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**The Dynamics of Integrating
New Resource into a
Value Network**

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Biography:

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First I would like to express my sincere gratitude to my supervisor Prof. Ferreira for his support of my study.

Then I would like to thank my wife Samaneh and our families in Iran for supporting me spiritually throughout my study, writing this dissertation and my life in general.

Managers are not confronted with problems that are independent of each other, but with dynamic situations that consist of complex systems of changing problems that interact with each other. I call such situations messes. . . . Managers do not solve problems, they manage messes.

— Russell Ackoff, operations theorist

Abstract

In collaborative based networks where all participants collaborate for co-creation of a value, resource integration plays an important role. This is because resources are scarce and the inclusion method could avoid extra costs and inefficient relationships to provide a mutual beneficiary relationship for all involved parties.

Value network Analysis is a helpful model for organizational value creation enhancement by looking at firm's overall relationships including internal or inter-firm relationships in overall business context. It tries to analyze asset exchange by detail analyze of tangible and intangible deliverables and exchanges, which enable managers to manage exchanges in micro level as well as measuring the overall balance of reciprocity in organization and in business network as whole.

Proposed methods in value network scholars consider asset exchange and deliverables but there is lacks of attention to the process of integration of new participant's assets in current value network and the available resources that new actor has access to.

Integration of a new participant for value co-creation had been studied by different scholars, in this study we will focus on the dynamics of integration process on the existing value network.

Key-words: value network, resource integration, network reconfiguration

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Chapter 1. Introduction

The main mechanism for value creation or value distortion is business processes. By implementing qualified process which consistently controlled and managed, it is likely to increase the created value for business stakeholders consistently. In the other hand for running the business sustainably, value must be balanced equitably throughout stakeholders (*Davies and Davies 2011*). For this aim we need to analyze the value creation dynamics, value conversion mechanism and delivered value to stakeholders within value network.

To understand how economic value is created, the starting point is value chain, but this is not enough, we need to expand our view and boundary of analysis to value network (Lusch, 2010). In marketing and business strategy '*Value network*' is a term for a set of partners within a web of relationships that collaborate together to provide an economic value or a product (Kirkwood, 2013). They usually have complex dynamic exchanges among themselves in value network. Exchanges are not just tangible but could be also in forms of intangible (Allee, 2008).

Value Network study tries to capture the interrelationships, interaction and exchanges in firm's value creation network, to find missing/extra relationships and/or exchanges; it provides insights to adjust relationships and to control asset exchanges. In practice, organization managers need to use value network analysis to improve business process by manipulating existing conditions (Ojala, 2014).

We need to look at organization's value network and surrounding environment as a system with a holistic view to extract the relationships to include all involved parties in a holistic causality manner. But what is a holist view and how can we capture it? For this aim we need to have a systemic view to the context that we want to look at.

"System" is a term to imply an interdependent group of parts forming an integrated structure. Since this study is about business processes, here, the parts will be people, tools, equipment and any resources would be applied for design, produce, market, distribute and sale for given product or service (Kirkwood, 2013 - p2).

Looking at overall value network participants requires to study new actor's integration process as well as current process of value creating by existing participants of network.

This method can help organization managers to 'optimize interactions', 'improve communications' and 'balance asset exchange and workflows' among involved parties and workgroups in value network in overall view.

This dissertation continues with the review on value network concept in literature which will conduct in research gap. Then in third chapter we will explain our research method. Chapter four is dedicated to the proposed model by also looking at resource integration models as well as proposing our model. In chapter five we study a business case with a discussion about application of proposed model on that case. Conclusions will be the final chapter.

Chapter 2. Literature Review

In this chapter we will review the literature of value network and systems thinking and will continue by identifying the research gap in this context.

2.1. Value Network

Before going to review the literature of value network, we start by reviewing the definition of value:

The Oxford dictionary defines “Value” as: “The regard that something is held to deserve; the importance, worth, or usefulness of something” and also “The worth of something compared to the price paid or asked for it.”

Historically value was corresponding to a measurable unit by itself and then became almost equal to price to denote this concept clearly, this points that something has value by being suitable for specific application (Ramirez, 1999).

Ramirez (1999) also emphasizes:

“Values are contingent, more than subjective. They do not reside ‘in’ an individual, independent of his actual actions, nor ‘in’ a good, independent of the interactions to which it is subjected.”

Value is an assessment of the quality and benefit of things; the deduction of losses from benefits or the difference between sacrifices and gains. In general terms we can say the difference between giving and getting. Giving or getting could be in terms of tangible or intangibles. Tangible example is getting/giving money and intangible example like receiving help to do something.

In economics the value of a product is the amount of ‘*saved labor or discomfort reduction*’ gained by using that product versus certain amount of money we have to pay. In other definition the value of product is the price it would bring in market in

which is settled by the demand for the product relative to supply. It is also context dependent view, as users or perceivers of value will also consider other possible solutions that could accomplish their needs (Ojala, 2014).

In transactional view on value chain model, the “product’s value” is created a long ‘value chain’ by the firms which positioned a long this chain. Firms add value to their input and contribute to provide final product along the value chain; making value for customer. Internal activities inside a given firm for value-adding process takes place by interaction and exchanges among workgroups and people inside the firm to produce a part of this chain. Also inter-firms reciprocities takes place to co-produce final product within a mutual agreement or need.

This is industrial view to the customers in a product-dominant economy in which customers were seen just as consumer or destroyer of the value that producers were created for them, customers were not even aware of their needs, producers anticipate customer needs. When transaction takes place, value would realize by customers, therefore this value was a mean to connect or disconnect to customers (Ramirez, 1999).

In this view customers consider as final arbitrary of value as they position at the end point of value chain and ultimately receive final product to use and to define the value. Customers are not interested in production process and they don’t want to be connected to financial detail of business. This is transactional relationships between producers and customers, to the Peppard, (2006):

“The customer is seeking variety, service quality, relevance, user friendly, as well as fair and easily understood pricing, if required”

For example looking at value chain of constructing a house; different firms produce different parts to be used in final product (the house). Some of them work independently and autonomously from chain, just following standards, general rules and market needs like faucet, ceramic or glass producers, while some of them works within common agreement with main producer (construction firm) of chain like kitchen cabinets producers which usually have to customize their product based on final usage and sizes. These parts will be used in different stage of construction and will be installed in proper time and place, so final product will be configured as planned by producer, and finally a house would be constructed that someone would be interested in

to buy, and probably without any interest of how and when different parts produced and assembled.

There is also alternative view beside this view in which, customers do not stay aside that producers create value for them to use or to destroy it, but they - customers - present in value creating process. They cooperate to co-produce value. In this view value is not just created by producers and used by customer, but mutually created and re-created by different players including customers. This view is more about relational relationships between producers and customers rather than transactional relationships (Ramirez, 1999).

High performance organizations go even further and do not position themselves to simply add value of products to be delivered to customers, they use contribution of business network parties as well as customers to innovate and recreate value. Their border of strategic analyze is the value network and surrounding environment, within which all economic actors collaborate to co-produce value. Their key strategic goal is the reconfiguration of roles and relationships among this network of players in order to mobilize the value creation in reconfigured system in new forms of value and by new actors to match competencies and customer needs (Normann & Ramirez, 1993).

In a service-dominant view (Vargo, 2008) which is one of the methods that emphasize on the latter perspective, value is created by interactions and collaboration among a network of entities which is co-creation of value rather than co-production. Continuous reconfiguration of business network to optimum benefit from relationship and knowledge and other's resources will be the main focus of strategist. Therefore setting up a network of interacting partners, rather than determining a position along value chain, will improve access to flexible resources (include people, technology, natural resources, etc.) and provide context of mutual collaboration for all participants which results in co-creation of value.

Changing the marketing view from “transactional approach to relational approach” or changing from value exchange to value creation, made value chain partners to become in “close interactive relationships” while their action transformed from competitors to active collaborators who share resources and build “*economic and structural bonds*” (Gummesson, 2010).

One of the main points in service-dominant view is that value resides under the concept of increasing capabilities and competences by collaborating with other actors rather than individual production in advance (Kieliszewski, 2012).

