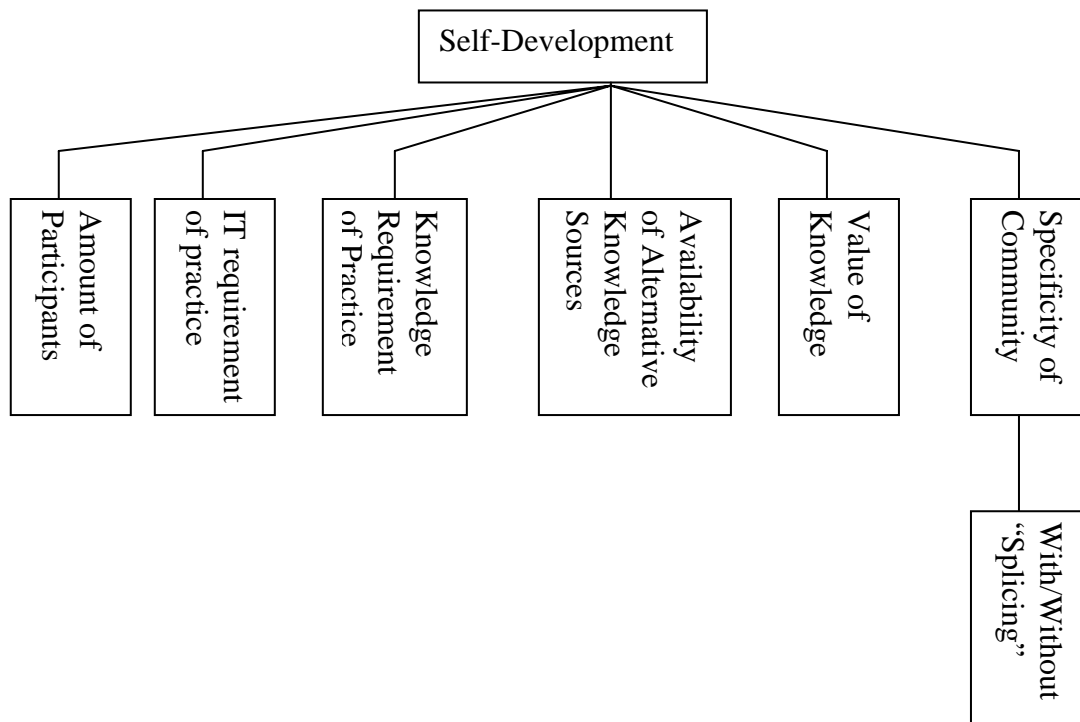
*Sense of Belonging:* To a particular profession or elite group. It refers to a desire to expand social networks relating to the person’s interest/practice and to socialise. It involves people seeking to gain emotional support and a desire to progress the profession as a whole.

*Reputation Development and Acknowledgment:* The use of VCoP to exhibit expertise and to build or expand a reputation. Using VCoP as a means to gain acknowledgement for particular works and expertise.



### 3.1 Self-Development

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the overall importance ascribed to Self-Development as a possible motivating factor for participation in a VCoP.



*Amount of Participants:* It is suspected that communities which have a large amount of participants may be deemed as better learning opportunities by participants.

*Specificity of Community:* It is suspected that if a community is very focused around a tightly knit subject it may offer increased learning opportunities. A more specific community would increase its ability to delve into deeper discussions, and offer less “amateur” interruptions such as clarifying the subjects’ jargon. Hence such a community may be perceived as offering more learning opportunities. It also decreases the “noise to signal ratio”.

This factor may be effected by the degree of “splicing” offered by the community (Please refer to section 1.4 for definition of “splicing”).

*Knowledge requirement of practice:* It is suspected that the more intellectual ability and training required to undertake the community’s practice, the more scope for learning and knowledge sharing exists. Hence with more scope for learning, Self-Development would become a greater motivating factor.

