Chapter 7

Evaluation of the research

7.1. Introduction

Chapter Seven concludes the study with an evaluation of the research. The research aimed to explore and describe the use of networking capabilities with virtual organizing activities in virtual value networks of partners. The study applied the Grounded Theory methodology in gathering and analyzing data from a literature case study as well as empirical cases. The research resulted in the development of a conceptual framework with storyline on the use of network capabilities with virtual organizing in the e-marketplace. The substantive theory of the study contributes to a better understanding of the use of networking capabilities through constructs of the framework. The study reveals a complex process with the introduction of networking capabilities with virtual organizing. The findings of the research have implications for web-based businesses that implement virtual organizing in a virtual value network of partners.

The next section provides an overview of the research study. Section 7.3 evaluates the research against the proposed set of principles of Klein and Myers (1999) for conducting and evaluating interpretive field studies in Information Systems. Section 7.4 considers the theoretical contribution of the research according to questions on related issues identified by Whetten (1989). Section 7.5 describes an empirical organizational case study that enables categories and structured processes of the theoretical framework to be tested. The final section consists of concluding remarks about the research with suggestions on the way forward with this particular research theme.

7.2 Overview of the research study

7.2.1 Review of the research problem

The success of web-based businesses in electronic markets depends on the successful implementation of virtual organizing in the virtual value network of partners. Members of the virtual value network need to adopt, demonstrate and develop socio-technical skills used with virtual organizing in the electronic marketplace. The research study was concerned with the research problem, namely: "*To develop a framework of needed networking capabilities and their inter-relationships that enable successful virtual organizing in e-business*". The research study delivered a framework of networking capabilities with inter-relationships that support co-operation between members of the virtual value network. The use of networking capabilities with virtual organizing strengthens collaboration between partners in the virtual value network.

Twelve networking capabilities were defined and described in the framework and a case study is introduced in this chapter to evaluate the theory. When used with virtual organizing, these networking capabilities may lead to improved business relationships in the virtual value network. It was also shown how the effective and efficient use of the networking capabilities with virtual organizing impacts the competitiveness of web-based businesses in electronic markets.

The use of networking capabilities with virtual organizing support the entrepreneur to foster close relationships in the virtual value network in response to changes in electronic markets. Choosing a strategy in the use of networking capabilities with virtual organizing with the aim to strengthen new or existing inter-relations in the virtual value network is challenging. The inter-relationships established in the research study between networking capabilities used with virtual organizing may support the entrepreneur in his attempts to strengthen inter-relationships in the virtual value network.

7.2.2 How research objectives address the problem and contribute to the literature

The research study delivered a framework of networking capabilities with inter-relationships that is not only informative but functional in its use with virtual organizing in the virtual value network. The framework of the research study provides practical theory that may improve virtual organizing in web-based business. The inter-relationships explained by means of a framework established how specific networking capabilities may strengthen each other when used with virtual organizing. The research objective of the study has been formulated as follows: "*To develop better understanding of the capacity of networking capabilities to not only enable, but to enhance, effective and efficient virtual organizing in a virtual network of organizations*". The framework (theory) of the research study provides a strategic view of the use of networking capabilities with virtual organizing in electronic markets.

7.2.3 The research design and how it was implemented

Chapter One provided the background for the research study. The electronic marketplace is an integral part of the new economy with an emphasis on networking skills used with virtual organizing in virtual value networks. The research study concentrated on the social-technical skills of entrepreneurs and managers that participate in virtual value networks in electronic markets.

Chapter Two reviewed the extant literature and focused on elements and complexities related to virtual organizing activities of virtual value networks in electronic commerce. The chapter introduced and highlighted the need for a systemic approach in the use of networking capabilities with virtual organizing.

Chapter Three defined the research objective as the development of a framework (theory) of networking capabilities (and their inter-relationships). The qualitative research approach of Grounded Theory method (Strauss and Corbin) was adopted and explained in the chapter. The GTM provided a systemic set of procedures to develop an inductively derived theory [that is grounded in data] on the phenomenon of the study.

Chapter Four delivered the preliminary framework by using a literature case as source of data. The literature case, a set of 21 articles, was not a subset of the literature reviewed in Chapter Two, but consisted of articles that were specifically selected since they provided a holistic approach to the topic of virtual organizing in virtual value networks. An article that focused on only one aspect of virtual organizing was not considered for inclusion in the literature case. Many of the articles were therefore not from mainstream journals. But as a replacement for interviews, they provided a rich source of data.

Chapter Five introduced six field studies as the means to extend and explore categories of the preliminary framework to arrive at the concluding framework of GTM. The field studies delivered rich data that resulted in one new category, as well as two sub-categories included in the concluding framework of the research study.

Chapter Six used Actor-Network Theory to interpret the concluding framework developed in Chapter Five. It was shown how networking capabilities used with virtual organizing can be used to establish and maintain a virtual value network. As such it highlighted the dynamic possibilities of the networking capabilities, something that was not captured in the concluding framework. The entrepreneurial process was defined that also provided explanatory value to consider the role of information technology in virtual organizing. The chapter concluded with an assessment of the role of the entrepreneur with the entrepreneurial process of virtual organizing.

7.2.4 Research findings and contribution

The framework (theory) of the research study extends current understanding of the concept of networking capabilities by defining and relating the identified capabilities. The framework provides practical theory on the use of networking capabilities in virtual organizing to establish or strengthen existing inter-relationships in the virtual value network and as such may be useful for web-based businesses in the development of a strategic approach to the use of networking capabilities with virtual organizing in the virtual value network of partners.

7.2.5 Implications of the work for theory and practice

The theory of the research study, together with its interpretation in Chapter 6, explains when, how and why various networking capabilities are used with virtual organizing. The study presented a theory of networking capabilities used with virtual organizing as a means to advance the development of co-operative inter-relationships between partners of the virtual value network. The theory provides new insight that impact on web-based businesses' approach to virtual organizing in the virtual value network. The framework may guide the entrepreneur when considering approaches to virtual organizing in the virtual value network of partners. The interpretation of the theory in Chapter Six furthermore provides guidelines for the dynamic application of the networking capabilities to establish and maintain a virtual value chain.

Web-based businesses have much to learn from the theory of the research study and its use in virtual organizing. The theory explains inter-relationships between identified networking capabilities that provide a strategic approach to virtual organizing with its emphasis on socio-technical skills of a personal nature. Partners in the virtual value network need to share their understanding and

strategic use of networking capabilities with virtual organizing in electronic markets. The theory of the research study will only benefit entrepreneurs where partners share a common understanding and strategic approach in the use of networking capabilities with virtual organizing in electronic markets.