Based on the second view value is an “*emergent property of the network*” (Allee, 2008) and understanding the performance of the network as a whole is fundamental to understand the process of value creation. The value networks study is required to understand actors, interactions and deliverables within this network.

As product and services become more complicate and diverse as well as potential offering related to those, so the process and the necessary relationships involved to produce these products varied. Due to this change in business, rarely a single company produce everything integrally any more. As a result, customer and supplier allies and business partners are important actors of any business activity; therefore the dynamic combination and configuration of participants and their reciprocities are necessary in this network. This raises the needs to study the network of interaction (Kothandaraman & Wilson, 2001; Normann & Ramirez, 1994).

In other words, as the value is created through the relationships between customers, intermediaries, complementors, competitors and suppliers, the value network is a framework that brings together the different capabilities and resources to produce the target output (Oksanen et al, 2010).

In marketing and business strategy ‘Value network’ is a term for activity-focused networks, in which a set of actors have interactions and exchanges to supply, design, produce, market, deliver and use a product or service as an economic product (Kirkwood, 2013 p2). They have interrelationships within a network to provide complementary or redundancy parts or services in different hierarchical levels (Van Middendorp, 2010) to co-produce value within common direct/indirect agreement (Hosseini and Albadvi, 2010).

The study of overall as well as detail relationships and reciprocities between partnerships of network participant are subject of value network study. It describes the value exchange between partners while collaborating with each other (Allee, 2008). Value network combines strategic management analysis with a human centered network approach (Van Middendorp, 2010).

In a successful value network all members are in mutual collaboration, so everyone gets and deliver value in such ways that he achieves his own task as well as other members of value network as whole. Otherwise the participants will dismiss their participation, or system as general become inefficient and value reducing which is unstable and unsustainable system that inevitably will force to collapse or reconfigure (Allee, 2008).

Value network study provides a broader view for strategist and organization's managers to look beyond existing lines and current limits to identify opportunity and threats, to find their position in network of partners as well as embracing and deployment of available resources to enhance value creation processes (Ersoz, 2012).

The Analytical method of firm's internal activity and external relationships developed in value chain model by Michael Porter (Porter, 1985) has remarkable impact on value creation and value network literature; as the explanation of firms performance has been "chained to the value chain" (Normann & Ramirez; 1994).

The supply chain is a sub-part of the value network; value chain is embedded within value networks (Lusch, 2010). Strong ties historically characterized many highly structured and rigid supply chains in a global network economy, but much of the value network is comprised of weak ties which enable seemingly unrelated organizational networks to form a larger macro-structure which can be more fluid, agile, and adaptable.

Value network starts by value chain and then extends the border of its boundary, to include a network of multiple participants e.g. all economic actors, stakeholders and other beneficiaries; a networked view with human center approach. It emphasizes on the knowledge and intangible asset exchanges as well as tangible asset exchanges (Allee, 2008 – Van Middendorp, 2010).

In network view each player has access to some sort of resources and the knowledge of transforming those resources to value. This make firms connected together and collaborate to produce a product in framework of a value network. Therefore within this network, firms are interdependent to each other. In this context an individual company should dynamically adapt to the environment as outcome will be the result of network interaction rather than just be controlled by single firm. In this context the actor's freedom will be restricted by other actors (Sandström, 2010 - p17).

Marketing shift from transaction-oriented view on exchanges to relationship view and focusing on developing long-term relationships with business partners and allies, made it essential to consider such a way of looking on actors relationships and the process of value exchanges in which they are involved in (Van Middendorp, 2010; Hosseini and Albadvi, 2010).

There is also other network-based-view concepts which can be used as synonym to value network e.g. value constellation (Normann & Ramirez, 1993), business ecosystems (Iansiti and Levien, 2005), value webs (Akkermans, et al., 2004), business group (Smangs, 2006), strategic network (Afuah, 2000). Compared to these similar concepts, value network considers broader view on contributed players with looking on high level of details in same time, considering environmental and social issues. Value network also has more emphasized on value creation system and considers tangible value exchanges as well as knowledge and intangible value exchanges, aspects that are missed or less considered in other views (Van Middendorp, 2010).

Among the basic contributions which proposed value network as a conceptual framework and a way of looking on business relationships, there are three important theories as listed below:

A. Christensen and Rosenbloom (1995)

“The context within which the firm identifies and responds to customers' needs, procures inputs and reacts to competitors. The boundaries of a value network are determined by a unique definition of product performance.”

In this definition value network is an environment consists of economic actors contribute to co-produce a product but it is rather a close view to this system.

Here the key component of value network is product and services which an organization produces rather than people who make the product. The links between people and product is considered but interaction and interrelationship between people has less attention. By limiting the value network borders on product performance, their focus is on value chain rather than a holistic view on organization environment.

B. Stabell and Fjeldstad (1998)

“The value network model firms that create value by facilitating a network relationship between their customers using a mediating technology”

Then they continue: “The firm itself is not the network. It provides a networking service”

In this definition, value networks are shaped by single companies that configure themselves to mediate interactions and exchanges across a network of their customers to solve customers' problem in customized way. They proposed this model almost for service based firms like banks and insurance companies in which they provide a networking service to mediate exchange between their customer, as in banking services, one customer wants to deposit his money and other one wants to take loan, the bank will do this exchange within the networks they provide for customers by using the firm's infrastructure that make this task easier and faster; to exchange the value.

This view had focused on firm level strategy and competitive advantage of firms in value chain. They target value chain improvement to enhance value producing mechanism for service based firms. Building their theory on Porters marketing strategy, and expand this model in linear base, while in real world is less relevant. As a simple example for nonlinear real world, consider when same changes or same activities in given organization cause different results (Van Middendorp, 2010) or doubling the inputs will not necessarily results in doubling the outputs. Their attention is too much on customer needs and value chain within business network while (again in this view) the people inside organization, those who produce the product and their interaction are missed. Also social and soft concepts – like intangibles - are not integrated in their theory. They have not evolved their idea, and attaining initial concept within value chain framework and marketing strategy.

C. Verna Allee (Allee, 2008)

“A value network is a web of relationships that generates economic value and other benefits through complex dynamic exchanges between two or more individuals, groups or

organizations. Any organization or group of organizations engaged in both tangible and intangible exchanges can be viewed as a value network, whether private industry, government or public sector.”

In this view the main task of value network is to produce value for network's participants. Participants are people who transform their knowledge and know-how to deliverables in forms of tangible or intangible value which are valued by recipient – other members of this network, individual, group or organization –. Allee considers peoples inside the firm as well as other actors of business environment, she also considers soft dimensions like trust and reputation: a live view to organizational network which is less considered with others in this context.

In this model value network starts by organization as core point of network then its boundaries will extend until includes all participants and beneficiaries within this environment in which organization operate in. No matter how big the network is, the point is that the network should contain all members and relationships contributing to business process and value creation. The starting point for this analysis would be value chain and then we need to extend its boundary.

The value doesn't need to be in tangible form to be valued. Intangible exchanges like information, product service and supports, and other soft exchanges are as important as tangible exchanges and have their value; none of them without others has true value. The main channel to transform one type of asset to another one is network. (Allee, 2008)

Allee has classified *exchanges* in two forms of tangible and intangibles. Intangible exchanges - like trust or honesty - are different than physical aspects of transaction. These exchanges as important part of exchange-network usually are missed in value management and value engineering methods and related literatures (Allee, 2008, 2009).

Another important point is that knowledge simply does not behave like natural and physical resources. Knowledge and ideas can replicate and multiply infinitely while it would not finish, it grows when exchanges. Physical resources do not have this attribute; they are in limited stocks and are not replicable infinitely.

Knowledge flows between actors and the way it converted to value should be considered and treated differently (Allee, 2008 ; Van Middendorp, 2010).

Allee raises a challenging question that how intangibles such as employee competence, internal procedure, and external interaction and relations – that are important bases of any business - would be transformed to value and more important how to capture it.

