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Value-creating networks –
A conceptual model and analysis

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Name of the report Value-creating networks – A conceptual model and analysis		
Abstract <p>Value and supply chains have been studied widely in the field of strategic management. Value nets and networks are most familiar in the fields of e-commerce and mobile-commerce. None of these, however, have been studied widely in the field of infrastructure and technical networks. Studies have mostly been theoretical in nature and there is a lack of empirical studies concerning value creation. Objective of this research is to understand communities' technical networks value creation processes and networks providing the value to the end customers. Starting point is to understanding what value creation and value-creating networks are and how they can advance firms operational efficiency and effectiveness.</p> <p>In this theoretical research a conceptual and analysis model for value-creating networks was created. The conceptual model consists of four critical elements, namely customer value, core competencies, relationships and interaction. These four elements were used when the analysis model was created. The analysis model consists of five questions: 1) Who is the customer and what is considered valuable? 2) What activities are needed to create the value? 3) What resources are needed to carry out the activities? 4) Who are able to utilise these resources? and 5) How actors interact and influence each other? When these questions are answered related to a certain product or service the current state of the value-creation can be determined and the future possibilities discovered.</p> <p>Objective of all network actors should be satisfied, internal or external, customers. The network should work together to deliver the product or service to the customer at the right time, to the right place and at the right price. The analysis of value-creating networks gives possibilities to realise customers' needs and find the main actors in the network. The analysis makes the relationships and interaction of the different actors clearer and gives the opportunity to find the underlying problems and objectives for future development. When the customer, customer's needs and the value-creating network has been identified it is possible to make improvements and increase the value created to the customer.</p> <p>This research is part of a more extensive research project named <i>C-Business – Communities' technical networks ownership, governance and operation</i>, which aims to investigate the pros and cons of different ownership and governance models of communities' technical networks.</p>		
Keywords Value chain, value-creating network		
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1 Introduction

Value and supply chains have been studied widely in the field of strategic management. Value nets and networks are more familiar in the fields of e-commerce and mobile-commerce. None of these, however, have been studied widely in the field of infrastructure and technical networks. Studies have mostly been theoretical in nature and there is a lack of empirical studies concerning value creation. Objective of this research is to understand communities' technical networks value creation processes and networks providing the value to the end customers.

But before going into detailed discussion of value chains and value networks, one question should be asked – Why organisations even exist? This question was first asked by Coase (1937) when he pondered around market forces and questioned the existence of organisations. At the end Coase concluded that organisations should exist because 1) discovery of relevant prices through price mechanism is expensive, 2) difficulty of forecasting leads to situation where the direction of resources are dependent on the buyer and the entrepreneur, and 3) expensive market transactions are eliminated within a firm.

According to Coase (1937) the degree of vertical integration should be higher when transaction costs are added to production costs. Hence, if Coase had not highlighted the necessity to consider also the transaction costs, Adam Smith's unspecialised craftsmen would still be working by themselves exchanging their entire surplus on the market (Dubois 1998). Williamson (1975, 1985) state that recurrent transactions that involve uncertainty about the outcome and require substantial 'transaction-specific investments' are more likely to take place within hierarchically organised firm than open markets. Thus, instead of individual craftsmen producing the whole product in their workshops from beginning to the end, product tasks are divided between several employees under hierarchically organised firm. Ford presented a first non-stop assembly line in 1914 and after that specialization and division of work has been extremely rapid.

It did not take long when firms realised that they do not need to produce everything in-house but outsourcing, joint ventures, alliances and partnering are also reasonable option. Firms started to change significantly. They started to form relational contracts and blur their established boundaries to engage in collaborations that resemble neither familiar arm's length market contracting nor the formal ideal of vertical integration (Powell 1991). These alliances were not just joint ventures between hierarchical firms but collaborative ventures where firms were part of a complex network.

One example of complex partnership is Japanese Keiretsu. Keiretsu means a group of individual units which are united with flows of money, personnel and even personal loyalty. Japanese Keiretsu can include thousands of companies all working for a single large firm while other Keiretsu are made upon these huge firms (together with their thousands of small companies) forming a gigantic industrial companies. Original purpose of these Keiretsu was to rearm Japan against the coming onslaught of foreign competition by picking the key industries, spurring them up, and protecting

them from serious competition. Nowadays they are one of the most efficient ways to manufacture products. (Miyashita and Russell 1994)

Organisations have also been affected by just-in-time, total quality management, continuous improvement and other management trends developed over the years. These lean production principles were originally developed in Japan for Toyota to further in-plant efficiency. It was, however, soon realised that to gain all the benefits in-plant, equivalent changes in the relationships between different links in the value chain were also needed. (Kaplinsky and Morris 2001) Toyota has tight collaboration with its partners and they all share a common information system through which all information is transferred between the parties. Toyota also helps their supplier in implementing Toyota Production System, to further develop operation and help in problem solving. (Womack et al. 1990)

During the years value chain thinking has been moving beyond Porter's (1985) original idea of analysing firm's internal activities and their interaction to a networked, systemic approach (Bovet and Martha 2000a). Previously inter-related but clearly distinct operators and systems are narrowing boundaries between them and firms are starting to exploit the opportunities and advantages in maximising the cooperation (Parolini 1999). Organisations are moving from sequential, linear models to multi-directional and simultaneous co-production where actors are creating value together to bring customers that extra bit of value at a profit (Normann and Ramírez 1994).

Major forces driving firms into collaboration are more demanding customers, new technology and the Internet, growing competitive pressure and globalisation. Consumers want speed, service, and customisation at a low price. (Bovet and Martha 2000a, Weiner et al. 1997) New technology and electronic communication has improved the responsiveness of the system, reduced inventories and made value constellation possible. (Normann and Ramírez 1994, Kothandaraman and Wilson 2001) Analysis of value chain provides a tool for mapping crucial domains of private and public policy in the global economy and an important insight into the policy challenges confronting both private and public actors in global processes. (see e.g. Kaplinsky 2004)

The value chain should maintain its central role as an analysing tool of firm-level competitive strengths and weaknesses especially in industrial organisations (Stabell and Fjeldstad 1998). Value creating networks, however, makes it possible to see beyond the boundaries of organisations and improve efficiency through collaboration. Value networks are originally used in e- and m-commerce, where marketplaces are redefined and value networks are connected electronically (Kothandaraman and Wilson 2001). What is most important to remember is that *only those who can define and optimise their value network can provide their customers increased value and this way succeed in the market* (Weiner et al. 1997).