7.2.6 Limitations of the work

The research study was limited to web-based businesses in Gauteng, South Africa that participate in electronic markets. Web-based businesses from various different industrial sectors compete [with unique product and service offerings] in electronic markets. More research needs to be undertaken to test the relevance and value of the framework (theory) with web-based businesses that compete in various different industrial sectors in the global electronic marketplace.

The network structure adopted by competing virtual value networks in electronic commerce may impact on the use of identified networking capabilities [of the conceptual framework] with virtual organizing. The research study assumed that the established inter-relationships between networking capabilities of the conceptual framework are equal in importance regardless of the network structure adopted by web-based business in electronic markets. There is scope for future research that examines the importance of the identified networking capabilities and the established inter-relationships of the framework in the context of the particular network structure adopted by virtual value networks in electronic markets.

7.3 A set of principles for conducting and evaluating interpretive field studies in Information Systems

Klein and Myers (1999) proposed a set of principles for conducting and evaluating interpretive studies in the field of Information Systems. The principles are summarized in Table 7.1.

Table 7.1   Set of principles for evaluation of interpretive field research
of Klein and Myers (1999) (Adapted from Rowlands, 2005)

	Principles	Methodological emphasis
1	Principle of hermeneutic tradition	Explain the nature of socially constructed human meanings as well as the interdependent meaning of the parts and the whole that they form
2	Principle of contextualisation	Explain the socio-historical context so that the intended audience can understand the emergence of the current situation.
3	Interaction between researcher and subjects	Explain the mutual interactions of the researchers with the participants. It stresses that social facts are produced as parts of the social interaction of the researchers with the participants
4	Abstraction and generalisation	Explain how insights are derived through the use of a particular theoretical lens acting as a sensitising device to view the world in a certain way.
5	Dialogical reasoning	Explain possible contradictions between the theoretical preconceptions and the data gathered, allowing for a subsequent cycle of revision.
6	Multiple interpretations	Explain possible variations in participant's interpretations. This principle asks researchers to present possible variations in interpretations among the participants.
7	Principle of suspicion	Explain possible bias in narratives collected from the participants and in finding alternative explanations to the problem under investigation.

Klein and Myers (1999) describe the principles for evaluating interpretive field research to be applicable to research that is hermeneutic in nature. Orlikowski

(1993) considers Grounded Theory methodology to be '*interpretive*' (Orlikowski, 1993) since it implements qualitative and unstructured data (Strauss and Corbin, 1990) while theory-building strategy in Grounded Theory is inductive in nature (Strauss and Corbin, 1990). Hughes and Jones (2003) deem the Grounded Theory methodology implementation to be '*fitting*' with the interpretive nature of Information Systems research.

Hermeneutics create meaning where the researcher needs to apply himself to the interpretation '*with a sense of responsibility to deepen understanding*' (Moules, 2002). The Grounded Theory similarly involves itself with understanding the meaning of text (Rennie, 2000).

The Grounded Theory methodology consists of a hierarchical set of coding processes of which Sarker *et al.* (2001) say that '*coding is considered to be an interpretive act of the researchers who are sensitized to certain theoretical concepts*'. Coding is used by researchers to construct categories and the relations of categories in a conceptual framework that represent their understandings of the meaning in data.

The process of interpretation requires entering into the hermeneutic circle (Moules, 2002). She describes the hermeneutic circle as representing a '*metaphorical way of conceptualizing understanding and the process of interpretation to which I participate, belong and am situated*'. The hermeneutic circle involves a generative recursion between the data as a whole and the data in part. Reflection on the part of the researcher even prior to transcribing the text of an interview reflects on an immersion in the data as a whole and the data in part. The dynamic ever evolving nature of the interaction through re-reading, reflection and writing of the case study data enables the researcher to focus, recognize and isolate new understandings in the process of interpretation. The process of the '*hermeneutic circle*' implies that emergent codes need to be refined over the term of the research project (Lee, 1991). In the process of developing categories and inter-relationships from case study data the

researcher is thus making explicit the implicit in a process of interpretation on a continuous basis.

The seven principles of Klein and Myers (1999) provide the Grounded Theory researcher with the opportunity to assess the quality of the interpretive research. This is discussed next by considering each of the seven principles in turn.

7.3.1 The principle of the hermeneutic circle

The principle of the hermeneutic circle is considered the most fundamental principle, integral to the other principles. The research study aimed to understand the parts of the phenomenon where the inter-relationships between identified networking capabilities influenced our understanding of the parts. Improved understanding of the phenomenon of the study (the whole) in turn changed our perception of the networking capabilities and identified inter-relationships.

The hermeneutic circle is the generative recursion between the whole and the part (Moules, 2002). Being in the circle necessitates a dynamic and evolving interaction with case study data as a whole and in part. The text (literature case study) and transcripts (empirical cases) needed to be interpreted in terms of their parts as well as the context of the study. In the research the principle of the hermeneutic circle illustrates how human understanding is achieved by iterating between considering the shared meaning of the parts (categories and sub-categories) and the set of inter-related processes considered to be the whole that they represent in the theoretical framework of the study.

The use of the Grounded Theory methodology in developing the preliminary framework from the literature case data entailed shifting between the whole and parts. Each article of the literature case data was interpreted for meaning from the whole text that consists of sentences whilst each individual sentence influenced how the entire text was interpreted. The principle also applied to each

text that was interpreted in context of the article, where the context needs to be re-interpreted in relation to the text.

The principle of hermeneutics also applied to the empirical case data used to develop the concluding framework of the study. The researcher entered the hermeneutic circle when data was collected, transcribed and analyzed from interviews. The researcher got a sense of the whole (text) in the process of conducting the interview. Personal involvement in the process of conducting the interview enabled the researcher to create deeper understanding of the resultant text (transcripts). The process of coding the empirical case data in the text also influenced the researcher in understanding sentences of the text. Understanding of the sentences of the text influenced how the text was understood.

The process of coding the literature case data as well as the empirical case data enabled the preliminary and concluding frameworks to be developed. The process of coding involved moving between the paradigm models of the study in order to arrive at the developed concluding framework. The case study data were analyzed for themes and ideas which enabled further concepts to be developed that further explained the use of networking capabilities in virtual organizing.

7.3.2 The principle of contextualization

The principle of contextualization highlights the importance of critical reflection on the social and historical background of the phenomenon studied in the research. The principle of contextualization was relevant to the literature review, literature case and the empirical case of the research study. The introductory chapter explained the context of the study. A broad and thorough review of relevant literature preceded the process of defining the research problem with research objective and research questions. The literature review provided further insight into the importance of networking capabilities with virtual organizing in the virtual value network of partners for web-based business.