The Allee’s model is more inclusive and has a holistic view to business ecosystem, social dimension and environmental beneficiaries. But even though, to have a complete view to analyze a network, we suggest all models need to be considered in combination as the first two models have some focuses on marketing and strategic dimensions that would be necessary to consider (Van Middendorp, 2010). A summary of three value network models shown in Table1 below;

Table 1: Main conceptual frameworks for value network view:

Author	Year	Theory	Proxy
Christensen and Rosenbloom	1995	<ul style="list-style-type: none"> - The context within which the firm identifies and responds to customers' needs. - Network borders are defined by product performance. 	Product value chain
Fjeldstad and Stabell	1998	<ul style="list-style-type: none"> - Single companies that create value by providing networking between customers. - Network borders include inter-firm relationships as well as relationships with customers. 	Firm and value chain partners
Verna Allee	1999, 2000, 2008, 2009	<ul style="list-style-type: none"> - Web of relationships that generates economic value and other benefits through complex dynamic exchanges between ... - Internal as well as external business relationships that contribute to value creation process. 	Organization with internal and external relationships in business context

Value Network Analysis

To capture overall reciprocity in value network and to have a list of requirement action we need to do value network analysis (VNA). The VNA model which proposed by Allee is a business modeling methodology that tries to identify and study the value network members as well as their relationships, interaction, exchanges, workflows, deliverable and assets exchange among members in value network considering internal and external parts. It visualizes a web of business network participants which interact together with interconnected relationships to exchange economic goods, benefiting each other to create economic value (Allee, 2008).

It is an analytical method which provides a map of network's interactions with a list of exchange and deliverables within each interaction. This method will identify where an organization needs to improvement. It identifies if there is missed interaction within business process or in the other side if there is unnecessary/extra activities there. It will illustrate how to improve the overall outcome or delivered value.

It is important to note here that going to details of exchanges and relationships should not cause system split by conjunction of role performance and firm performance (Allee, 2008, Van Middendorp, 2010), we need to consider system as whole as well as considering to necessary details.

2.2. Systems Thinking

In the process of assessing and implementing value network in order to preventing system split we need to have a systemic view to value network to have a holistic view and be able to address the issues with right solutions which would benefit overall system rather than just a split part as an island.

Having this view; would help managers to identify the value drivers, as critical factors to the long-term success of business relationships and provide them insights to take necessary actions, efficiently and effectively, among involve parties and workgroups in their value network.

For understanding the overall value creation pattern we need to extract value drivers and to define the causalities of the network. For this aim, as the value network is a system of

several organizations, in this environment we need to define the boundaries of the network correctly and to include as necessary participants as we require; not less not more. Choosing smaller border will cause to not considering some players/drivers and therefore we may not have the vision to anticipate “*consequences of their action*”. In the other hand if we extend our border of study more than what it should be, it will conduct us to “*unnecessary complexities*” which may not be relevant to our study and just make difficulty to find appropriate network model (Gharajedaghi, 2011).

Another issue in value network studies usually researchers consider organization as a close and static system and has lacked in complete systemic view. Having systems thinking view in value network study which leads to consider dynamic interaction and exchanges in overall context, would improve the researcher’s insight to capture important drivers.

The third issue in value network models is that within these studies consideration has been to knowledge exchange but the process of producing knowledge - rather than just its exchange - and the nature of tacit knowledge and more important the consideration of ever changing environment and dynamic aspects of business has been missed.

A systemic view of organization goes beyond this limitation and considers organization as a live system with a dynamic interaction and interrelationships with surrounding environment rather than static view with a close borders because combination of interacting organizations shapes - partly – the society (Peter Drucker, 1992). More specifically the business environment is a changing system which does not wend past way. Although the business process is iterating process, but future is not replication of history, we need to have a holistic and dynamic view to whole organization environment and interactions. This would help us to optimize current performance as well as predict future to anticipate the network requirements consistently and running the business sustainably.

This part will continue with a review on *systems thinking* which will illustrate the way of looking at value network as a systemic model; so we need to know *what the “system” is and how to think in “systems thinking” method?*

System is a term to imply an interconnected group of parts, interdependent together, organized and making integrated structure to accomplish something and “*produce their own pattern of behavior over time*” (Meadows, 2008).

Since this study is about business processes, here, the system's parts will be people, tools, equipment and any resources would be applied for design, produce, market, distribute and sale for given product or service. (Kirkwood, 2013 – p 2])

The systems theory argues problems and their causes should not study separately from other system component, they should be addressed by looking at their relationship to other component, or even other systems. They should be considered as an “*emergent property*” of a system as whole. And finally before suggesting any solution or actions, possible consequences which unintentionally would emerge in other parts of system due to our decision, should be considered (Dennis, 2002 - *Senge, 1990 and Capra, 1996*). This method of thinking helps to better understand complex management problems by looking at whole business network rather than just searching causes on seemingly related specific department or even inside organization.

Organizations made up by its member's moment-to-moment interaction in their operation field therefore the organizational structures will shape within these interactions and relationships among actors in specific time and space. This makes organization's existence dependent on their part's performance and behaviors.

Living systems are complex systems with interdependent relationships and interactions. Understanding this interdependency requires a thinking method different than analytical thinking. It needs “*systems thinking*” in which systems study as a whole in a holistic way; considering interconnectedness between components as well as their interaction and influence on each other (Gharajehdaghi, 2006).

In other side we have “system analyzing” method, that we can say when it confronts to complex problems tries to dissect system's components in to simple parts – or bits – to analyze individually and then put them together. It is a three step process in which it first cuts the system in to small parts or bits or say takes away the part it seeks to understand. Then in second step it tries to understand bits and explains that part's behavior separately, usually by studying them individually. Finally in third step it tries to use the knowledge of bits as a basis for understanding and explanation of the whole system by putting those individual behaviors together. (Gharajehdaghi, 2006 - p16 & Dennis, 2002)

There is two points about this method: first a system as whole is more than sum of its individual components. When we dissect a system to small parts or components, we lose some *emergent property of component's connectedness*. It means that not always by summing parts we can obtain the whole; summation is less than all together. It is because of interdependency and connectedness in systems. By cutting a system to its constituent parts, usually we will “destroy the system connectedness” and by breaking connectedness of a system we break the system itself; putting parts beside each other will not results the initial system any more. They should be altogether with dynamic interaction and necessary communications as well as interdependencies which will keep the system's connectedness. As the saying goes, in systems “*everything is connected to everything*” (Dennis, 2002 - p 6).

The second point about system analyzing method is that most of the systems show characteristics that are not properties of any of their component individually; these are *emergent properties*; a result of mutual interaction and dynamic interconnection (Dennis, 2002 - p 6).

In mechanical and non-living systems, where mutual interaction and interconnectedness is less, using analytical method may help us to understand that system. But specially in living systems the study of individual constituent parts, even very comprehensive study never can identify system-level characteristics. That may give us some insights about bit's behavior but mostly is unsuccessful to illustrate behavior of system as whole (Dennis, 2002).

In other side we have the “*Systems Thinking*”, versus the system analyzing method which uses different procedure. In contrast with system analyzing method which dissects system's components in to simple parts, systems thinking method for studying a given problem considers all system's components together with presence of all system behavior and interactions rather than focusing on parts individually when separated from system.

“It puts the system in a context of larger environment of which it is a part and studies the role it plays in the larger whole, with a comprehensive view”(Gharajehdagi, 2006 - p 27).

The method looks at events in a nonlinear causality manner with considering the presence of feedbacks and delays.

As an example, imagine a given teamwork that together and by using some tools, they can develop a task. To study the specification of this teamwork, as a system, we cannot just study this team's components (people and tools) individually and then putting all specification together to study this system or even to obtain overall view of this system. In this method something will be missed, *those which are the result of interaction and those which have time and path dependency: situational results and outcomes that are not certain*. We need to put all component of this system together considering their interaction and relations to be able to study their method and their overall ability. Same group members with different interactions will have different results either better or worse. They can do something in their teamwork which by just summation of individual work we never can reach (*Gharajehdagi, 2006; Senge, 1990; Forrester, 1971*) we can say '*the whole*' is greater than '*sum of individual parts*'.