1.1 Problem and hypothesis

Starting point for this study is to understanding what value creation and value-creating networks are and how they can advance firms operational efficiency and effectiveness. The main objective is to find a conceptual model that unravels the underlying value-creating network and potential. The model would help the analysis and understanding of value creation logic and reveal the critical activities in providing value to the customer. Potential outcomes would be new ways to organise operations so that each party in the network could maximise benefits received through partnerships and networks. Figure 1 shows the process for the research process.

The objective is to find answers to the following questions through theoretical analysis. Do firms recognise their customers and customers' needs and how they can fulfil them? Do they realise the

potential in the network of firms around them? Do they know what their core capabilities and competencies are and how value-creating network could be exploited? What kind of development potential lies in the core competencies and partnerships? Is there a motive for externalisation or outsourcing?

Value networks can be studied through the following questions:

- What does value chain, value network and value creation mean?
- What elements describe value-creating networks?
- How can value-creating networks be modelled and analysed?

1.2 Research process

The research starts from finding a theoretical background to value chain, value networks and value creation (Chapter 2). After that a conceptual model of value-creating networks is prepared (Chapter 3). The main goal is a model for analysing value creating networks (Chapter 4). Finally some conclusions are drawn from the conceptual model (Chapter 5).

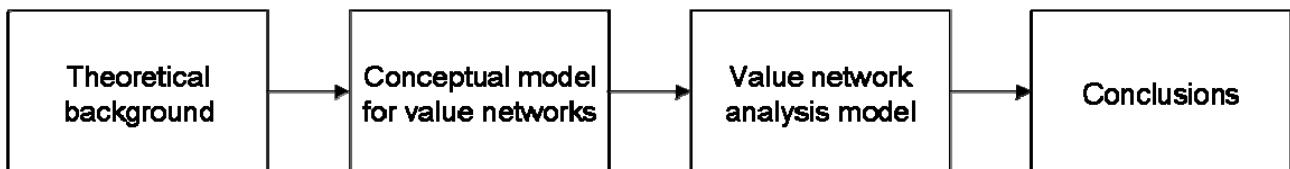


Fig. 1. Research process

2 Theoretical background of value-creating networks

Industrial organisations are naturally related to each other. They are dependent on each others production, distribution, use of goods and services. They have direct relationships with customers, distributors, suppliers and even competitors, and indirect relations with all suppliers, customers, competitors and other stakeholders. These exchange relationships are important because in today's world it is rare to have firms that can exist as self-supporting businesses. That is why firms need to establish and develop sustainable cooperation's, alliances and possibly joint ventures to guarantee the quality and quantity of goods and services exchanged and the demanding response times. (Johanson and Mattson 1991)

Relationships are being established, maintained, developed and broken in order to gain satisfactory short-term economic-returns and to create a suitable position in the network so that long-term survival and development of the firm can be ensured. Partnerships may reduce transaction costs, promote development of knowledge, give parties some control over each other, and be used as bridge to other firms and when mobilising partners against third parties (Johanson and Mattson 1991). This requires joint planning and coordination or power exercised by one party over another. (Johanson and Mattson 1991) What matters most in creating partnerships are social relations that lead to trust, loyalty, tacit understanding, and willingness to make risky deals (risk sharing and allocation) and sharing resources. Many researchers also consider proximity as one important factor in the formation of cooperation. (Staber 1996)

Value networks and partnerships exist because it is usually not reasonable to create value just through the firm itself and its limited resources and competencies. If there is a possibility to ally oneself with other firms that can complement the firm's existing competencies there is greater changes to create added value to the customer. In these alliances and networks each actor does the things that they do best, give something to the creation process and capture benefits from the partnership (experience, profit, or visibility). Working together firms are able to create maximal value for the end customer without making major sacrifices and even gain more back from the net than they originally gave away. (Helander 2004)

Shafer et al. (2005) states that creating value and capturing returns from that value are fundamental functions of business. They are the reasons for collaborative customer/supplier relationships (Helander 2004). Creating and capturing value reflects the two fundamental functions of all organisations: 1) creating value in ways that differentiate them from the competition and 2) develop core competencies that are different from those of competitors (Shafer et al. 2005). To create value to the end customer, firms need to use their core competencies in core processes, so that something valuable to the customer is created. Hannus (1993) has presented a simple illustration for value creation within a single firm in Figure 2. In networks value is generated through complex dynamic value exchanges instead of a single firm's core processes (Hamel 2001, Allee 2000).

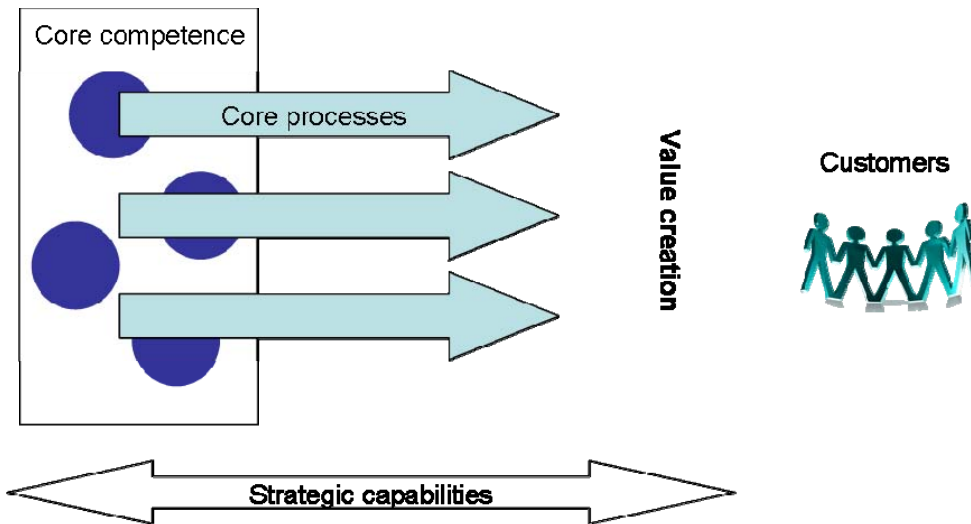


Fig. 2. Value creation within a firm according to process management principles (modified from Hannus 1993)

2.1 Value chain

Before going into detailed discussion of value networks we should consider simpler model and see where and how the discussion first took place. We can say that it mainly started with Porter's (1985) world known *value chain analysis*. In his model a firm is disaggregated into its strategically relevant activities as shown in Figure 3 so that the behaviour of cost and the existing and potential sources of differentiation can be understood. Analysing of value chain can be used as a tool for analysing single firm's activities and their interaction in very exact manner. Porter mainly considers individual firms and how they can answer customers' needs.