The preliminary framework presented in Chapter 4 was developed by using as data a selected number of journal and other papers (literature case data). This means that the preliminary framework is firmly placed within the context of the literature.

The empirical cases broadened the context of the study from the theoretical to the practical in the development of the concluding framework of the research. The case studies provided background information on the interviewees and their business contexts.

7.3.3 The principle of interaction between the researchers and the subjects

The researcher needs to be aware of the interpretation of data as expressions and meanings communicated by the interviewees. Interpretations are the outcome of the social interaction between the researcher and interviewee during the interview.

The researcher was closely involved with the interviewees to promote interpretation and analysis of the research topic. Interaction during interviews involved the interviewees as interpreters and analysts with the researcher. Although exploratory questions were used during interviews the interviewees talked unreservedly on any related issues that impact on the phenomenon. The researcher probed the interviewees for more insight and explanations that might improve understanding of opinions expressed during the interviews. This led the interviewees to rethink and provide their own interpretations while the researcher was made aware of own processes of interpretation and analysis.

7.3.4 The principle of abstraction and generalization

The Grounded theory methodology, with its emphasis on the hierarchical coding processes and theoretical sampling, enabled first a preliminary and then a concluding framework with storyline to be extracted from case study data. These frameworks with their storylines are viewed to be abstractions derived from case study data.

The concluding framework presents, in the terminology of Strauss and Corbin, a substantive theory – pertaining to a specific phenomenon. As shown by Lehmann (1999) such a substantive theory can be enhanced and extended to 'formal theories' and eventually to a 'Grand Theory'. In this research no attempt was made to enhance (thus to generalize) the derived, substantive theory to a formal theory. We do apply, however, the substantive theory to a practical situation in Section 7.4, and thereby show the applicability of the theory outside the context within which it was developed.

7.3.5 The principle of dialogical reasoning

The principle of dialogical reasoning requires the researcher to be sensitive about possible contradictions between his own preconceptions guiding the research design, and the actual findings of the research, with subsequent cycles of revision of the preconceptions.

In this research the researcher's preconceptions were framed by an in-depth study of relevant literature. This led to the research design and the development of the preliminary framework which was developed by applying the Grounded Theory method to a selection of literature – the literature case. However much cycles of revisions were performed during the various coding processes of the Grounded Theory method, the preliminary framework nevertheless in a very real sense embodied these preconceptions.

Subsequently, however, as discussed in detail in Chapter 5, the preliminary framework was enhanced and refined through the use of three empirical case studies to produce the concluding framework of the research. The coding processes discussed in Chapter 5 constitute the 'cycles of revision of the preconceptions' and we can conclude, therefore, that the principle of dialogical reasoning was followed.

7.3.6 The principle of multiple interpretations

The principle of multiple interpretations requires sensitivity on the part of the researcher to possible differences in interpretations among participants who provide multiple narratives or stories about essentially the same issue.

In this research two types of 'participants' come into play. First, in the literature case data used to develop the preliminary framework (Chapter 4) various authors 'tell their stories' about issues pertaining to virtual organizing. Second, in the empirical case studies used to refine the preliminary framework into the concluding framework, interviewees contributed their stories.

In both cases the researcher had to deal with different and conflicting interpretations. Thus, for example, interviewees in the empirical case studies would express opinions that would be influenced by the particular business in which they operate, and these would often be at variance with each other.

The coding processes of the Grounded Theory Method forced the researcher in both cases to re-consider, re-evaluate and re-align initial interpretations. In other words, the Grounded Theory Method does not allow the researcher to gloss over multiple and perhaps conflicting interpretations.

7.3.7 The principle of suspicion

The literature case data, containing a number of journal articles and technical reports, obviously reflect the biases and 'distortions' of the various authors. Similarly, the empirical case data reflected the views of entrepreneurs of web-based businesses. The researcher therefore needed to guard against misinterpretations when reflecting on these empirical data.

The processes of coding of the Grounded Theory method again helped to create meaning from the case study data rather than just to report on meaning that was communicated in the articles and interviews.

The study also considered the role of networking capabilities in the formation of a virtual supply network from the perspective of Actor-Network theory. The 'moments of Translation' of ANT indicated the central role of the entrepreneur in the formation of a virtual supply actor-network. The complexities that have to be dealt with when new members need to be introduced into the virtual supply network of partners were analyzed using the Due Process Model. The ANT perspective of the theory led to the identification of the 'entrepreneurial process' that includes three networking capabilities of the concluding framework to be used by the entrepreneur with virtual organizing in electronic markets of users. The ANT interpretation of the Grounded Theory developed in the study (Chapter Six) also emphasized the role of information technology in support of the efforts of the entrepreneur to align the heterogeneous interests of participating actors.

Current business thinking acknowledges that successful participation of web-based businesses in electronic markets depends on co-operative inter-relationships between partners of the virtual value network. The contribution of the research is that it underlines the important role of the entrepreneur and that it shows how specific networking capabilities could be exploited to establish a successful virtual organization. In particular, the central role of web-based trust formation in virtual organizing that was brought out in the Grounded Theory,

provides a basis for understanding the interplay of the different networking capabilities.

The set of principles of Klein and Myers (1999) enabled the quality of the interpretive research to be evaluated. The discussion in Sections 7.2.1 – 7.2.7 indicates how each of the seven principles was implicitly adopted in the research process.

The next sub-section evaluates the contribution of the study according to a number of questions posed by Whetten (1989).

7.4 Evaluating the contribution of the research

In this section the research findings of the study are assessed for their contribution to knowledge. Whetten (1989) provides a number of questions that can be used in such an assessment. The assessment is based on six key questions that lead the evaluator in the evaluation process. The six questions are: What's new? So what? Why so? Well done? Done well? Why now?

The research is evaluated next under separate sub-headings for each of the six key questions.

7.4.1 What is new? Does the study make a significant value-added contribution to current thinking?

The concluding framework developed in the research study represents a first, substantive theory to provide insight into the importance of socio-technical skills referred to as networking capabilities that are used in virtual organizing activities. The concluding framework or Grounded Theory developed in this study attempts to provide a holistic understanding of the contribution of networking capabilities to virtual organizing in virtual networks of partners. The theoretical framework with

storyline adds value and new insight for entrepreneurs of web-based business that implement virtual organizing in the virtual value network of partners.

7.4.2 So what? Will the theory likely change the practice of Information System research?

The concluding framework with storyline established the central importance of trust formation in virtual value networks of partners. Information Systems enable the entrepreneur to communicate trustworthy, timely and useful information that promotes the interests of all the partners. Actor-Network Theory provided a new perspective of the Grounded Theory of the research study and indicated the use of Information Systems that enable and support participation of potential users in the virtual value network of partners.