There are five principles that together define the essential characters and behavior of a system: *Openness, purposefulness, multidimensionality, emergent property, and counterintuitiveness*. These principles "acting together as an interactive whole", therefore studying a system behavior and finding system characters needs to consider these principles altogether. Organizations also as "purposeful, multiminded" systems have these system principles (*Gharajehdagi, 2006*).

Cause and effect relationships inevitably associate with *time delay* and *feedbacks*. Time delay means a response to an input occurs over time rather than immediately after applying the input. This makes system changes take place after a time span; short or long time, depends on type of input and system's character. Feedback is adjusting the input, or in organization, the decisions; by monitoring of changes and current outputs.

In practice this will help managers to "perceive and evaluate the potential result and consequences of possible actions by understanding the complex interconnectedness of business problems" (*Dennis, 2002*), either inside or outside of organization, in a time span; immediate effects or long delayed consequences. Because "everything is connected to everything else", making wrong decision or taking bad action will trigger

some driver which in turn causes to popping up unmatched and unaligned consequences with no return way. And in the other hand eliminating its effects perhaps take much time and effort. Having this view would help us to make wiser decision to avoid unintended consequence of our decision.

Of course it is not just about systems specification and behavior, but the other side, the observer view also is important. The way the observer looks at given system and how he tries to interpret the system behavior, specifications and performance.

To Espejo (1994):

“The system—its identity, parts, and relationships—cannot be anything else but a construct or distinction by an observer; and different observers in different contexts and with different purposes may make different distinctions. In this sense, defining a system is viewpoint-dependent.”

For example an unfounded idea about a given system, which is based on different view, introduces different identity and relationships for that system. Therefore it can viewed as a new possibility of that system; a new distinction (although wrong view).

We will finish this chapter by raising the research gap in this context.

2.3. Research Gap

The current methods in value network modeling are helpful for business network analysis to identify where the firms need attention and investment. But the point is that business network like any live system should be stable to survive while it has dynamic adjustment and adaptation to ever changing environment, otherwise that network will decline and lose its operation domain or will force to collapse (Oksanen et al , 2010; Allee, 2008).

All political, environmental, social, technological and economical changes are potential drivers which impose new condition to a value networks as external forces. Of course it is not just about external drivers but also internal forces within value network borders, even though with less impact, are also drivers for dynamic adaptation necessity.

In business domain no one has sufficient resources to create value individually; value network is a platform to deal with this necessity. It provide a platform for resource exchange in which involved player could collaborate to co-create value for all parties.

But rapid and intensive changes imposed by competitive market, incentivize actors to move to other value networks while there is a network dependency between them. So organizations have to make necessary adjustments on their value network to be able to integrate required resources in which provide mutual collaboration context for all players. In this framework all parties will benefit from new participant and vice versa.

In most scholars value map is about participants, relationships and exchanges within current participants of value network. The question that would raise here is that, what about resources and capabilities related to new player that is going to integrate into current process? Considering the fact that this new player is not a network participant yet and is not align with overall network requirements, so how to develop value network models to include the analysis for new participant integration? Which developing process needs to be done for integrating process?

Therefore current looking to value network needs a little extension to include the integration process. In this regard organization's managers need to leverage proper activities or redesign related process, which in turn needs to access to even more resources to accomplish these adjustments. Required new resources are in terms of tangible or intangible ones e. g. knowledge, capabilities, new human resources, financial and natural resources; all of these are subject to new resource integration. This is the reason that we also need to analyze resources and resource integration process as precedence to deliverable value. The deliverable exchanges in the value network are the result of resource integration and matching process.

In value network models we assume resources are equal to deliverables but resources have not inherent value unless they integrate to given value network and would match to other participant's capability and network process as well (Gummesson and Mele, 2010). Otherwise we cannot consider them as potential role which could provide deliverables. Therefore in value networks prior to identifying the deliverable, resource integration analysis should be done. Deliverables are the outcomes of integration of resources in to current value networks.

This study is on the role of new resource integration in existing value network and the dynamic adjustment requirements for alignment of actors or say matching process, tries to provide insight to facilitate the integration process.

Chapter 3. Research Method

This chapter is about our research design and our research method.

The questions that rose in our mind and motivate us to study this subject were:

- How does new resource integrate in an existing value network? and
- How do value network participants benefit from resources that are under control of new participant? and
- How new participants can influence an existing value network?

We designed our research as shown in fig.1; influenced by design science approach to research model proposed by Von et al (2004).

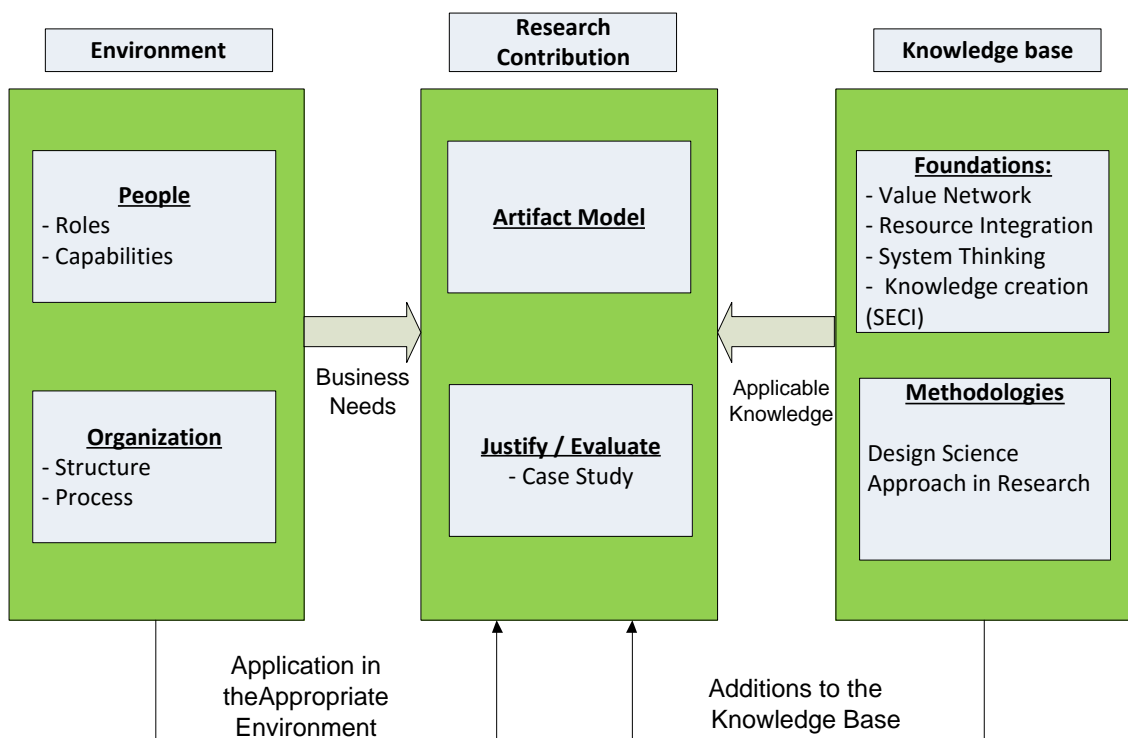


Fig.1: Design science approach to research

In our research the foundation of our knowledge is theoretical insights, models proposed in literature review as well as practical experience and observations of research team. The methodology is design science approach in research.

During this research, theories from literature were iteratively reviewed as a process of combination and hypothesis generation (Eisenhardt, 1989, p.536). Our research contribution is proposing a model and developing an insight to extend value network borders to study the dynamics of new resource integration into existing value network as inter-connected steps in value creating process. It is a combination of models proposed in literature; inter linking those models together to provide a holistic and dynamic view of the value network.

The environment within which our research applies is the business context in terms of people capability and roles as well as organizational process and structure (Von et al, 2004).

The study then continues by justification and evaluation in an exploratory case study that address how the proposed model answers the research questions. As a case study is an experiential research in live context to investigate a specific phenomenon, it used for exploration and theory generation as well as for explanation and proving a hypothesis (Eisenhardt, 1989, p.536). Case study helps to evolve a hypothesis or even it would conduct researches to new ideas and new phenomenon as it involves in real life with researcher's point of view as an external observer to system. It provides such a condition for researcher to study a phenomenon which is interlinked to their context. Cases usually choose to be studied based on their actual importance or theoretical conjunction to concept (Dubé & Paré, 2003).