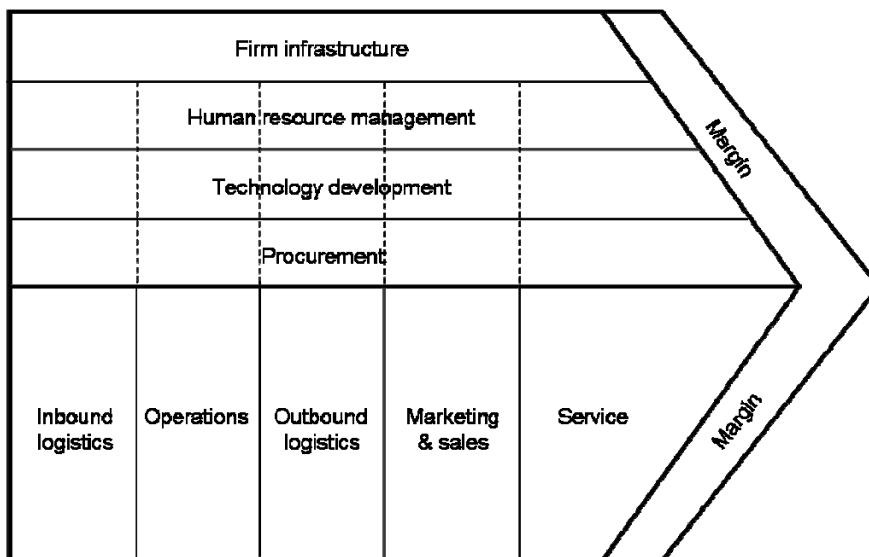


Fig. 3. Value chain (Modifier from Porter 1985)

What is important to notice is that when Porter's main objective has been analysing individual firms, we need to consider value creation with wider scope to determine the potential in value networks. Indeed, Porter took this into consideration further when presenting an idea of a value system. According to Porter, a value system is a set of consecutive activities, where each actor adds successively value to the product. All these activities are interrelated and there exists linkages

between value activities within a firm's own value chain but also between value chains in the value system.

In the value system, here defined as the value-creating chain, organisations and their core competencies are horizontally connected with each other. Each firm provides what they can do best and deliver it to the next operator in the chain. Value chain is thus a group of sequential activities which are connected through flows of information, material, resources or money. Each organisation concentrates only on their own activities knowing the previous and following activities in the line, but ignoring the importance of understanding how they affect the whole chain.

One example of value-creating chain could be the provision of traditional home electronics. First in the supply chain are material suppliers, subcontractors and manufacturer. The manufacturer uses subcontractors and its own competence to manufacture products for retail. Importer imports the products and distributes them to retailer who then sells them to end customers. Usually the products are pushed down the chain so that when the manufacturer has produced a certain amount of goods (e.g. according to forecasts) he then delivers them to its importers. The importers then deliver the products to the retailers from where the customers can choose and buy products they prefer. The chain can of course work the other way around if the customer makes an order to the retailer who then informs the importer and who places an order to the manufacturer. Figure 4 represents an example of the value creating chain for each firm. The arrows between the circles are the value exchanges such as flows of information, material, resources or money. Together they form a sequential value-creating chain. Information, trust and accuracy are the most important attributes when the relationship between different parties is considered.

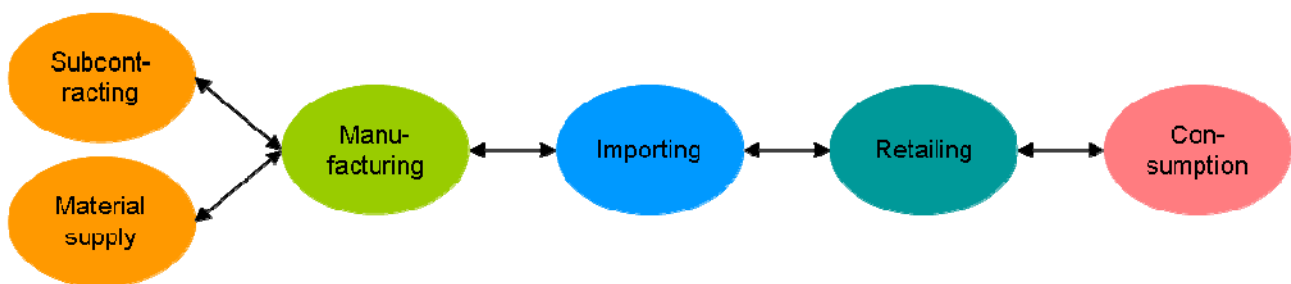


Fig. 4. An example of value-creating chain

Although used in many situations, sequential value-creation is really slow and rigid method to do business. In recent years organisations and their relationships have been changing and becoming more and more complicated. There has already been an increasing movement towards partnerships and cooperation of which vertical integration, Keiretsu and Toyota models are good examples. These partnerships cannot be modelled in the previously mentioned method, whereas it definitely needs to be modernised. In the future we are increasingly talking about value networks and value creating partnerships/systems instead of separate firms and traditional partnership methods such as outsourcing. Maybe it is time to break traditional boundaries and start creating value networks?

2.2 Value-creating networks

Value-creating networks have been studied for a few decades. Many theoretical researchers have presented their own models and methods to describe and analyse value creation in network for organisations. Empirical research and material is lacking, which is a considerable deficiency in this sector. Most of the value network researchers have been following similar methods when it comes to value networks, but terminology and scope frequently varies.

Johnston and Lawrence (1991) present a concept named ‘*value-adding partnership*’ (VAP) where a set of independent companies work closely together to manage the flows of goods and services along the shared value-added chain. Traditionally, transactions between the steps from raw material to final consumption have been arm’s length relationships or hierarchies of common ownership. In VAP each player has a stake in the other’s success and the whole chain is monitored to enhance competitive dynamics. Good examples of successful VAPs can be found from Italy where small companies with cooperative relationships have replaced large vertically integrated textile mills. These small companies have succeeded mainly because there is more opportunity for innovation, flexibility and specialisation as compared to large bureaucratic organisations. (Johnston and Lawrence 1991) Excellent examples are also Japanese car manufacturers, such as Toyota, where thousands of companies are working for a single large firm forming a Keiretsu. Keiretsu membership provides very high level of security against competition, market forces and financial difficulties and members are able to stabilise their performance. (Miyashita and Russell 1994)

Normann and Ramírez (1994) present another view, a *value constellation*, where actors come together to co-produce value. Instead of performing activities sequentially (Porter’s value system) activities are now performed simultaneously and value is created together instead of each actor creating value one after another. In this new value network, organisations focus is in the value-creating system itself versus that of the company or the industry (Peppard and Rylander 2006) In value constellation actors interface with each other and perform the ‘right’ activities for them (which they can perform fastest, cheapest, etc.) creating value to all parties. To be effective, firms should also take into consideration that their value creation coincides with customers’ value creation logics by using for example joint problem solving processes. Normann and Ramírez propose that instead of indentifying and fulfilling customers needs it is more helpful to focus on identifying and offering activities that fit customer’s own activities. Successful value constellation results are lower unit cost, fight against inefficient cross-subsidies, optimised risk-sharing, risk-absorption and improved risk-management. (Normann and Ramírez 1994)