The research findings showed how socio-technical skills of a personal nature are relevant for all members of the virtual value network that participate in virtual organizing activities and showed the potential and important contribution of Information Systems to enhance virtual trust formation amongst partners. Thus, when the entrepreneur implements Information Systems to communicate information and facts, this has the potential to convince the potential user that his best interests are promoted and protected with the e-commerce product offering.

Participation of the user in the virtual value network as a partner enables the entrepreneur to gain valuable information. The information obtained from the user enables the entrepreneur to strengthen the virtual value network, to be used as a platform, by validating and improving on his/her claim for e-commerce product delivery in the e-marketplace. Networking capabilities provide the stimulus for virtual organizing activities that challenge the general assumptions on technical skills rather than socio-technical skills as the main driver or motivation of virtual organizing activities.

The research with its focus on meaning, action and processes in a socio-technical context contributes to how we approach and conceptualize the use of information systems in organizational and social contexts. The study shows the value of interpretive research methods in Information Systems research as a means to improve our understanding of the meaning, use and implementation of information systems in organizational and social contexts. In this sense, the research contributes to the practice of IS research, while it must modestly submit that it is not likely to change the practice of IS research.

7.4.3 Why so? Are the underlying logic and supporting evidence compelling?

The development of the preliminary framework with storyline was based on the Grounded Theory methodology where emerging concepts and categories were developed from the literature case study data. The resulting preliminary framework needed further refinement that was based on empirical case data. A concluding framework was developed that explains the effective use of networking capabilities in virtual organizing.

The preliminary and concluding frameworks were both developed using the processes of the Grounded Theory method. As such, they are the result of the inherent logic of the GTM, which guided the researcher every step of the way. The supporting evidence was clear all along – the literature case data in the development of the preliminary framework, and the empirical case data in the development of the concluding framework.

Furthermore, in Section 7.4, the real-life application potential of the result of the research was put to the test. By further validating the concluding framework this provides additional evidence in support of the research.

The research study therefore used multiple data sources to derive its final result in a convincing, logical manner from the supporting evidence (the data). Further

supporting evidence in the form of a validation through an additional case study (in Section 7.4) is also provided.

7.4.4 Done well and well done? Is the thesis well written, does the thesis reflect seasoned thinking?

Chapter One provides an introduction to the central ideas and concepts of the research study. The chapter provides the motivation for the study as well as the objectives of the research project. An outline, presented as a roadmap, indicates the theme of each chapter of the thesis. The thesis consists of seven chapters where each chapter has a clearly defined objective and contributes, explains and provide information towards achieving the overall objective.

Each chapter of the thesis provides a short introduction to the chapter with relevant information on what it contains. Each chapter then concludes with a summary in order to highlight the important issues that have been addressed as well as to enable the reader to reflect on what has been achieved in the chapter. The summary concludes with a short description of what the following chapter aims to address in the context of the research project.

The literature review presented in Chapter Two provides an analysis of the literature on the use of networking capabilities with virtual organizing in the virtual value network of partners. The formal understanding of elements that impact on virtual organizing activities, as well as the use of networking capabilities, is given in Chapter Two. Chapter Three considers the development of research questions as well as the Grounded Theory methodology that was used in the study. The chapter motivates the use of the Grounded Theory methodology. Processes and procedures of the Grounded Theory methodology are explained in Chapter Three. Chapters Four and Five applied the Grounded Theory Method in generating the preliminary and concluding frameworks.

Chapter Six of the study provides an interpretation of the Grounded Theory through the lens of Actor-Network Theory. This contributes to a deeper understanding of the Grounded Theory. It also provides a deeper insight into the use of networking capabilities with virtual organizing in a virtual value network of partners. This interpretation of the research findings allowed deeper conclusions to be drawn regarding virtual organizing in the virtual value network of partners.

Chapter Seven provides an evaluation of the research. The evaluation focuses on the quality of the research and on the contribution to knowledge that has been made through the research. In addition, the concluding framework developed in the study is validated by discussing its application to a particular case study.

It can therefore be concluded that the thesis is presented in a coherent manner. With regards to whether it reflects 'seasoned thinking' it can only be stated that none of the work or result reported here was arrived at without considerable effort and reflection.

7.4.5 Why now? Is the topic of contemporary interest to scholars in this area?

The editorial note to a special issue of the Journal of information Systems (14, 2004) highlights dramatic changes in electronic markets with recent advances in technology and the effect it has electronic business activities. This resonates with the research study which demonstrated the relevance and use of networking capabilities with virtual organizing activities in the virtual value network of partners.

The concluding framework with storyline of the study has implications for web-based businesses, in particular for electronic business elements such as network formation, and virtual organizing activities. It also calls for a rethink of the role of the entrepreneur and information technology in the virtual value network of partners. The research therefore brings new understanding of issues pertaining

to virtual organizing and information system implementation in the virtual value network of the entrepreneur when performing electronic business activities in electronic markets.

The identification of the socio-technical oriented networking capabilities used with virtual organizing and the exploration of the complexities of inter-relationships influenced by social processes of the virtual value network are likely to appeal to scholars in the field of Information Systems.

Sub-section 7.3.5 concludes the evaluation of the contribution of the research study using the questions posed by Whetten (1989). The evaluation focused on the contribution of the interpretive research study to the development of theory in Information Systems. The evaluation of the research confirms that the research study has potential significance for future Information System research.

Finally, before concluding this chapter in Section 7.6, the results of the research (in the form of the concluding framework presented in Chapter 5) are applied to a particular case study. This serves as a validation of the research results by showing the applicability and usefulness of the concluding framework.

7.5   Dell's case study

The objective of the research was:

"*To develop better understanding of the capacity of networking capabilities to not only enable, but to enhance, effective and efficient virtual organizing in a virtual network of organizations*".

A theory or framework was therefore developed which could be helpful to entrepreneurs and managers of web-based organizations and improve their understanding of the capacity of networking capabilities to enable effective and efficient virtual organizing. This represents an important step in the process of finding an accommodating and effective solution to situations where

entrepreneurs and managers need to improve on their virtual organizing capabilities in order to succeed in e-commerce.

The concluding framework (as depicted in Figure 5.7) has significant explanatory potential. This potential will be illustrated through the application of the framework to a case study of an entrepreneur participating as a web-based organization in the e-marketplace. The explanatory power of the framework will, in the following discussion, be illustrated by relating and applying the theory or framework (with propositions and conditions associated with successful use of network capabilities in virtual organizing) to the implementation of networking capabilities as implicated in the particular case study.