We chose a single in-depth case study for our research. The case is involved in new resource integration in an existing organization. In this case study, both phenomena proposed by Dubé & Paré, (2003) – actual importance and theoretical conjunction to concept – are relevant.

The structure of case study starts by an introduction about the context and then description about the case, it continues by discussions around the case and reviewing

the proposed model and other related concept then it terminates by answering to the research questions.

This case study results from the authors personal own past professional experience and his observation on value network of described company. The case is about finding new supplier for a high-tech component. As there were some external changes in business ecosystem, which was out of hand of company's governor team, so the company could not supply that component from traditional suppliers anymore. They had to find new supplier and dealing with supplier power. As the component was a high-tech product and there are a limited number of suppliers for that component, so the company had to reconfigure their network e.g. to deal with new supplier and to make a lot of changes in existing relationships of company as well as reworks to be able to use this new component into their production process.

The point is that the problem that this company faced is not a rare problem; within business context any company or organization would face to similar situation in terms of relationships with suppliers and other partners, especially for project-type-businesses which all are unique. Just the intensity of changes and reworks may be less. As these were the cases for all projects that author was involved, just with different intensity or limitation from project to project.

Chapter 4. Proposed Model

This chapter starts by an introduction to proposed model and then continues by explaining the resource integration process mostly based on Gummesson and Mele (2010) model. Then the proposed model will explain on the last part of chapter.

4.1. Introduction to Proposed Model

In business domain rarely a single company has sufficient resources to create economic value integrally; value network is a platform to deal with this necessity. Earlier we outlined value network based on literatures (Allee, 2008, Stabell et al 1998; Christensen et al, 1995) as multiple interconnected firms with dynamic interaction and reciprocities, which share their resources in networked process and collaborate for creation a value as final target.

The notion of providing value for all participants in co-creation model, where all participants benefit from value creation process, equal to their contribution, indicates that organizations like any other live systems (Gharajedaghi, 2011) need dynamic adjustment and adaptation to ever changing condition to be stable rather than being in static position in which they would force to diminish and “*they will be reconfigured by more dynamic and stable competitors*” (Normann & Ramirez, 1993).

Looking at overall value network participants, while having a systems thinking view (Gharajehdaghi, 2006; Dennis, 2002), conduct our attention to new actor’s integration process into an existing value network. Having this view and keeping in mind the dynamic adjustment requirement for value network, would raise the need for dynamic adaptation for resource integration in existing value network. This encouraged us to look at the value network model using the value co-creation model proposed by Gummesson & Mele (2010) to identify compatibility between new actor’s resources

and target value network and also to find the dynamic adjustment requirement for value network.

4.2. Resource Integration and Matching Process

In this part we introduce resource integration process based on the model proposed by Gummesson and Mele (2010):

Resource integration is the inclusion of new actor's resource into current process of an existing network of actors. It indicates a "cultural and social process" which paves the way for new actor to become member of existing network to be involved in mutual collaboration to co-creating specific value. In this process new actor's resources should be compatible to existing participant's capability and expectation. Then they can establish mutual interaction which results in exchange of knowledge and other resources. Before integration process "*actors interface and evaluate each other in terms of resources, competences and processes*" (Gummesson and Mele, 2010) to identify the compatibility of new participant to current process of host network.

Once these evaluation and interactions takes place and both parties find that their expectations and needs are aligned (the matching process) then the new actor's resource will be a potential for co-creation of value. This alignment in terms of "*expectations, needs and capabilities*" is a necessity to cost reduction activities and to avoid inefficient relationships and interactions.

The integration process as described by Gummesson and Mele (2010); starts by interaction between participants which in turn takes place in three steps: dialog, resource transfer and then learning. These interactions would provide evidence for actors to be able to evaluate each other and would determine whether new player is a potential participant for co-creating of value or not.

If this alignment and matching takes place or at least the participant be prospect for that, further interactions would take place for co-creation of value. Then the integration of new resource will provide additional value for all of participants equitably to their contribution. To accomplish this, firms should be "*resource integrators*" who are to

manage utilization of different participant's resources effectively and efficiently toward creation of target value output.

By participant's resource we mean the resources owned by employee level as well as other market level players, like other firms in value network, and it is in terms of capabilities, knowledge, financial resources or any other assets. In all of these processes efficient and effective utilization of resources and assets is a determinant factor.

4.3. Proposed Model

Having a systemic view to value network and considering other drivers rather than internal drivers are a necessity for value network study. The environment which a given value network is a part of, continuously is subject to circumstances imposed by competitive market in which all participants face rapid and intensive changes. As mentioned before, firms need to access to other firm's resources to create a value, while the resources are scarce and "*firms are dependent on resources controlled by other firms*" (Ojala et al, 2014). In this environment, participants with rich-resources are more likely to change their position or even move to other networks in which provide bigger value for them (Oksanen et al, 2010). Specialization and diversity of resources would reinforce these situations.

These situations imply to the necessity that all firms have to dynamically renew or extend their network, especially when they face to changes that spurred by external drivers. External driven changes usually cause by market level players due to political, technological or infrastructure changes, these drivers are out of control of firms. In summary resource dependency and contextual changes are external drivers for accessing to and integrating of new resources.

As a result, dealing with such a dynamic and uncertain condition, requires that all firms could dynamically integrate new resources into their value network. They have to adapt to new situations, in order to improve value creation process and benefit from other firm's resources as well as providing benefit for them. This requires the integration of a new actor and associated resources into existing value network of organization. This process, as a common problem in business domain, results dynamic changes to value networks and imposes unwanted consequences to the participants. Following we will

explain the concept of resource integration into a value network in more detail by considering overall changes due to this integration.

Value network provides a platform for participant's interaction in which they exchange resource and co-create value for each and all of participants in such a way that overall activities converge toward creation of a final value. In the other hand we have resource integration model (Gummesson and Mele, 2010) in which dialogs take place between new entrance and existing participants of network, and then they transfer resources that would results in learning. Alignment between two parties in terms of capabilities and expectations is a determinant factor for learning and overall integration process.

In resource integration model, the concept of actor's resource access and their integration in existing value network for the aim of value network study needs more attention to capture the dynamic rearrangement of network process due to this integration. The value creation model proposed by Gummesson and Mele (2010) had been dedicated to resource integration and resource matching in value co-creation model, when we apply it to value network analysis we find the requirement of this integration in scope of all network participants. In this process we also need to find the influence of this integration on existing interactions, resources and processes of value network. In this view we can extend the value network study to include new resource analysis and integration process to illustrate how new entrance makes changes in network and how contributes on network's outcomes.

When the existing participants of value network have to integrate a new partner into their network, their current interactions and relationships would be influenced by this new entrance. By further development of a model by (Gummesson and Mele, 2010), fig. 2 outlines the value network reconfiguration model for integrating new participant. This model starts by selection of new participant, continues by interaction process in which participant evaluate each other, determining if they are potential partner. Then it tries to capture the required adjustment and rearrangement of existing process and finally mutual exchange and value co-creation interaction are modeled.