Parolini (1999) continues the development already done by Normann and Ramírez by assuming that, “rather than being considered simply as sets of economic players, value-creating systems should be seen as sets of activities that are jointly involved in the creation of value.” In Parolini’s model (*the value net*) value-creating systems are a fundamental object of investigation and activities as the basic unit of analysis. Parolini proposes the following definition for value-creating system:

- “a value-creating system (VCS) can be defined as a set of activities creating value for customers;
- these activities are carried out using a set of human, tangible and intangible resources;
- they are linked by flows of material, information, financial resources and influence relationships;
- VCSs also include consumption activities, insofar the value that final consumer enjoy is also a function of the way they use and consume the potential value received;
- final consumers not only receive and consume the value created, but can also participate in value creating activities;
- activities may be governed by the market, a hierarchy or intermediate forms of co-ordination (company networks);
- various economic players may participate in a VCS (companies, families, public bodies, non-profit organizations) by taking responsibility for one or more activities;
- an economic player may participate in more than one VCS.”

Parolini emphasise the need to establish stable connections and lasting alliances with other economic players to ensure the competitiveness of the system. Parolini notes that “this is only possible if the companies have the same opinion concerning the value that they are to create together, are convinced that they need each other in order to create it, and have come to an

agreement as to how the created value is to be divided”. A strategic alliance can thus be created only if all participants believe that they can benefit from the cooperation. (Parolini 1999)

When considering the activities of individual companies it is possible to understand a part of value received by the final customer. Parolini’s value net model consists of activities that jointly participate in the creation of value and the flows of material, information, money and resources which connect these activities as shown in Figure 5. It is important to define the VCSs activities and relationships from the customer’s point of view and go “backwards” to find the important activities and relationships creating value for customers. It is dangerous to start the modelling from drawing the value chain of firms participating in it since institutional and organisational boundaries may restrict the analysis. (Parolini 1999)

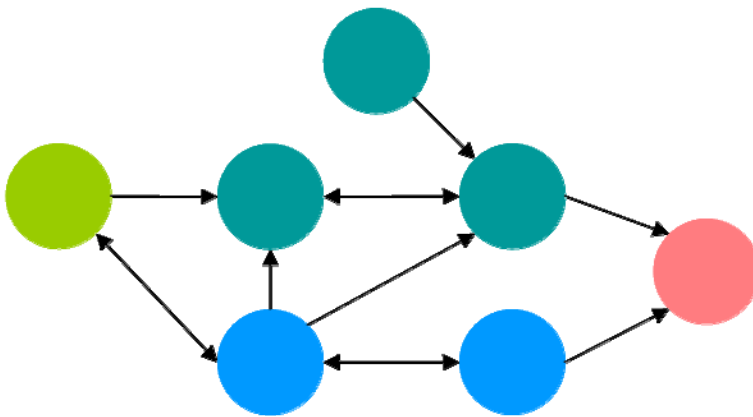


Fig. 5. The value net (modified from Parolini 1999)

The value net is also a great tool for individual firms to broaden their perspective. When companies concentrate exclusively on themselves, they often optimise and correct only their own work and fail to see that the problem may lie somewhere else in the system. Individual firm’s efforts to improve operation might be wasted because the value-creating system in general is failing or the final customer cannot receive or perceive the value created by the firm. Customers also tend to make judgements at the level of the whole value-creating system thus the extension from individual companies to value-creating systems in strategic analysis is justifiable. (Parolini 1999)

Bovet and Martha (2000b) also use the term value net and define it as a network of partnerships. According to them the value net is a dynamic, high-performance network of customers/supplier partnerships and information flows, which objective is to create value for customers, the company and its suppliers. Value net, in their opinion, forms itself around its customers according to Figure. 6. The company controls the customer touch points and is located in the inner concentric circle surrounding the customer. The outermost circle represents the constellation of providers that perform the sourcing, assembly and delivery activities. (Bovet and Martha 2000b)

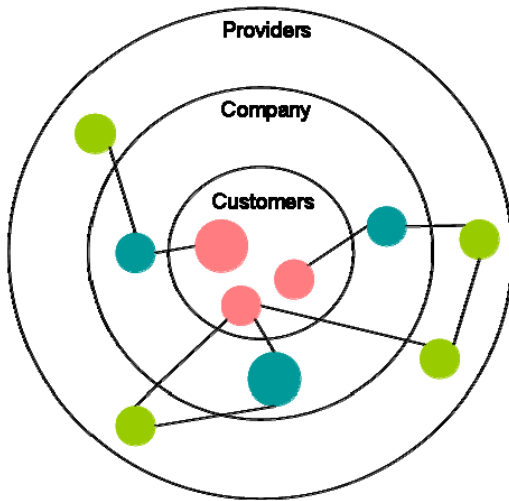


Fig. 6. The value net (modified from Bovet and Martha 2000b)

Value net defined by Bovet and Martha (2000b) have five important characteristics, namely:

- *Customer-aligned*: customer choices trigger activities in the value net
- *Collaborative and systemic*: companies engage in value-creating relationships
- *Agile and scalable*: flexible production, distribution and information flows
- *Fast flow*: order-to-delivery cycles are fast and compressed.
- *Digital*: digital technology and digital supply chain concepts

Value net design is based on customers' needs which are seamlessly linked back to a carefully designed fulfilment engine. Many capabilities of the fulfilment engine are drawn from the collaboration across agile, scalable and fast network of partners. One important tool in value net model of Bovet and Martha is the concept of digital supply chain which makes it possible to achieve superior customer satisfaction and company profitability. (Bovet and Martha 2000b)

Kothandaraman and Wilson (2001) call their concept a *value-creating network*. In value-creating networks the focus is on the key firms in the network that delivers value to the final consumer. This model thus moves beyond considering just VAPs where firms collaborate to improve their position in the markets to the consideration of customer value. Kothandaraman and Wilson (2001) develop a rationale for value-creating networks using three building blocks which makes it possible to understand the value creation process and its links to core capabilities of firms in the network. These building blocks are superior customer value, core capabilities and relationships, and are presented thoroughly in chapter 3.

In this paper we consider value-creating network to be a complex network structure where firms' core competencies are linked to each other through value exchanges such as flows of information, material, resources and money. In value-creating networks these flows can run horizontally but also vertically. Flows are thus multidirectional and sometimes simultaneous, making information available to participants more timely and real-time. In value-creating networks different economic actors, suppliers, partners, allies and customers work together to create value. Value, instead of pure cost, is the key driver in the construction of any competitive strategy and the value network is designed around the activities required to produce the end product (Peppard and Rylander 2006).