The case study that was selected is entitled: "*The power of virtual integration: an interview with Dell Computers' Michael Dell*" (Magretta, J. 1998. Harvard Business Review, March/April 1998: pp. 72). The case study can be summarized as follows:

> *Michael Dell discusses how his company is using technology and information to blur the traditional boundaries in the value chain among suppliers, manufacturers and end users. Other topics include how Dell has pioneered a new business model within the computer industry; outsourcing, establishing collaborations; how the direct model through e-commerce benefits his suppliers; the company's fast-cycle segmentation; how Dell forecasts demand; coordination with customers; how Dell stays close to its customers; the role of research and development in the company; and leadership in a virtually integrated organization. Dell Computers is one of the most successful virtual organizations in e-commerce, having created a twelve billion dollar company in only thirteen years.*

Michael Dell never mentioned or discussed elements of trust during the interview. One may only speculate on the reason for this. It may well be that Michael Dell preferred to concentrate on issues that relate to physical and quality flows in networked business supply relations (Kinder, 2003) rather than to concentrate on

social flows and capabilities during the interview. The value and importance of trusting relations in the virtual value network for the Dell Computer Corporation are confirmed in the words a former chief operation officer in suggesting that *'trust, not profits, is the single greatest challenge facing the business world today' (Jarvenpaa & Tanriverdi, 2002).*

The complete case study is attached as Annexure 4. The concluding theory (developed in Chapter Five) will now be used to provide structured comment, in the context of the case study, on the potential use and applicability of the concluding framework for the entrepreneur of a web-based organization which implements virtual organizing in a virtual supply network. The framework, as a key element of the theory, is shown, for quick reference purposes, in Figure 7.1 below.
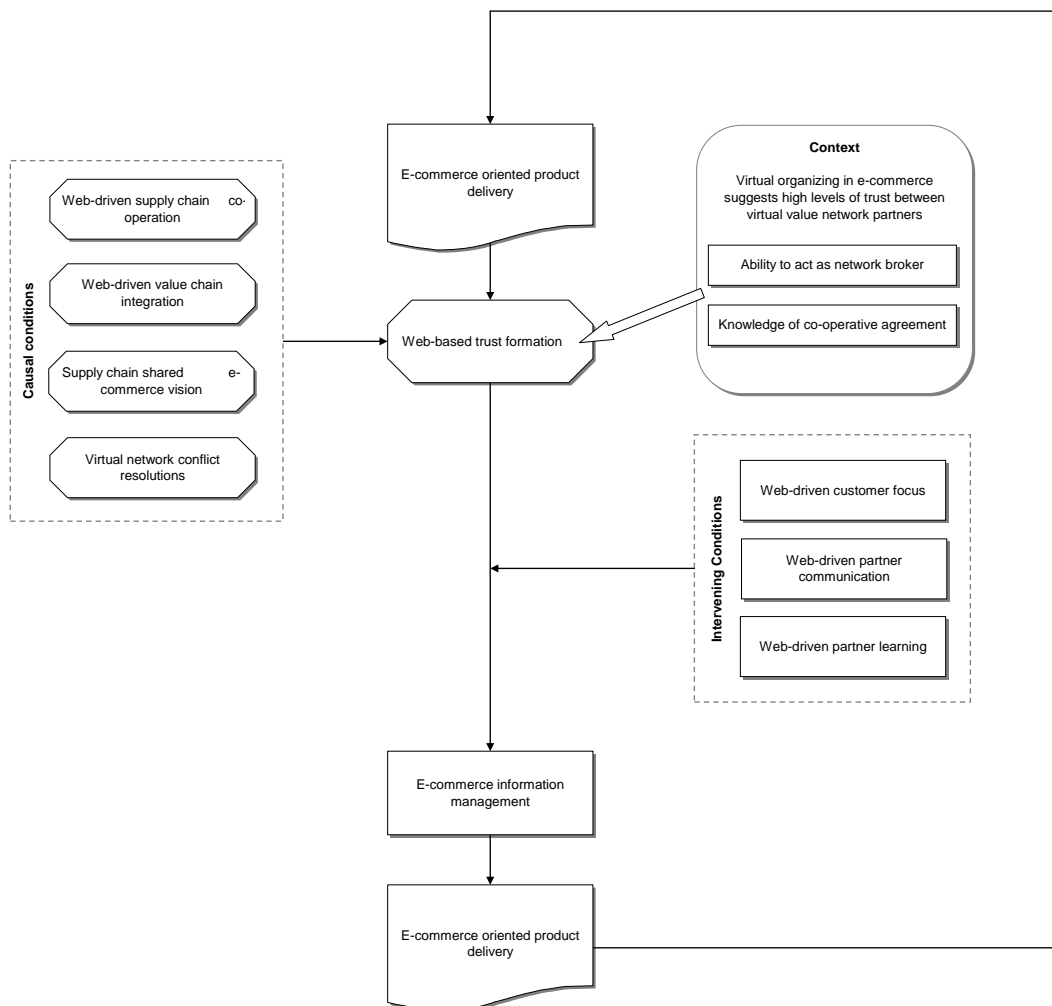
Figure 7.1   The concluding framework

The framework must be viewed in combination with the propositions describing the relationships between the framework elements (Table 5.6) and the pattern of conditions under which networking capabilities enable virtual organizing (Table 5.7).

The case study highlights the role of networking capabilities which enable effective virtual organizing activities in the virtual value chain network (in the e-marketplace). In terms of the framework (Figure 7.1) specific networking capabilities support effective web-based trust formation:

a. One such capability is effective '*Web-driven value chain integration*'. Virtual integration of specialized firms making up the supply chain seems to be a critical aspect of virtual organizing. Dell states: "*Virtual integration harnesses the economic benefits of two very different business models. It offers the advantages of a tightly coordinated supply chain that have traditionally come through vertical integration*". Other statements such as: "…*Dell's insight into how to combine them is highly innovative: technology is enabling coordination across company boundaries to achieve new levels of efficiency and productivity*" support the role of web-driven value chain integration. The advancement of '*Web-driven value chain integration*' skills supports interactions amongst partners that strengthen '*Web-based trust formation*' in the virtual value network (Jarvenpaa & Tanriverdi, 2002).

b. Another important networking capability that supports Web-base trust formation of the conceptual framework is '*Web-driven supply chain co-operation*'. The different firms of Dell Computers cooperate on important business activities such as product design and share design teams across borders. The case study highlights this expectation as follows: "*They assign their engineers to our design team, and we start to treat them as if they were part of the company*". Furthermore, the firms of Dell Computers

co-operate to satisfy customer segments securing customer satisfaction. The advancement of '*Web-driven supply chain co-operation*' promotes collaborative relationships in support of '*Web-based trust formation*' in the virtual supply network of partners (Jarvenpaa & Tanriverdi, 2002).