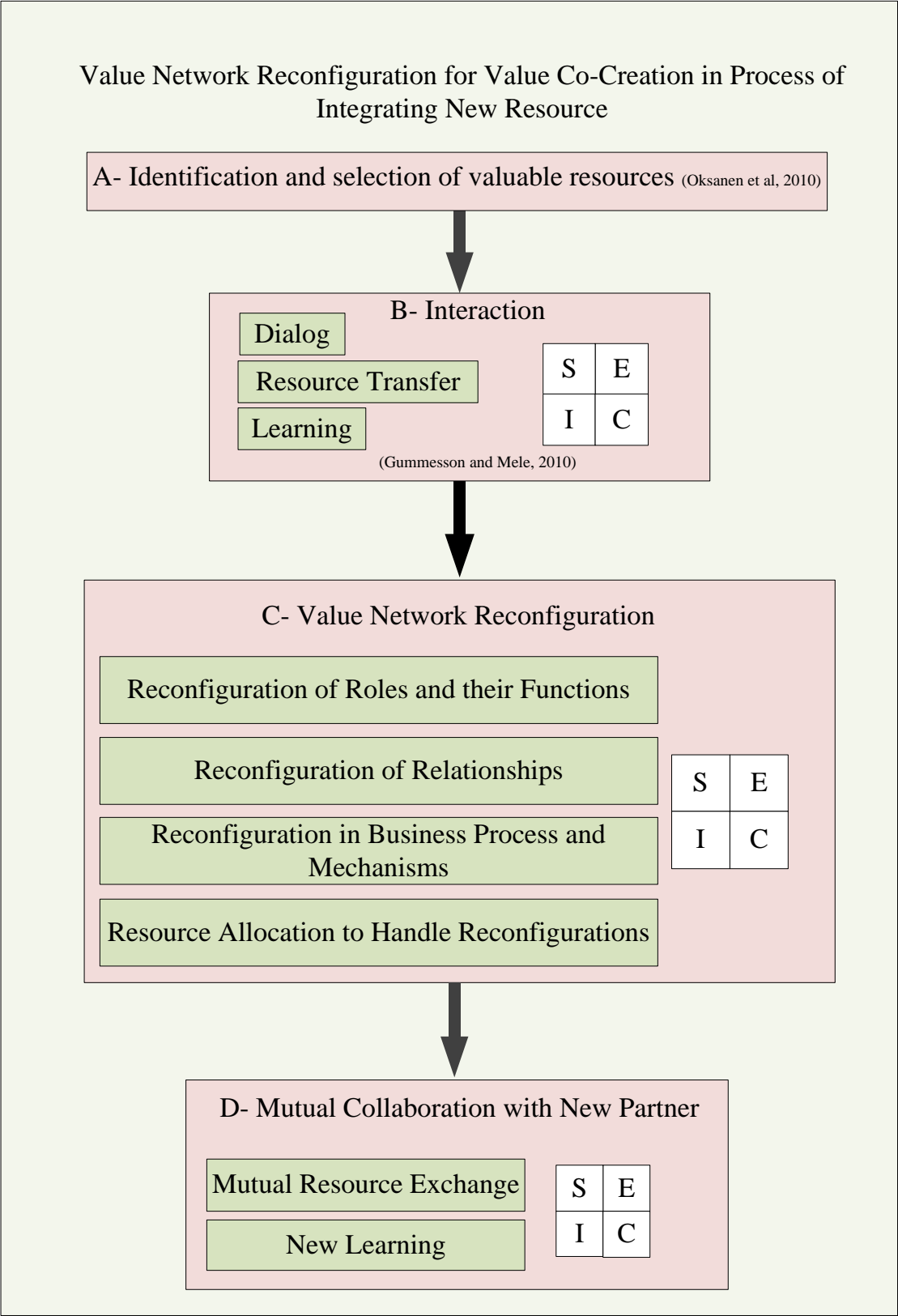


Fig. 2: value network reconfiguration model

The explanation of model would be:

A- Identification and selection of valuable resources

“Identification, selection, and management of effective and worthwhile resources and relationships” are prior to forming or extending a network that aims in value co-creation (Oksanen et al, 2010). In our model we capture this necessity by considering it, in the initial step and prior to integration; before new participant interfaces with the value network.

B- Interaction

Second step is the interaction model proposed by Gummesson and Mele (2010) in which participants interact with each other, they form dialogs and transfer resources which may leads to learning process. They distinguished purposeful dialog from simple interfacing; in purposeful dialog the knowledge and experience exchanges would take place, it will converge participant’s perspectives toward specific view and defined outcome. Shared view then converge different participant’s objectives to make a basis for creating value or even re-inventing the value in network.

In this process new actor’s resources should be compatible to existing participant’s capability and to their expectation. As Gummesson and Mele state: “actors *interface and evaluate each other*”, actors try to identify if this new participant would be aligned to current process of host network or at least to be prospect for that.

C- Value Network Reconfiguration

The third step is reconfiguration in value network; the existing participants of value network would make adjustment in their network to be able to establish mutual interaction and collaboration to exchange resources and knowledge. In this adjustment process which would be a reconfiguration or rearrangement on network we capture four types of changes that would take place to enable and facilitate the integration of new participant:

1- Reconfiguration of roles and their functions, this may appear in form of additional relationship and interactions within existing relationships; for example

in pre-integration conditions partner “x” has relationships with partner “y” then within integration of new participant due to new condition, more interaction between “x” and “y” takes place to exchange information or any resources or to negotiate new issues, this is in addition to previous interactions that in normal condition were in progress.

2- *Reconfiguration of relationships*, this may appear in forms of completely new relationships and interactions among network’s partners which in pre-integration process where not exist. For example between partner “x” and “z” inside value network there were not any interaction in pre-integration stage but due to new changes they have to have some interaction and reciprocities.

3- *Reconfiguration in business process and mechanisms*, this is when new roles would be emerged to carry out some extra interaction and relationships or business process need to be changed e.g. when design team need to change their design process due to new product specifications or when assemble team need to follow different procedure to perform their job.

4- *Resource allocation to handle reconfigurations*; utilization of resources to handle these new interaction and reciprocities, e.g. facilities, equipment, financial resources etc. are required to handle the adjustments which in turn may be subject to access to even more new resources. For example buying new tools and assigning new person for installing the components that are to be provided by new partner and allocating financial resources for learning or reworks.

D- Mutual Collaboration with New Partner

The reconfiguration in step C will pave the way for mutual resource exchange which in turn leads to mutual collaboration for value co-creation. This would lead to matching and alignment between new entrance and existing participants, as explained before, then provides a framework for mutual resource exchange in which more knowledge sharing and learning takes place. In this step partners would form social and economic capital which in turn is a source for value co-creation. It turns new entrance to a potential source of value co-creation. Therefore value creating process would take place by transforming potential

resource to particular advantage or asset for network as well as for participant itself (Lusch et al. 2008, p. 8).

This step will promote cost reduction activities and avoid inefficient relationships and interactions (Gummesson and Mele, 2010). Then by this stage the respective participant to new resource could be considered as a role in value network and it could be a potential to receive /deliver value from/to other participants.

In this sense the network interaction and resource integration provide the basis for mutual collaboration and value co-creation for potential resources to become a part of value network. In this view, resources do not have ingrained value but need to be applied and integrated into a network to be valuable (Gummesson and Mele, 2010).

Resources, include tangible and intangible ones, are shared and exchange by participants in compliance with their contextual assessment (Gummesson and Mele, 2010) of accomplishing specific targets. In this concern, for integrating a new actor into existing network, knowledge and skills, play important roles. The way of revealing tacit knowledge and sharing it between two parties and therefore the learning process or SECI model (Nonaka, 1994) is an important driver in integration process as well as in value co-creation. Thus providing a platform for knowledge creation in interaction process *and also in* reconfiguration process will leverage the process to better efficiency to improve the overall results. This platform will promote cost reduction activities and avoid inefficient relationships and interactions.

Utilization of knowledge and sharing it with others will result in knowledge extension and new knowledge creation. Knowledge grows as much as exchanges with no limits (Allee, 2008; Van Middendorp, 2010). In this context knowledge creation and learning exist in all steps so in this respect we capture it in SECI model in three steps of interface, value reconfiguration and mutual collaboration within our model. During dialog and resource transfer the learning process exist; consideration of the level of knowledge and skills in new participant and existing participants and the way participants share these knowledge and skills with each other, modeled by a SECI squares in interaction phase.

By passing this step; when both parties found this process as a valuable process which could result in value co-creation, then there would be network reconfiguration. Network reconfiguration will provide requirement for inclusion of new partner into value network. These requirements will fulfill by performing more interaction and relationships between existing partners. This process needs additional resources to perform activities. Additional resources are in terms of physical, financial or intangible collaborations which in turn also results in new learning. We consider this learning process of third step of integration by another SECI squares.