In the value-creating network model the activities are sequential, but also parallel, forming a network of core activities which produce value to the end customer. Instead of concentrating only on their own core competencies, firms understand the meaning and importance of the network around them and know how to benefit. This makes it possible for different actors to maximise and optimise the whole network instead of small pieces of the whole.

A good example of value-creating network is travel services provided through the Internet depicted in Figure 7. Here a travel agency, hotels, airlines, and for example a concert hall put their effort on an online service where customer can find real-time information about tickets, available rooms and prices. The travel information is now available anytime and anywhere making travel reservation easier than ever before. Customers can choose flights, hotel and amusement as best fitted for themselves and with one click the hotel, the airline and the concert hall can see the reservations. Each firm provides products and services which fit their core competencies and just share information with each other to create value also to the other participants in the network. Network participants often work also directly with each other (airline provides cheap hotel rooms in their partner hotel, customer contracts travel agency directly) which makes the network even more versatile and complicated.

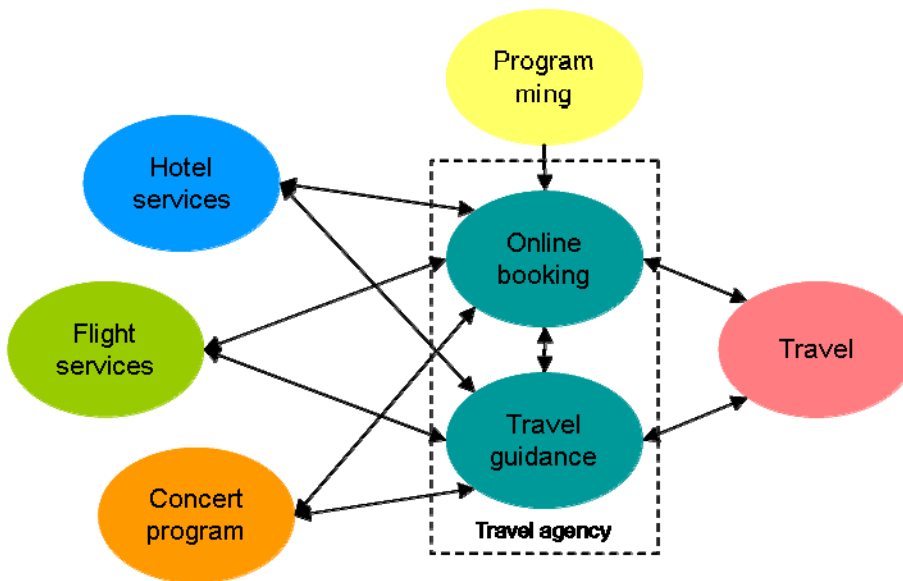


Fig. 7. An example of value-creating network

In viewing and analysing value-creating networks the objective is to understand what activities are most important in product/service provision and what brings value to the end customer (or other network participants!). Network activities should be reviewed regardless of organisational and firm boundaries in order to see who in fact should produce and what. This analysis makes it possible to see potential for outsourcing and cooperation, but also what each firms should produce in-house to stay and compete in the markets. Analysis gives opportunities to optimise the whole network and possibilities to change the network structure to better suit the changing environment. Usually it is more practical to work and strive together towards a common goal instead of everyone working and optimising just own operation. When each firm does what they do best, and is active part in the network forming partnerships and alliances, they can support each other and make the whole network work more efficiently and effectively.

In contrast to value-creating chain, in value networks the value is created together through a set of linked activities (core competencies) of several firms. The value created is not just for the customers of the network, but also received by society and all firms participating in the network (see Figure. 8).

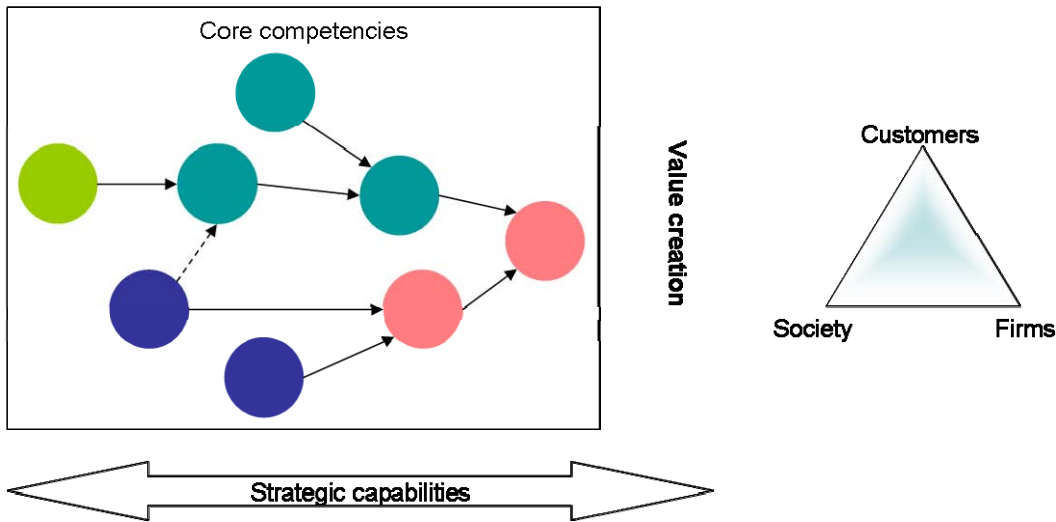


Fig. 8. Value creation in value network

One should remember that networks do not remain stable over time. They evolve alongside with competitors' strategies, new technologies or regulatory events. These forces constantly change the structure and configuration of the network. (Peppard and Rylander 2006) Many technical networks have traditionally been structured into vertically integrated monopolies, each directly owning all the components of the value chain. In the future they will differ at least in two ways, first, the firms will focus on selected high-profit, high-growth niches and secondly they will own only a select portion of the assets in the value chain. Networks start forming and each company in the network will "cherry pick" and configure only those value-adding activities that they can do best and which are meaningful to a customer segment. (Weiner et al. 1997)

2.3 Information system in value-creating network

As mentioned already above, information is the most important flow between the firms. All other flows (material, resource and money) need reliable and real-time information to run properly. This means that the information is the most important element between the firms binding them together into networks. Different technological systems support the inter-organisational relationships and facilitate communication between the firms making partnerships easier and more functional. The Internet, growing bandwidth capacity and skyrocketing computing powers have revolutionised the way companies, suppliers and customers interact with each other and it also creates opportunities for growth. (Bovet and Martha 2000b) Previously it was necessary to go to a physical warehouse to check the availability of a certain product, now it is behind one mouse-click while the product can be located anywhere in the world. However, this has its limitations when information is not correctly updated or maintained.