c. The third networking capability that supports web-based trust formation of the conceptual framework is '*Supply chain shared e-commerce vision*'. Dell Computers consists of specialized companies in order to secure effectiveness and efficiency. The following statement highlights the importance of this networking capability: "*As the industry grew, more specialized companies developed to produce specific components. That opened up the opportunity to create a business that was far more focused and efficient*"; and: "*We focus on how we can coordinate our activities to create the most value for the customer*" indicating the role of '*Supply chain shared e-commerce* vision' as a networking capability. The development of '*Supply chain shared e-commerce vision*' guides inter-relationships between partners thereby extending '*Web-based trust formation*' in the virtual value network (Jarvenpaa & Tanriverdi, 2002).

d. The specific proposition (Table 5.6) that relate to the above discussed networking capabilities are:

- Web-driven supply chain co-operation ensures effective virtual organizing and supports efficient web-based trust formation.

- Successful web-driven value chain integration ensures effective virtual organizing and supports efficient web-based trust formation.

- The importance of supply chain shared e-commerce vision is that it ensures effective virtual organizing and supports efficient web-based trust formation.

The propositions supporting the framework (Table 5.10) indicate that successful '*E-commerce oriented product delivery*' supports more effective '*Web-based trust formation*' and that '*Web-driven supply chain cooperation*' contributes to effective

virtual organizing when it supports the establishment of efficient '*Web-based trust formation*' in the virtual value chain network. Dell's remark: "*The supplier effectively becomes our partner. They assign their engineers to our design team…*" indicates how effective '*Web-driven supply chain co-operation*' can build trust in virtual value networks turning participating firms and consumers into partners. Dell Computers' level of integration, of the virtual supply network into the virtual value network, is of such a nature that partners represent the web-based organization with its users as and when required to do so. This suggests a highly effective integrated virtual supply network of partners which share an e-commerce vision. Dell states: "*The vast majority (customers) think that person works for us, which is just great. That's part of virtual integration*".

The research has shown that since '*Web-based trust formation*' is of critical importance to support virtual organizing, '*E-commerce information management*' will be important to entrepreneurs and management. Figure 7.2 points out that '*E-commerce information management*' is supported by various networking capabilities that intervene on its effectiveness and efficiency. Effective '*E-commerce information management*' enables '*E-commerce oriented product delivery*' which in turn supports '*Web-based trust formation*' in the virtual network of partners.
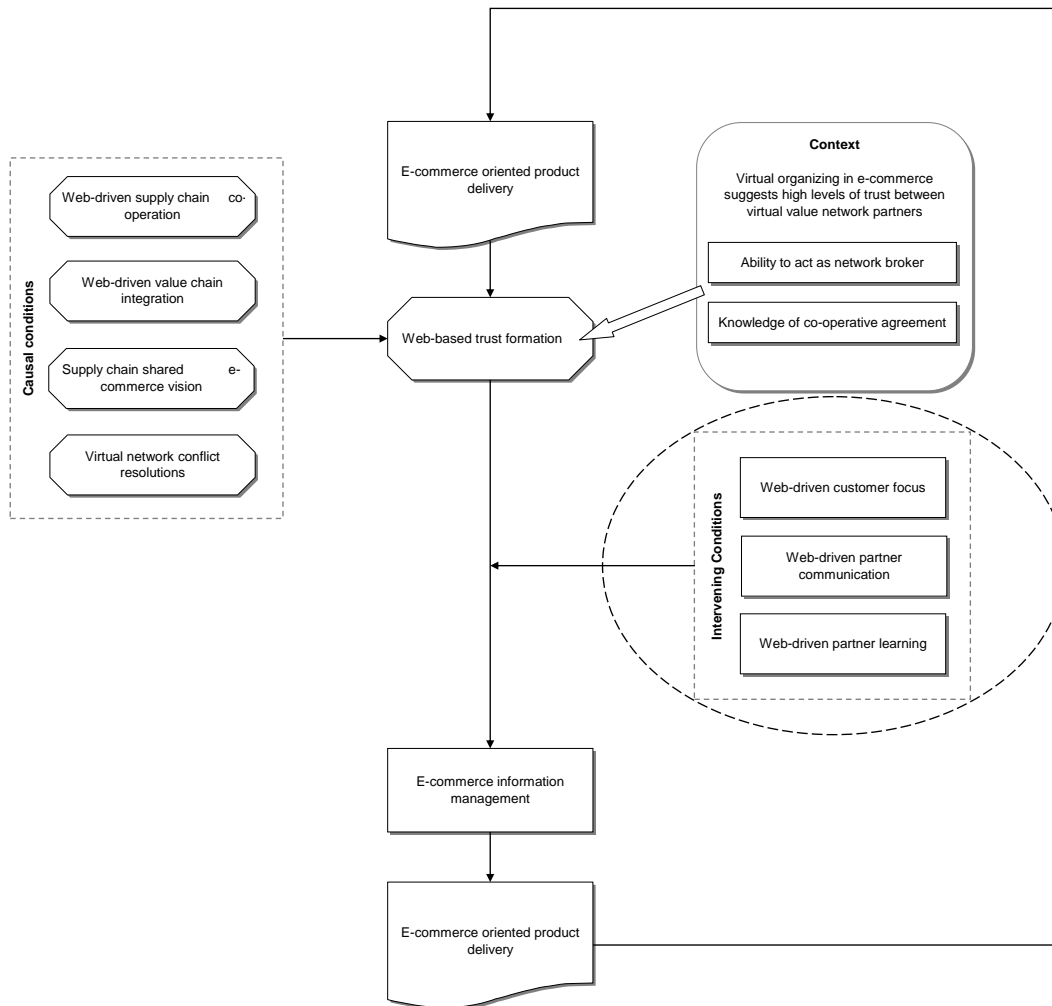
Figure 7.2 E-commerce information management is supported by various networking capabilities

The Dell Computer case study highlights the role of three networking capabilities included in the concluding framework that facilitates and drive effective '*E-commerce information management*', namely, '*Web-driven customer focus*', '*Web-driven partner communication*' and '*Web-driven partner learning*'. These will be discussed next.

a. '*Web-driven customer focus*' is taken to a different level with virtual organizing. The partners in the virtual supply network all take responsibility and are expected to develop and improve their customer

focus. Dell Computers seems to leverage all three factors to maximum potential in supporting effective '*E-commerce information management*'. Statements of Dell such as "*Because what we're all about is shrinking the time and the resources it takes to meet customers' needs*" and "*…we may have to develop new capabilities rather quickly*" suggest a complete customer focus orientation at Dell Computers.