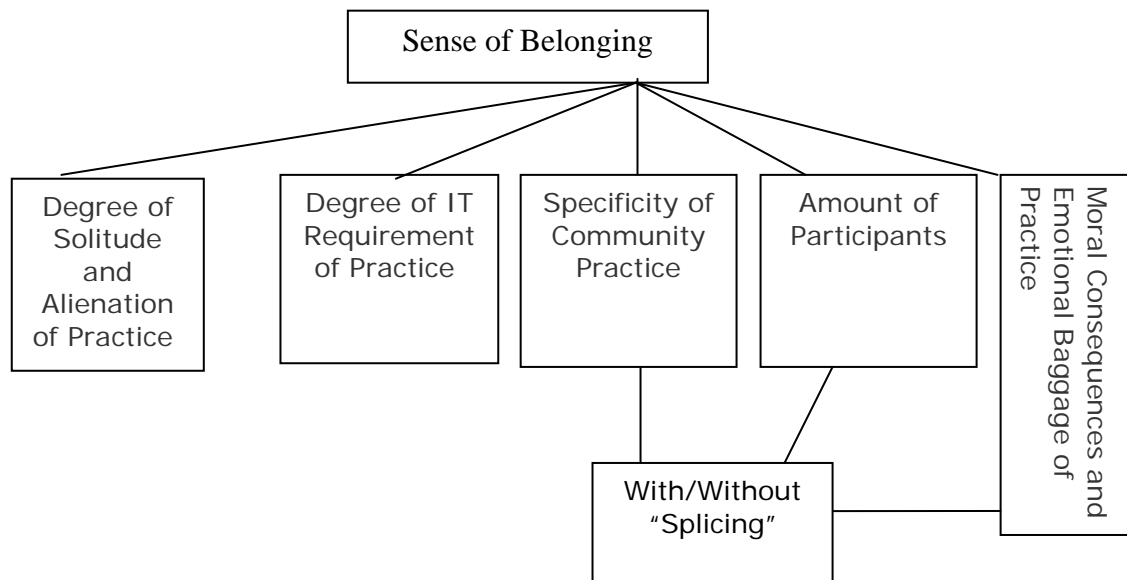
*Degree of IT requirement of Practice:* Since we are examining communities of practice which make use of a virtual environment, it is suspected, that a practice which itself makes great use of Information Technology would be less effected by technophobia and its members would generally be more accustomed to learning and communicating in a virtual setting.

*Availability of Alternative Knowledge Sources:* Newer practices, such as search marketing and social computing, are currently making great use of VCoP. One explanation would be that these new practices lack formal professional bodies to organise and legislate the professions' knowledge requirements. It is thus suspected that should a community's practice have many alternative sources of knowledge, such as well founded professional bodies and academic curriculum, people may be less likely to use the VCoP to learn since some would prefer learning from the alternative sources. The same would work in reverse, where, for example, because of the novelty of a practice, knowledge has not yet been formalised and a VCoP becomes one of the only sources for learning.

*Value of Knowledge:* When individuals value a particular knowledge highly they may well forego the advantages of trying to build on it collectively in order to benefit from it singularly. This may better explain why academic institutions are not sufficiently represented in VCoP. Academics earn their living off formalising information. To share it freely on the internet may help increase their knowledge pool but it also depreciates the value of the knowledge assets they possess.

### 3.2 Sense of Belonging

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the degree to which achieving a Sense of Belonging may be a possible motivating factor for participation in a VCoP.



*Degree of IT requirement of Practice:* In order for the community to provide its members with a sense of belonging, a certain degree of emotions must be shared in the community. It is speculated that when users are fearful of the technology or they simply do not understand the more intricate techniques such as emoticons, they may be less able to communicate emotions. It is further hypothesised that such an understanding of IT is related to the degree to which the practice itself is dependent on IT.

*Specificity of Community topic:* It is suspected that if a community is very focused around a tightly knit subject it may increase the sense of belonging that it could offer. This is partly because the community becomes more elite but also because the interests, emotions and experiences of the community's participants would be more closely related.

It is believed that the degree to which the community enables "splicing" may alter how important this factor is. (Please refer to section 1.4 for definition of "splicing")

*Amount of Participants:* It is suspected that communities which have a large amount of participants may exhibit a reduction in any sense of belonging which they generate as it may reduce any sense of intimacy.