By providing the internal requirement for inclusion of new actor's resources in value network process, then resources will exchange to form mutual collaboration which also is with new learning.

In our model the existing value network had to make reconfiguration and rearrangement to be able to provide collaboration platform and mutual beneficiary for both sides (new partner and existing value network' partners). We believe that for integration process, it is not just new participant who has to be matched (aligned) to existing network, but in the other way the network as overall have to make reconfiguration and process-adjustment to be matched to new participant. The dependency of value network to new participant's resources is a determinant factor for these changes; the more dependency a value network have to a new resource, the more adjustment the value network need to do for collaboration.

Chapter 5. Case Study

The structure of this case study starts by an introduction about the context and then description about the case, it will terminate by discussions about the case, reviewing the proposed model and other related concept as well as research questions.

5.1. Introduction to the case study

Here we are going to study a business case about an EPC company. EPC Company is a turnkey contractor which provides Engineering, Procurement and Construction services to make a complete project. In this case the project is a medium voltage (66 KV) electrical substation. The company's relationships with traditional suppliers of a high-tech component affected due to some external changes that were out of hand of company's governance team. Traditional suppliers of this component were a limited number of high recognized international brands in high-tech industry.

The company's managers then got trouble to supply these components especially for one of their ongoing projects that was under manufacturing and construction. They had to find new partner for their project. This study is about the way they dealt with the challenges of finding proper partner and integrating this new partner's resources in current process of their value network.

This case study results from the authors personal own past professional experience and his observation on that company. However, for the sake of confidentiality, the name of the company and suppliers will not be revealed. The point is that the problem that this company faced is not a rare problem, any company or organization during his relationships with suppliers would face similar situations. As this also was the case for other projects that author was involved, just with different intensity or limitation.

5.2. The case study

During this study we use the term “contractor” to point to this EPC Company’s name. This “contractor” is a multidiscipline Engineering, Procurement and Construction Company that makes electrical substations in collaboration with a number of other companies e.g. equipment producers and service providers.

They have partnership with equipment suppliers, component producer, construction and installation companies and etc. all of these producers, service provider and also contractor’s internal team-works collaborate to construct an electrical substation. The process includes designing, supplying the material and equipment, constructions and finally equipment installation and commissioning.

Client is final owner and usually operator of electrical substation. The process of making an electrical substation within study context starts when client issues a tender between prequalified companies. Then invited companies propose their price and technical specification offers. The client’s contract-team will review the proposals and will select a company as general contractor based on its profile, technical offer and price offer.

The company that is bid winner has to work under supervision of a consultant which is an independent third party which also assigns by client to oversee the project progress and controlling the quality of work. By starting the contract, contractor receives the site to start to work. First step is “general designing” of project. After this stage and before further development of project, the project’s consultant should confirm the general designs. If there is any tolerance between consultant’s standards and the designs, contractor will apply consultant requirement on design or will convince them to not to do so. For major component of project the supplier name should be cleared in this stage. This is because further development of design and construction will depends on the supplier brands. As each supplier has its own style of design-standards and configuration, therefore utilizing another brand would influence the designs and requires reworks.

Supplier brands should be among vendor list of equipment and material supplier. Vendor list is a list that client attaches to tender document and also to the contract, with the name of qualified producer for project’s equipment, component and materials. This

list usually is based on technical specification, quality and references of producers. Contractor can choose any of suppliers within that list based on his preference but no supplier out of list is permitted. Contractor preference could be the price or time delivery or other aspects concerning to overall portfolio of organization and its strategy. The component quantity, detail functions and its configurations need further development in design. These specs will be clear in second stage of design that is “detail design”. Once this agreement for general design take place, contractor proceeds detail design of project’s drawing. Depends on project scope and work-load of design teams, the detail design works may takes between six months to one year. The quantity and configuration of major component will be defined after this stage of designs. These works also need to be confirmed with consultant.

Once detail design finished and consultant confirmed the work, then procurement team will receive list of equipment and material which should be supplied for project (Bill of Material). So the procurement team proceeds the enquiry of price and time delivery.

Then product supplier for each component will be contracted so supplier will start to produce project’s specific products or say customized product. Majority of products should be produced based on projects specific requirements. The production of some of components like electrical panels would accomplish with collaboration of two or more suppliers.

Electrical panel manufacturing assembles electrical component into a metal enclosed structure and make electrical wiring between those components. Their work is based on detail designs and component lists. These documents produce by contractor’s designing team with collaboration of another partner named “automation designing company” (AD-Co.).

Among electrical components there are two important, high-tech components in electrical panels: “control modules” and “protection relay” (C&P); there are a limited number of producers in world which are producing these C&Ps.

This C&P system’s brand is determinant for designing, assembly and wiring connections of electrical panels as well as for some of other equipment. As each manufacture has its technical specification and design methods for its product which in turn is based on manufactures patents, internal design-style and protocols. The detail design, assembly, connection and operation of project are defined by C&P’s

specifications and brand. If C&Ps producer change, different design and assembly processes will require. So in summary working process in electrical panel manufacturing and some other partners depends on the C&P's brands.

These C&P equipment also need a software to be able to connect to central control room for operation. This software is "substation automation system" (SA system) which also produces by C&P itself. Each manufacture again has its software and it is different than other producer's software.

Products description and function should be cleared in "detail designs" stage which is six month to one year after "general design" stage. Although the contractor usually make a pre-agreement with suppliers in initial stage of "detail design" and starts to make detail-design based on this product, but the purchase request and official contract with suppliers will take place by a big delay after starting the project. This makes a lot of economical and relational problems, especially when economy are unstable or when national and international decision makers could influence company's relationship and reciprocities. This was the case with one special project of this contractor as during this time span, some problems aroused, so the pre-appointed suppliers were not willing to deliver pre-agreed equipment and products for ongoing projects. As there was no official contract; just a non-official preliminary offer was proposed in initial stage of "detail design". We need to express that in this time span designing was developed and assembly site were start their work based on the assumption of receiving pre-agreed brand components.

Facing this problem, contractor (with AD-Co. together) had to search for new suppliers that could supply these components. Their searching result in a company named "supplier-A" (the real name for confidential reason will not revealed and we use term "supplier-A" for it).

As supplier-A were not in initial vendor list in contract, so the contractor had to prove that new supplier's technical capabilities meet the projects requirement and client expectation and to provide these demonstration for client and consultant. If so, the integration process could initiate otherwise they had to search for another supplier.

References that a given supplier have, helps the contractor to understand if their components could perform desired functionality during operation of system or not, as the accuracy of component is very important point.

Supplier-A had not enough references to demonstrate his technical capabilities so there was uncertainty about this product. The risk was high because contractor and AD-Co had to change the designing and the manufacturing process based on this product. It needed a lot of reworks and costs with no certainty about outcomes.

After a complete review on product specification and technical characteristics of that product, contractor found that it is not a good partner for their value network as their capabilities were not match to expectation of design-team, AD-Co, consultant and client as well.

Finding this fact, the contractor continued searching to identify other capable producers which could provide such a component that meet the project's requirement and also to meet other participant's expectations. They found supplier-B (again the real name of supplier for confidential reasons will not revealed and we use term "supplier-B" for it) that based on its product specifications and to their references, it was capable of providing technical quality C&Ps and SA system.

Information exchanges between technical-teams of both parties started by emails, phone calls and meetings, then enquiries from references provided enough technical evidences for initial approval of this supplier. Integrating process of supplier-B started by the meetings between commercial teams of two parties, followed by technical workshops and factory sample tests. Factory sample tests provided enough evidence for them about potential capability of product to meet requirement of all network's partners and the projects operation requirement in overall.

There were some other issues to be solved, first this supplier name was not in vendor list and contractor was not allowed to buy its product.

Second issue was about detail design criteria; supplier-B's component were not match to detail designing, as designs were based on other supplier's product, so they could not use this product in current design of project.

Considering overall projects requirement, it was not such a big issue to solve latter problem. It was matter of cost and time as the contractor and their partners had to rework in designs to make modifications according to new components. Additional delay to selecting C&P components would lead to even more delay in project delivery. Considering the project's overall condition as it was in delay, while client need to put it

in operation as soon as possible, it was reasonable to dedicate such an effort to proceed works.