b. '*Web-driven partner learning*' indicates the need for entrepreneurs and partners in the virtual supply networks to continuously determine and evaluate customer needs in order to translate important and relevant information (obtained through various strategies) into new product offerings in the e-marketplace. '*Web-driven partner learning*' furthermore contributes to the process of making decisions that impact on the virtual value network. Dell's statements, such as: "*One of the biggest challenges we face today is finding managers who can sense and respond to rapid shifts, people who can process new information very quickly and make decisions in real time*", and "*we have to monitor and understand the innovations in the material science world*", as well as "*our job is to take the technology that's out there and apply it in a useful way to meet customers' needs*" confirm a network – wide responsibility to web-based partner learning. Dell Computers also supports customer learning activities, evidenced by Dell's remark: "*…we are able to play more of an advisory role, trying to help our customers understand what the flow of new technology really means, how it will translate into specific products*".

c. The main contribution of '*Web-driven partner communications*' as an identified networking capability in the framework relates to the effective communication of relevant information to all members of the virtual value network in real-time. The successful implementation of "*Web-driven partner communications*" with virtual organizing activities offers the opportunity to increase the virtual supply network's competitive advantage in the e-marketplace. In other words, communication in the virtual value network and the reaction of the virtual supply network, in response to the

needs of the users, needs to happen in real-time in order to create a lasting competitive advantage in the e-marketplace. Dell states the following: "*With our service providers, we're working to set quality measures and more, important, to build data linkages that let us see in real time how we're doing- when parts are dispatched, for instance, or how long it takes to respond to a request for service*".

The specific propositions (Table 5.10) that relate to the above discussed networking capabilities are:

- The achievement of web-driven customer focus secures effective e-commerce information management.

- Efficient web-driven partner communication will lead to effective e-commerce information management.

- Successful web-driven partner learning leads to highly effective e-commerce information management and thereby effective virtual organizing.

The propositions supporting the framework (Table 5.11) indicate how the introduction of '*Web-driven customer focus*'; as well as '*Web-driven partner communication*' and '*Web-driven partner learning*' support the attainment of highly effective '*E-commerce information management*'.

Dell states: "*The technology available today really boosts the value of information sharing. We can share databases and methodologies with supplier partners in ways that just weren't possible before*" indicates how web-driven partner learning supports effective e-commerce information management". Furthermore, when Dell notes: "*This speeds time to market-often dramatically and creates a lot of value that can be share between buyer and supplier*" it indicates how '*Web-driven customer focus*' in the virtual supply network supports effective '*E-commerce information management*' which results in the delivery of

value to all members of the virtual value chain that is reached by means of '*E-commerce oriented product delivery*'.

Effective '*Web-driven partner communication*' highlights the need for the '*real-time*' communication of demand (users) to all members of the virtual supply network by the entrepreneur (entrepreneurial process). Dell confirms the important link of real time communication of information in statements such as "*We substitute information for inventory and ship only when we have real demand from real end customers*", and "*Managing velocity is about managing information- using a constant flow of information to drive operating practices, from the performance measures we track to how we work with our suppliers*". Communication of customer demands in a virtual supply network is of the utmost importance for the entrepreneur who wishes to succeed as a web-based organization in e-commerce.

The entrepreneur implements networking capabilities that enable virtual organizing activities (in the virtual supply network) in order to reach the objective of '*E-commerce oriented product delivery*'. The research (Figure 7.3) indicates that effective '*E-commerce information management*' needs to be introduced first by the entrepreneur since it supports the successful implementation of '*E-commerce oriented product delivery*' in the virtual supply network.
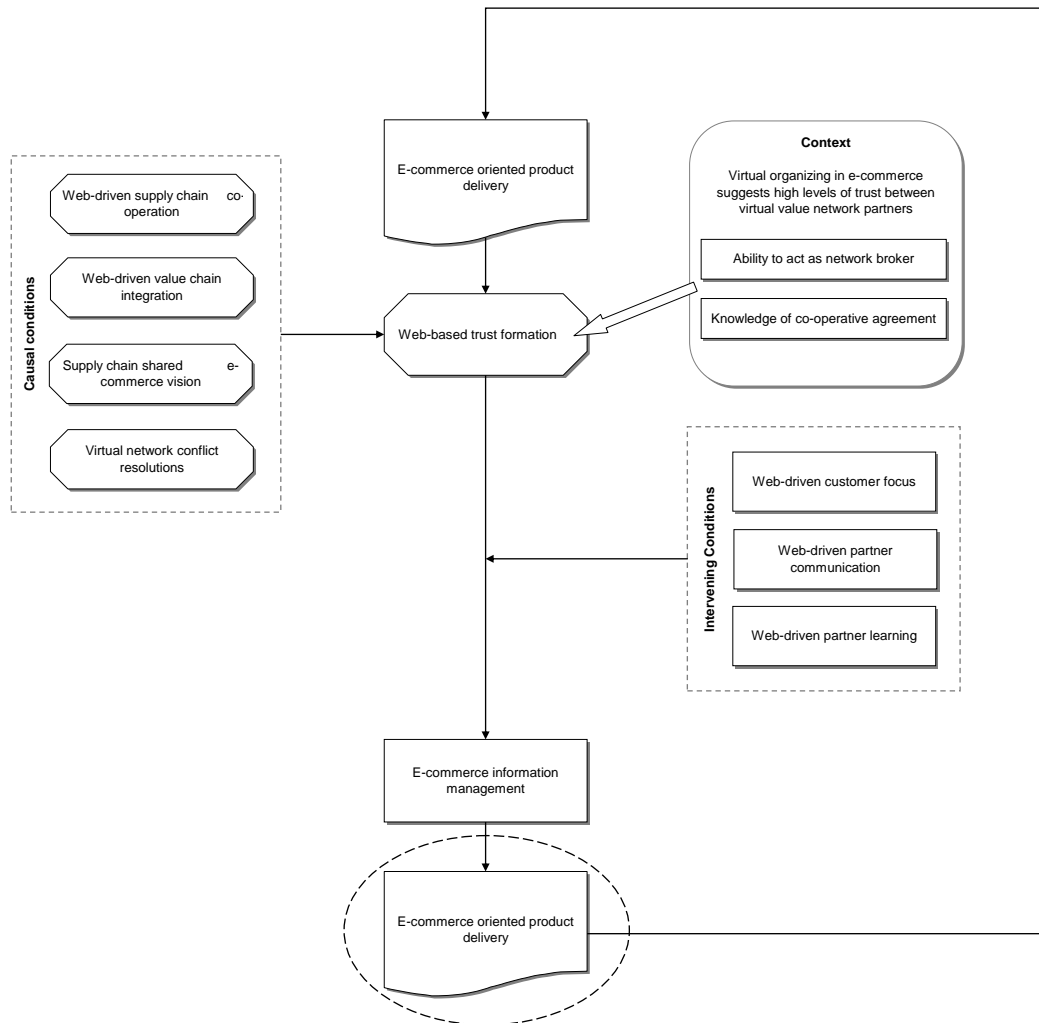
Figure 7.3   The need for successful e-commerce oriented product delivery