It is believed that the degree to which the community enables "splicing" may alter how important this factor is. (Please refer to section 1.4 for definition of "splicing")

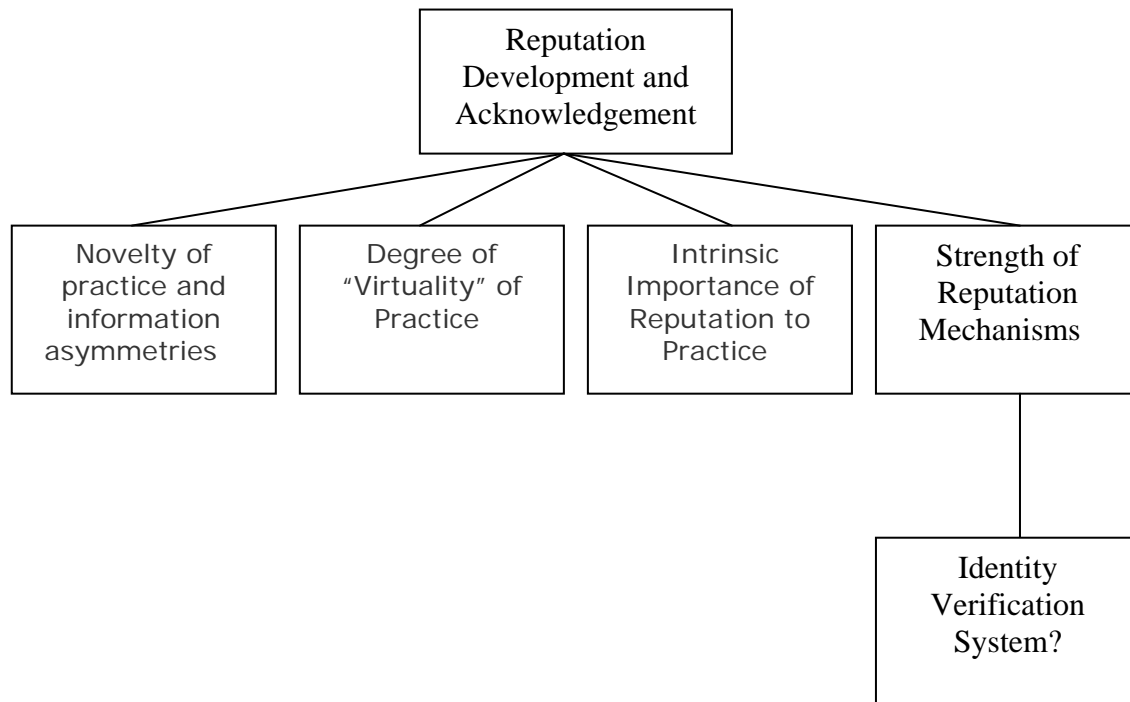
*Moral Consequences and Emotional Baggage of Practice:* It is suspected that practices which either have particular moral consequences or have a large amount of emotional baggage may find communities help lighten these burdens.

It is believed that the degree to which the community enables "splicing" may alter how important this factor is. (Please refer to section 1.4 for definition of "splicing")

*Degree of Solitude and Alienation of Practice:* Practices, such as PhD research for example, which require a great deal of solitary work may amplify the importance of "Sense of Belonging" as a Motivating Factor. Also, practices which carry with them a sense of alienation from the rest of the organisation, (for example IT staff in an Accounting firm), or even from society (for example public attorneys), may also be more susceptible to VCoP.

### 3.3 Reputation Development and Acknowledgment

Below is an explained list of some of the most important factors which are suspected of enhancing, enabling, or limiting the degree to which "Reputation Development" may be considered a motivating factor for participation in a VCoP.



*Strength of Community's Reputation Mechanism:* Many communities have enabled a variety of techniques which are supposed to help individuals build online reputations. In their most simple form they may appear as simple titles given to participants based upon how long they have participated in the community. However more sophisticated mechanisms exist associating a variety of moderating powers to higher reputations. Some communities adopt peer review systems, others simply allow users to view all the previous posts made by the person.

It is speculated that the existence and strength of these mechanisms may provide a direct vehicle for participants willing to create an online reputation, making the factor more relevant.

It is also believed that the existence if Identity Verification systems may strengthen the importance of such a mechanism.

*Identity Verification Systems:* This refers to the community's ability to verify its participant identity by, for example, requiring a credit card payment or necessitating usage or work e-mails.