New information technologies provide direct and timely information exchange through e-mail, the Internet and direct connections (e.g. electronic data interchange) between parties. No more time-consuming mailing, phone-calls and extensive face-to-face discussions. All necessary information (and more) is attainable and retrievable directly from your suppliers or customers computer. These technologies support the data and information exchanges between parties and thereby enhance the development of value networks and communication between parties (Kothandaraman and Wilson 2001, Peppard and Rylander 2006). Furthermore, the objective of these inter-organisational systems is to facilitate the foundation of closer relationships as well as to manage also the third party content providers (Peppard and Rylander 2006). Although the content or service of the third-party can be embodied in an electronic form, many aspects of the relationship are and should still be conducted

on a personal basis. (Peppard and Rylander 2006) Without timely, real-time and accurate information, close partnerships are not possible and benefits from the network cannot be exploited.

3 A conceptual model for value-creating networks

There are four key building blocks impacting the value chain of a product or a service: customer value, core competences, relationships and interaction (e.g. Håkansson and Johanson 1992, Parolini 1999, Kothandaraman and Wilson 2001, Helander 2004, Möller et al. 2005). Firms need to use their core capabilities and core competencies to deliver products that fully satisfy the needs and wants of the customer at a competitive price. Creating close partnerships firms can concentrate on their core competencies and outsource non-core activities. This way the delivery process can be clarified and the value increased. In addition, partnerships do not exist without interaction between the different actors. Actors exchange information, material, resources and money and this way reinforce and facilitate the value-creation in the network of partners. These four building blocks are briefly discussed in the following subsections and their interrelation is presented in Figure 9.

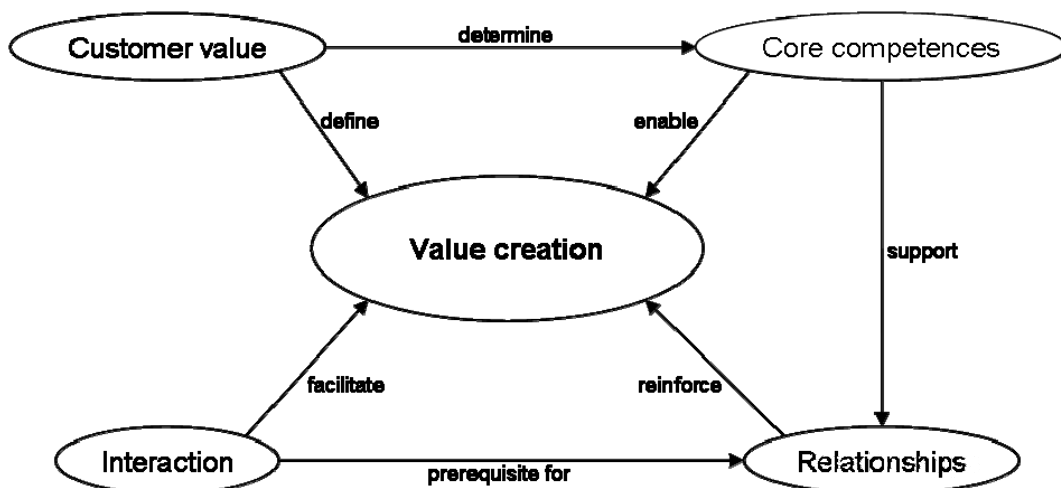


Fig. 9. A conceptual model for value creation

3.1 Value

Porter (1985) defines value as the “amount buyers are willing to pay for what firm provides them”. Value is thus measured in competitive terms by total revenue, which can be calculated by multiplying the price of the product by the quantity of the product sold. Parolini (1999) criticises Porter’s definition of value because it sounds almost like as if the net value for customers were not a value itself. Parolini obtains the net value by adding the total price purchasers have to pay for carrying out value-creating activities above the total cost, to the value customers attribute to a product above the actual price of the product. The net value for customer is derived from combination of tangible (e.g. quality, durability, and functionality) and intangible (e.g. prestige) elements, services and economic elements (e.g. purchase price, payment method, warranties). Instead, Kothandraman and Wilson (2001) see value as the relationship between the competing

market offerings and their respective prices from the eyes of the customer. This presents an interesting dilemma in the public arena, as finance ministries or those accountable, typically look at cost as the sole determining factor and not the value added services or savings.

Allee (1999, 2000) and Normann and Ramírez (1994) consider value beyond monetary value. Allee (1999) sees value as tangible or intangible quality, good, knowledge, benefit or service that is desirable or useful so that the recipient is willing to pay for or exchange it to another 'valuable item'. Value is created through complex dynamic exchanges between one or more enterprises, its customers, suppliers, strategic partners, and the community. (Allee 2000) Normann and Ramírez (1994) recognise also other values than pure monetary value when customers are engaged in activities to achieve value. These other values can be for example social, psychological, aesthetic and moral. Values can be measured for example by the 'density' of options made available to the user at the right time in the right place.

Normann and Ramírez also emphasise "the ultimate goal, if not the very nature, of economic activity is to create value" to the customer. What is difficult in this notion is that in the end, the value is created in the mind of the end customer thus the value created and obtained is always subjectively perceived. The end customer is thus one of the most important factors determining what kind of value-creating activities the network should perform. (Helander 2004) In the public sector of infrastructure there are many customers and various points of view with what is considered valuable. This may result in conflicts in point of views and decision making practices. This is what makes public services challenging in that so many values need to be considered, but not all customers can be satisfied. There is no exhaustive method to determine the value the customer receives. Perceived value can be estimated by asking customers willingness to pay for a certain product or service. Helander (2004) instead measures the value as a difference between customer's monetary and non-monetary benefits and sacrifices.

3.2 Core capabilities and core competencies

Core capabilities and core competencies (C&C) are the basis for operation of the firm. They are the means to satisfy customers' needs and provide superior value to them. C&C should correspond to customers' needs and support the whole value-creating network. There are also skills and knowledge deeper inside the firm supporting these activities, but although these elements are equally important as C&C, in this paper it is enough to consider the more prevailing concepts. C&C are many times thought of as equal but actually they differ quite considerably and are defined separately below.