'*E-commerce oriented product delivery*' describes the important outcome of the use of networking capabilities with virtual organizing in electronic markets. The entrepreneurial process indicates how the entrepreneur determines which customers segments [based on effective e-commerce information management] the virtual value network of partners may best serve [with best potential for web-based trust formation] with e-commerce oriented product delivery in electronic markets. The concept of '*E-commerce oriented product delivery*' (see Table 4.1) are validated in the following statement of Dell: "*We really look closely at financial measures like gross margins by customer segments- and we focus on segments*

we can serve profitably as we achieve scale", confirming the final important networking capability for virtual organizing in the e-marketplace.

The propositions supporting the framework (Table 5.10) indicate that effective '*E-commerce information management*' will lead to successful '*E-commerce oriented product delivery*'. Magretta states: "*The finer the segmentation, the better able Dell is to forecast what its customers are going to need and when. Dell then substitutes strategic information for inventory*".
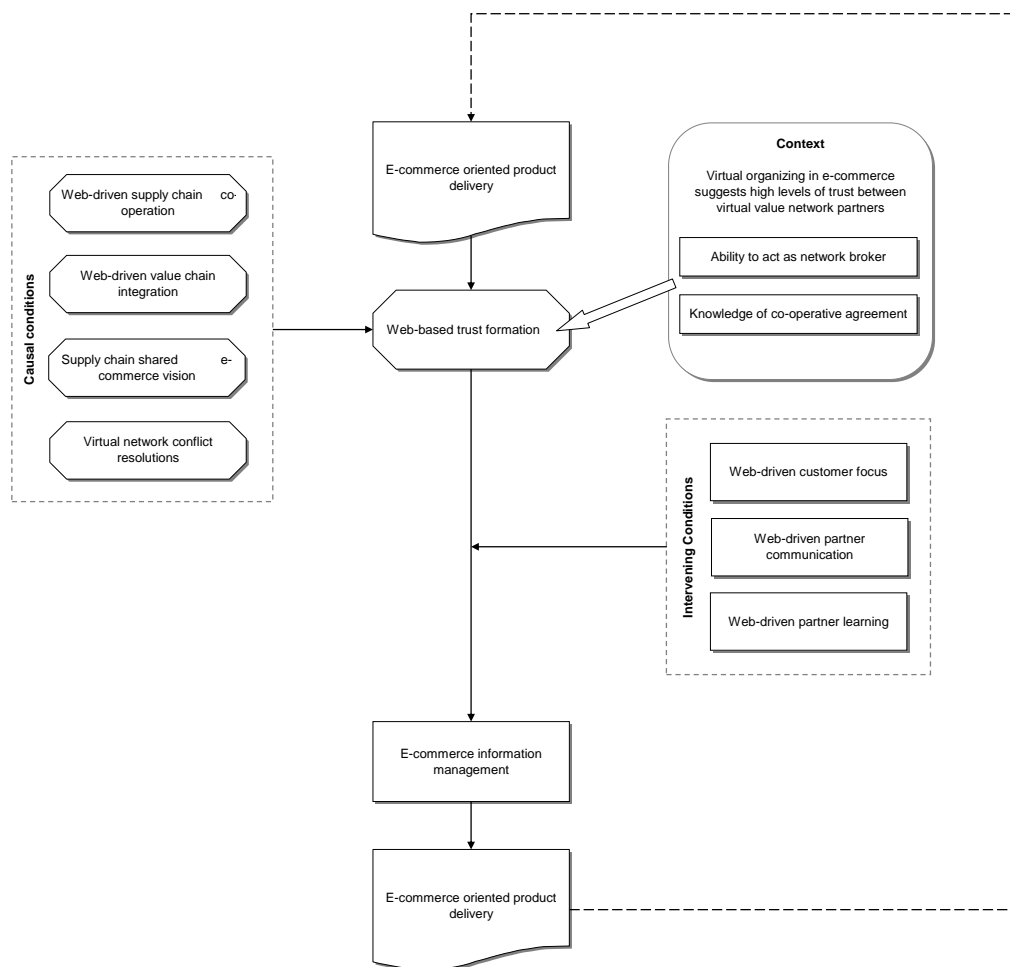

Figure 7.4   Networking capabilities supporting virtual organizations are cyclic in nature

The above discussion demonstrated the application of the theory (i.e., the framework in Figure 7.4) supported by propositions (Table 5.10) and conditions associated with the successful use of networking capabilities in virtual organizing (Table 5.9)) to a case study. This was not meant to serve as a validation or test of the theory, but simply to show the relevance and applicability of the theory to a given case. The theory has, however, not only application potential, but could generate or guide further research. The next section addresses this point.

7.6   Conclusion

Chapter 7 concluded the study with an overview and evaluation of the research. The quality of the interpretive research has been assessed by means of the seven principles of Klein and Myers (1999). The theory of the study had also been assessed for its contribution to knowledge with a number of questions of Whetten (1989). In addition, the concluding framework of the study has been validated by considering its application value in the Dell case study.

The main contribution of the research is the concluding framework, developed through the Grounded Theory Method, which facilitates a better understanding of how networking capabilities enable virtual organizing and proved to be effective in providing answers to the research questions. The understanding of networking capabilities was further enhanced by focusing on the entrepreneurial process, when the concluding framework was interpreted using Actor-Network Theory in Chapter six.

The insight provided about the entrepreneurial process and the use and role of networking capabilities in virtual organizing provides a basis for developing strategies to effectively introduce and develop the necessary networking capabilities of the entrepreneurial process. It is hoped that this understanding could assist web-based businesses to enhance their potential for success by developing appropriate strategies.

In conclusion, the research and specifically the theory suggest some opportunities for further research. The substantive theory presented in this study was developed using data from the literature and three empirical case studies. Further development of the substantive theory would require more research to be undertaken across a number of industry sectors to obtain data about actual successful web-based businesses, and to determine how they had harnessed the networking capabilities identified in this research in their efforts at virtually organizing their businesses.