Initially the contractor had to deal with vendor list issue to convince client and consultant to accept new vendor. Establishing a number of meetings with client and consultant in different levels and team-works e.g. tendering team and technical team paved the way for convincing them. Consultant was almost convinced as its representatives were participated in technical meeting and factory tests.

As this change spurred by external drivers in national and international level, finally contractor could convince clients to accept this new vendor and also their acceptance for some financial compensation.

Then the contractor and AD-Co need to make changes in designs to be able to use supplier-B's product in their production process. For more technical clarification to making the designing team more familiar with technical detail of product, during this stage they had a lot of telephone calls, emails and meetings by supplier-B.

This was especially important because there were no time for trial and error. By acquiring the required knowledge, the design team start to make modification and changing the drawing; a lot of changes and adjustments were required to be done.

When these design modification became ready and before to be sent to manufactures, confirmation of the project's consultant was required. Finally those changes were approved and drawings sent for shop level to be manufactured by electrical panel manufacture. Based on these new drawings the panel manufacture had to make a lot of change in their production process to make electrical panel match to new components. Some of other products' producers were also influenced by these drawing modifications, but not as much as panel producer.

Although panel manufacture company received components by delay, they asked for intensive working because of overall project delay. So they put more workforces on this project and asked them for overtime works, finally they delivered electrical panels in half time as it was in normal working conditions.

Then installation and testing process took place. Test sub-contractor also had some meeting with AD-Co and some information exchanges with C&P supplier to learn testing methods for these components. Finally the contractor put the project in operation successfully.

In summary changing the supplier of C&R components and SA system in the middle of project caused lot of changes in project process as well as associated time and cost.

5.3. Discussion

The case that we study was involved in new resource integration while the resource scarcity led to big problems for identification and integration of new partner in the existing manufacturing process. The contractor team and network finally could integrate a new resource in their network while some cost and delay imposed to their process. This process provides them insight to be able to anticipate to similar problem for other ongoing and for future projects.

In this integration process the existing value network had to make a lot of reconfiguration and rearrangement to be able to provide collaboration platform and mutual beneficiary for both sides (new partner and existing value network' partners). We find that for integration process it is not just new participant who has to be matched to existing network, but in the other way the network had to make reconfiguration and process-adjustment to be matched to new participant. Of course it was because of the dependency of value network to new participant's resources; the more dependency they have, the more adjustment they need to do for collaboration.

During this integration process; partners formed dialog, transferred resource and they learned from each other. But the point is that within integration process or during the process of application of new product into value network (modification of drawing and installing the component in electrical panel) the contractor had to reconfigure their value network and in turn utilizing even more new resources; new human resource to accomplish new emerging relationships and reworks, financial resources to cover extra cost and etc. In this case the required reconfigurations were more intense as the replacement procedure took place in the middle of project (in detail-design stage).

In table 2 we made a summary of reconfiguration and rearrangements process that due to this integration process the value network had to perform and we mapped them into the proposed model.

Table 2: Value Network Rearrangements/ Reconfiguration for Integration Process

Event	Represented stage in the proposed Model
additional relationships between client and contractor's teamwork	Reconfiguration of roles and their Functions
additional relationships between consultant and contractor	Reconfiguration of roles and their Functions
additional relationship between contractor's design-team and panel manufacture as well as to other equipment producers	Reconfiguration of Relationships
additional relationship between contractor's project management team and panel manufacture as well as to other equipment producer's management team.	Reconfiguration of Roles and Functions
changes in design process to use new product	Adjustment in Business Process and Mechanism
reworks to perform modifications in designs by existing engineers or new hiring	Adjustment in Business Process and Mechanism / Resource Allocation / SECI model
reworks to perform modifications in panel manufacture assembly and other producers	Reconfiguration of Roles and Functions / Resource Allocation / SECI model
new design method in AD-Co	Adjustment in Business Process and Mechanism / Resource Allocation / SECI model
new learning for contractor's project team in terms of negotiation and cultural differences and learning to how to negotiate	Reconfiguration of Roles and their Functions / Resource Allocation / SECI model
test and commissioning process changed to match to new system.	Adjustment in business process and mechanism/ Resource Allocation / SECI model

The final part of this chapter is a review on research questions we asked in our research design:

1- How does new resource integrate in existing value network?

The existing value network (contractor and their partners) had to provide a platform for dialog, resource transfer and learning. They reconfigured roles and their functions to facilitate dialog. Then within these interactions there were knowledge exchange so the current partners of network learned about product specification by attending in workshops and factory sample tests; this was intangible part of resource transfer. Tangible part of resource transfer was product

and costs associated to travel and meetings and reworks. The reworks that performed were also facilitating this exchange and integration; new revised drawings, installing the product in electrical panel and rewiring the electrical connections.

2- How do value network participants benefit from resources that are under control of new participants?

- The contractor with the help of other participants used this new product in their manufacturing process while avoiding more delay and extra cost to project. (In this situation cost associates to delay, as it relates to overhead expenses, delay-penalty and subcontractor's claims for their extra expenses.)
- The contractor found new supplier as a new alternative for other projects. They used this product in their ongoing and future project without exposure to delay and extra costs. They could anticipate the situation and take proper action.
- It was not only the contractor that need this supplier, but in the other side, the new supplier also need contractor as starting point for entering a new market. By knowing this fact the contractor could make better negotiation and deals with the supplier.
- By spending money and time they could successfully rearrange the network and adjust the process as there were no other alternative for that.

3- How new participant can influence an existing value network?

- Reconfiguration and rearrangements that took place in this value network, either emerging of new roles and relationships or additional interaction within existing relationships, all were due to the process of integrating this new partner.
- Extra cost and time imposed to project due to rearrangements and also reworks. Costs for reworks, additional interactions and also associated costs to overhead expenses because of delays.

As demonstrated with this exploratory case study, the proposed model integrates the answers to the research questions by explaining the dynamics of network reconfiguration and the underlying learning process.

Chapter 6. Conclusion

In this research we explored value network borders to study the dynamics of new resource integration within the existing network. We proposed a model that is inter-connection step between resource integration and value creating process. This proposal results from an integration of different models proposed by authors, to explain the dynamics of resource integration in a value network. This was achieved by inter-linking those models in order to provide a holistic insight on the dynamics of the value network. In this study we try to explain the process of integrating a new participant into existing value network by proposing a model. During this research we also tried to study the impact of new participant on dynamics of an existing value network.

We find that matching is not just about adjustment of new entrance to an existing network but as shown in this case it is also adjustment of value network as whole to new entrance specifications; the level of required adjustment depends to the degree of network necessity and the level of scarcity of resource. It seems that the more dependency (necessity) value network has on the new resource, the more reconfiguration and adjustment they need to do for collaboration.

We also identified that existing value network as whole will be affected by new entrance. Rearrangements or even new reconfiguration in value network would be required for integration of new partner to become a part of value network and to involve in value co-creation process. But the integration process itself would also influence the degree of changes that are required for this integration. The level and intensity of changes depends on:

- The way that existing participants communicate to and interact with new entrance to form dialogs, transfer resources and learn from each other.
- The way that existing participant communicate and coordinate internally, to handle resource transfer and learning process.

- The scarcity of new participant and its power in the market.

We will conclude by pointing to the limitation of this study and possible future research:

Limitation of this study is the observation of the subject from point of view of only one person; it is recommended to include different perspectives into the study; that would be the subject of future studies in this context. Also studying more evident cases in different industries with the perspective of different observers is another possible research subject. Another subject regarding possible future research on this context it would be interesting to answer to the question of how existing value network would influence new participant itself?

Based on the early results of this study we would recommend managers that concerning to reconfiguration of value network and deal with uncertainty especially for those drivers that are out of control of organization governance, the identification and selection of external valuable resources should happen before the resource integration process; then effective mutual interaction and efficient learning process would facilitate the intended integration process. This would help managers to optimize their relationships and make balance between the reciprocities and workflows within their value network.

Chapter 7. References

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