Core capabilities are a set of core beliefs that signify their way of doing business. (Kothandaraman and Wilson 2001, Hamel and Prahalad 1994) There are four basic principles concerning core capabilities. First, building blocks of corporate strategy are business processes that start from identifying customer needs and end with satisfying them. Secondly, firm's success depends of transforming its core processes into strategic capabilities that provide superior value to customer. Thirdly, firms create core capabilities by making strategic investments and support infrastructure that links together different functions and units in the value chain. Fourthly, firms need to focus on capabilities that serve customers and create a new horizontal and customer oriented organisation architecture. (Stalk et al. 1992)

Core competencies are the collective learning in the organisation.(Kothandaraman and Wilson 2001, Hamel and Prahalad 1994) They are organisationally embedded resources, strategic activities, knowledge and skills, which represent the sum of learning across individual skill sets and organisation units (Hamel and Prahalad 1994). Core competence can be found through work

organisation, communication, involvement and deep commitment across organisational boundaries so that value can be delivered to the customer (Prahalad and Hamel 1990). Hamel and Prahalad (1994) and Kaplinsky and Morris (2001) emphasise that firms should concentrate only to those competencies that are relatively unique, provide value to customer and/or are difficult to copy and outsource the remaining. Helander (2004) suggest that firms need to identify their most important tasks to perform, and understand why they should be performed. Firms should also know how to change the course of the current system to desirable direction if needed (Helander 2004).

Core competencies should be considered in close relation to the end customers' value perceptions. At the end, customers are the ones who ultimately define value and judge whether something is or is not a core competence (e.g. Normann and Ramírez 1994, Peppard and Rylander 2006, Helander 2004, Hamel and Prahalad 1994). Firms should present themselves questions such as: What are the value elements in certain product or service? What is the customer actually paying for? Why is the customer willing to pay for a certain product or service? Which value elements are most important (make the biggest contribution to price realisation)? (Hamel and Prahalad 1994) Core competence in a company provides potential access to wide variety of markets, it should make a significant contribution to the perceived customer value and it should be difficult for competitors to imitate. (Prahalad and Hamel 1990) From value-creating network point of view firms should emphasise core competencies that they are able to utilise instead of concentrating on only those they possess (Helander 2004).

One should however notice that communities' technical networks do not really have opportunities or choices to change their core competence. They can, however, concentrate on their core competencies and outsource non-core activities to separate providers. A good example of this is outsourcing maintenance competitively to service providers. It is important to note that outsourcing has resulted in mixed results and can be procured in different ways. However, when it has been applied correctly the results typically have been beneficial, but not in all cases.

3.3 Relationships

When a combination of firms concentrates on their core competencies and combines their efforts and builds strong partnering relationships, a value-creating network is born. The objective of each firm taking part in the cooperation is to add value to the market offering and to create value to the customer. (Kothandaraman and Wilson 2001) Business partners who get together to share information, to analyse their business/value propositions and to understand better their core operating processes typically find ways to improve their efficiency and effectiveness in a cooperative manner (Poirier et al. 2003). Most familiar cooperating relationships are: partnerships, alliances, joint ventures, network organisations, franchises, concession models, and licensing, service, and management agreements (Herrala, D1). These relationships differ from each other in their closeness, dominance/balance level, intensity and extendedness (e.g. Helander 2004, Mentzer 2004).

Partnerships cannot exist if certain conditions are not met. Companies need to have shared opinions about the value that they are to create together, be convinced that they need each other to create that value and to agree on how the created value is divided between the parties. If these conditions are not met, organisations cannot really commit themselves to pursue a common objective and will continue to operate as independent entities. (Parolini 1999)

3.4 Interaction

The way the value is created to the customer is influenced by the nature of the relationships that the actors have with each other. The essence in business relationships are exchanges and interactions. Actors can exchange products, information or finance but also social exchanges are seen important. In any agreement and collaboration actors need to interact with each other asking question such as: What can you do for me? What can I do for you? How can we benefit from each other? (Helander 2004)

The level and depth of interaction is determined by several things:

- the relationship type
- the actors
 - o actors commitment
 - o actors trust with each other
 - o strategic behaviour of actors
- the exchanges
 - o information, material, resources, money and social exchanges
 - o importance and significance of exchanges
- the contract type
- legal issues

There can be at least three levels of interaction which can be expressed with a notion of different types of glues. Normal glue dries fast but breaks easily. Epoxy needs two components which together form slowly fastening, long-lasting bond. Silicone is the most elastic, adjusting and long-lasting adhesives of these three. Depending on the relationship and intensity of the cooperation firms glue themselves together into short-term and discrete or long-term, enduring and mutually profitable projects. What determines the level of adhesion is the value received (through flows of information, material, resources, money) and how receivers appreciate the partnership as a whole.

The value of the partnership and interaction can be assessed through several value attributes presented in Table 1. In this table the value of information is under consideration, but it is possible to consider the value of the other important flows, such as material, resources or money, in a similar way. Appreciation depends heavily on the receiver and what is perceived as valuable. It depends on the value attributes but also what kind of impact the value flows has on the receiver and on operations. In summary, it is important to consider the value created to the end customer, but equally important is to assess how firms can benefit from the partnership: what they can give to the network and what can they receive in return.

Table 1. Framework of information value attributes (Herrala et al. 2009)

Value Attribute	Component of value attribute	Key questions to describe the component
Accessibility & availability	Mode & media	What is the information format? How is the information distributed? How can the information be accessed? Is the information accessible when needed? Is the access restricted?
	Traceability	Can the data source be identified? Can the original data be traced?
	Service reliability	Is the information available when promised? Are the mode and media as promised?
Contents	Accuracy	Is the information free of error?
	Uniqueness	Is the information the same for everyone? Is it possible to get customised information? Is it possible to benefit from being only one having certain information?
	Relevance	Is the information something the user really needs? Does the information help to solve the problem at hand?

	Completeness	How complete is the information? Is there a deficit?
	Coverage	How wide an area does the information cover?
	Volume	How frequently is the information updated? How much information can be accessed at the same time?
Timeliness	Real-time	Is the provided information real-time or reflecting a relevant time point?
	History	Is the provided information based on collected data of past events?
Validity	Unambiguity	Does the information include obscurities?
	Objectivity	Can the information be considered objective?
	Consistency	Is the information coherent and logical?
	Service reputation	Are there competitive services? What kind of reputation does the service provider have?
Effectiveness	Decision impact	Can the information make the user change his/her decision, e.g. a route or a transport mode?
	Benefits	Does the information generate time-savings, increase comfort or enhance safety?
Cost		Is the information free of charge? Is some of the information chargeable? How much does the information cost?