*Novelty of practice and information asymmetries:* It is hypothesised that where a practice is still novel and slightly misunderstood by other industries, greater information asymmetries exists in the market place, leading to situations similar to those described by the "Lemons Principle" - All services would be classified as being of average quality, as quality is indistinguishable for customers. Hence higher quality professionals may be undervalued. It is suspected, that in such situations, the high quality professionals will put reputation building as a high priority as it provides the consumer with a signal which they may understand even if they don't fully understand the practice or service.

This factor is suspected to combine with the fact that novel products and services are more likely to be investigated virtually by customers.

*Degree or "Virtuality" of practice:* Practices such as Search Marketing, or Online facilitation only exist because of the existence of the Internet. It is suspected that in such practices building virtual reputations and identities is just as important, if not more, than other forms of reputations.

*Intrinsic Importance of Reputation to practice:* Some practices such as Journalism and Writing rely heavily on building a well known name. Here an individual's reputation is intrinsically important to his practice, no matter what situation the market is in.

## Appendix J: Delphi Study Results

Appendix X : Result of survey							First Question Round						Second Question Round					
							1	2	3	4	5	AVG	1	0.5	0	-0.5	-1	AVG
<b>Motivators</b>																		
Self-Development							5	7	0	0	0	1.58	0	0	9	2	1	1.4
Sense of Belonging							4	2	6	0	0	2.17	1	1	10	0	0	2.3
Reputation Building							2	7	3	0	0	2.08	0	1	7	4	0	2.0
<b>Questions which were not modified and thus closed off after the second round</b>																		
<b>Factor</b>							1	2	3	4	5	AVG	1	0.5	0	-0.5	-1	AVG
Amount of Participants							1	2	7	2	0	2.83	1	1	6	3	1	2.8
Knowledge Requirement of Practice							3	7	2	0	0	1.92	0	1	10	1	0	1.9
Degree of IT Requirement of Practice							0	3	4	4	1	3.25	0	3	7	2	0	3.3
<b>Self-Development</b>																		
Availability of Alternative Knowledge Sources							3	3	4	1	1	2.50	1	0	5	6	0	2.3
Value of Knowledge							5	4	3	0	0	1.83	0	1	10	1	0	1.8
<b>Sense of Belonging</b>																		
Degree of Solitude and Alienation of Practice							1	8	3	0	0	2.17	1	2	8	1	0	2.3
Degree of IT requirement of Practice							0	3	5	3	1	3.17	2	5	4	1	0	3.5
<b>Reputation Building</b>																		
Novelty of practice and information asymmetries							5	4	3	0	0	1.83	0	0	9	3	0	1.7
Degree of "Virtuality"							1	2	4	4	1	3.17	0	1	5	6	0	3.0
Intrinsic Importance of Reputation to Practice							4	7	1	0	0	1.75	0	0	10	2	0	1.7

Questions which were modified and introduced in the second round and followed up in round 3							First Question Round						Second Question Round					
							1	2	3	4	5	AVG	1	0.5	0	-0.5	-1	AVG
<b>Factor</b>							1	2	3	4	5	AVG	1	0.5	0	-0.5	-1	AVG
Specificity of Community Topic							1	6	4	1	0	2.42	0	2	5	5	0	2.3
<b>Self-Development</b>																		
With/Without Splicing							0	5	7	0	0	2.58	0	1	8	3	0	2.5
Specificity of Community Topic							2	4	6	0	0	2.33	1	1	7	3	0	2.3
With/Without Splicing							0	4	5	1	0	2.70	1	1	8	2	0	2.7
<b>Sense of Belonging</b>																		
Amounts of Participants Topic							0	5	5	1	0	2.64	2	4	5	1	0	2.9
With/Without Splicing							1	4	7	0	0	2.50	0	1	8	3	0	2.4
Emotional Baggage and Moral Consequence							1	6	4	1	0	2.42	2	0	6	3	1	2.4
With/Without Splicing							0	4	6	1	0	2.73	1	0	8	3	0	2.7
<b>Reputation Building</b>																		
Strength of Reputation Mechanism							1	5	4	1	0	2.45	0	2	8	2	0	2.5
With/Without Verification +							2	6	3	1	0	2.25	0	3	8	1	0	2.3
With/Without Verification -							0	3	5	3	0	2.75	2	1	8	1	0	2.9