4 Analysis of value-creating networks

The building blocks described in the last chapter can be used to create a method to analyse value-creation in a value-creating network. Parolini (1999), Helander (2004) and Peppard and Rylander (2006) have all created similar methods for this kind of analysis. These systematic methods are created for answering questions such as where the value lies in the network and how value is created through relationships. By understanding these relationships strategists can better understand where value lies in the network, how value is co-created, how the firm's activities affect the network and how other members are likely to respond. (Peppard and Rylander 2006)

Helander (2004) crystallise the method in four phases with the following questions:

- 1. Who is the customer? What customer considers valuable?**
- 2. What activities are needed to create the value for the customer?**
- 3. What resources are needed to carry out the activities?**
- 4. Who (=actors) are able to utilise these resources?**

However, before starting the initial analysis, the network should be defined and the boundaries of analysis set so that the research area does not expand too much and become impossible to manage. (Peppard and Rylander 2006)

In the first phase researcher should ask questions such as: Who is the customer and what is considered valuable (Helander 2004)? What constitutes value for the final customer and is it possible to take full advantage of it (Parolini 1999)? The perspective of the final customer gives firm ideas how customers evaluate things and how the firm can be of help by providing products and services. Customers are indeed the ones who ultimately define value. They are an integral part of the network when seeking choices, quality, relevance, ease of use, fair pricing and support. In value networks firms are not just delivering value to each other, based on requirement of next in line, but they must base offering around the notion of value defined by the customer and create value to customer together. (Peppard and Rylander 2006) Hamel and Prahalad (1994), however, remind us that, it is well known that customers are lacking foresight and firms should not blindly trust market analyses but know what their core competencies are and make use of them together.

This leads us to the second phase where the critical activities that are needed to create the value for the customer should be found and how these activities are inter-related. These activities can be classified into three groups: production activities (aimed at the creation of the product/service), support activities (aim at improving the effectiveness and efficiency of other activities) and external transaction management activities (essentially purchasing and selling activities). These activities should be regarded with highest reasonable disaggregation level and free from exact organisational and firm boundaries. It is also important to represent the significant ties and relationships between the activities to highlight their influence to the whole network system. (Parolini 1999)

In the third phase the core competencies and capabilities of the networks participants should be identified. Core questions are what core competencies firms possess and what it is able to utilise through other network participants. (Helander 2004) In value networks each actor should concentrate on performing the ‘right’ activities for them and externalising even the traditionally important activities if they do not fit the firm’s core competence. (Normann and Ramírez 1994)

In the fourth phase the network participants and other actors that influence the value delivered to the customer should be identified. These can be for example customers, suppliers, competitors, allies, regulators and supplementary firms. It is also important to define how network members can utilise and benefit from the different resources available. This is done in order to understand why each firm is part of the network and what are they getting out of it. (Peppard and Rylander 2006)

Helander’s questions could be completed with one further question:

5. How actors interact and influence each other?

In this stage different roles and linkages of the network participants are identified. These networks operate on the principle of fair exchange of all types of values where value flows are interwoven, interdependent and multidirectional. These value exchanges can be goods, services, information and revenues or knowledge or intangible benefits. (Allee 2000, Allee 1999) Exchanges are influenced by the perceived value and the behaviour of the network participants and the customers (Peppard and Rylander 2006). The objective of this phase is to identify the roles and value exchanges of the network participants and how they are influenced by each other. It is also important to realise that the partnerships operate and work properly only if both parties are convinced that they need each other and believe that they can benefit from the cooperation (Parolini 1999). Successful value networks and exchanges need especially integrity, honesty, responsibility, inclusion and respect to work properly. (Allee 2000, Allee 1999) Relationships can be classified by the level of closeness, co-operation, type of interaction and if the relationship is short-term or long term (Helander 2004). Figure 10 shows the new value creation model.

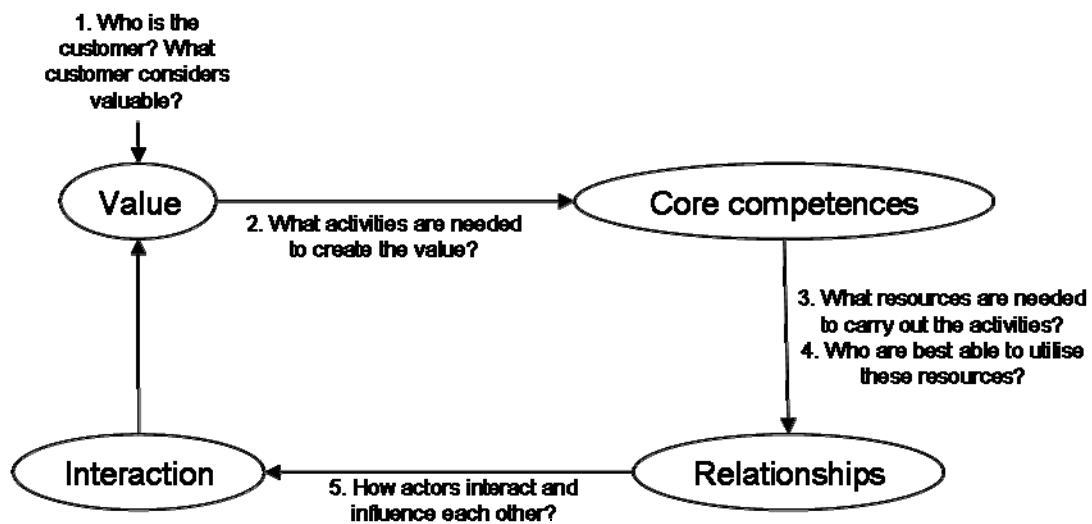


Fig. 10. Model of value-creation

When these questions are answered it should be easy to draw a graphical model of the value-creating network if needed. For example the illustration model of Parolini (Fig. 5) could be used. This is not however necessary if the network and value-creation logic is clear without the illustration.

5 Conclusions

In this theoretical research a conceptual and analysis model for value-creating networks was created. The conceptual model consists of four critical elements, namely customer value, core competencies, relationships and interaction. These four elements were used when the analysis model was created. The analysis model consists of five questions: 1) Who is the customer and what is considered valuable? 2) What activities are needed to create the value? 3) What resources are needed to carry out the activities? 4) Who are able to utilise these resources? and 5) How actors interact and influence each other? When these questions are answered related to a certain product or service the current state of the value-creation can be determined and the future possibilities discovered.

Objective of all network actors should be satisfied, internal or external, customers. The network should work together to deliver the product or service to the customer at the right time, to the right place and at the right price. The analysis of value-creating networks gives possibilities to realise customers' needs and find the main actors in the network. The analysis makes the relationships and interaction of the different actors clearer and gives the opportunity to find the underlying problems and objectives for future development. When the customer, customer's needs and the value-creating network has been identified it is possible to make improvements and increase the value created to the customer.

In the future this analysis model should be verified and validated through an empirical case study. In this study at least one interesting product or service and the value-creating network around it should be chosen and its value-creation analysed. Through this empirical test the model and its feasibility can be assured.

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