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# Understanding Relationship Value Applying a Cognitive Mapping Approach: A Customer Perspective

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# Understanding Relationship Value Applying a Cognitive Mapping Approach: A Customer Perspective[1]

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## Abstract

Value creation as a process achieved in a business relationship has turned out to be one of the fundamental questions in B2B marketing. We put forward the hypotheses that the value of a business relationship presents a particular combination in time of economic and non-economic (social) components, which are interrelated. Both the buyer (purchasing) and the seller (marketing) always have their own interpretation of business relationship value. A cognitive approach is implemented to shed light on the collective representation of a value phenomenon and to understand the three levels (episode, relationship and network) and two-dimensional conceptualization of focal relationship value. Our research focuses on understanding, representing and a further measuring of the economic and non-economic components of the value of a business relationship using a causal mapping technique.
**Keywords**: value, business relationship, causal mapping, cognitive approach

## Összefoglalás

Az üzleti kapcsolatokon keresztül létrejövő értékteremtés folyamata napjainkban a szervezetközi (business) marketing alapvető kérdései közé tartozik. Kiinduló hipotézisünk, hogy az üzleti kapcsolatok értéke egymással összefüggő, gazdasági és nem-gazdasági (szociális) elemekben tevődik össze. Mind a vevő (beszerző), mind az eladó (marketinges) saját maga interpretálja, értelmezi az üzleti kapcsolat értékét. A kutatásunkban alkalmazott kognitív megközelítés lehetővé teszi az érték kollektív megjelenítését, és a fokális kapcsolati érték háromszintű (epizód, kapcsolat, hálózat) kétdimenziós megközelítését. Az üzleti kapcsolatok értékének gazdasági és nem gazdasági elemeinek megértésére, bemutatására és mérésére a kognitív térképek módszerét használjuk.
**Kulcsszavak:** érték, üzleti kapcsolatok, okozati térkép, kognitív megközelítés

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„Az üzleti kapcsolatok értékének elemzése a kognitív térkép módszerével: a vevői oldal" – A műhelytanulmány az „Üzleti kapcsolatok az értékteremtésben" c. OTKA F037789 kutatási projekt keretében a BKÁE Vállalatgazdaságtan tanszéke által rendezett 2003. december 18-i minikonferencián elhangzott előadás alapján készült.

## INRODUCTION

The purpose of this research is to define characteristics of business relationship value seen from a customer's perspective. Value creation is a cornerstone of business marketing (Anderson and Narus 1999), it enable us to appreciate the dynamics of the relationship. In this case, value presents what a customer firm expects in exchange for customer contributions. Relationship value can be defined as the trade-off between benefits and sacrifices through creating needs and expectations in customer and satisfying them afterwards. In the business market the fulfillment of the buyer's expectations is achieved in an interactive buyer-seller relationship (Hakansson 1982, Turnbull and Valla 1986, Ford et al., 1998).

The research objectives of our study concern the elaboration of a framework of business relationship value. We consider the three levels of value: episode, relations and network. There have been many research studies treating value on an episode level between the customer and the supplier. The supplier delivers an offering, and the customer benefits from it. That creates the value of this business relationship. Publications on relations' level of value are relatively recent. This level is characterized for example, by the development of a good climate for doing long-term business. The network level of relationship is less explored. The value on this level comes from the connected relationship. In our vision, this value is an interaction between these three levels, which also corresponds to the manager's "thinking" (Johnston et al., 1999).

To elicit and understand the "thinking" of managers we use the cognitive mapping approach (Bougon, 1992; Eden, 1988) in the form of causal maps. We aim to acquire a collective understanding of business relationships value based on individual understanding of this value seen by managers involved in the same relationship.

Two research questions are addressed:

- What is the managerial representation of their business relations?

- What are the perceptions of value seen by each involved actor and what is the collective perception of this value?

The paper starts with a description of the framework of business relationship value. Then the cognitive mapping technique is presented as a basis of the research methodology. Thirdly, the major steps of the developed methodology are formulated and described in detail. Finally, the discussion of an application of this approach to the real case study of one French company in a space industry is given.

## Business relationship value: a conceptual framework

Business relationship, which occurs between a customer and a supplier demands different levels of effort in terms of investments (money, time, and skill), organizational learning, adaptation, commitments and trust building from both parties (Ford et al. 1998). Exchange episodes (products/services, financial, information and social) are the building blocks of the business relationship, and the frequency of these episodes can build and strengthen this interactive relationship. Each company in a business market sustains a range of relationships with customers and suppliers, and a focal relationship is not isolated from others, but closely linked. Therefore, today, a profound understanding of the structure and dynamics of a business market is linked with the concept of the network. Thus a conceptual framework of the three levels of business relationship value: episode, relations and network is suggested.

There exists a number of research works evaluating the customer value on an episode level. The main stream of studies define the value in monetary terms; however some researchers consider that this is not sufficient and suggest offering as a non-economic assets of value that also needs to be considered. Describing value from the economic aspects, Anderson and Narus (1999) define value in business markets as "the worth in monetary terms of the economic, technical, service and social benefits a customer firm receives in exchange for the price it pays for a market offering" (Anderson and Narus 1999). Their value concept is

based on benefits and calculates the difference or trade off between perceived worth and price paid (Anderson et al 1994). On the other hand, Ravald and Grönroos (1996) argue that a relation consists of episodes. They are referring to Monroe's definition of customer perceived value as the quotient between perceived benefits and perceived sacrifice. The perceived benefits are a combination of attributes (physical, technical, service) in relation to the particular use, the purchase price and other indicators of perceived quality. The perceived sacrifice contains all the costs the buyer faces when making a purchase (e.g. purchase price, acquisition costs, transportation, installation, order handling, repairs and maintenance, risk of failure or poor performance). They emphasise that the customer-perceived value of an offering is the utility or the outcome of buying a good or a service. The offering contributes to buyer performance and must be perceived by the customer as a greater net-value then the competitors' offering. The analysis of offering and the manner in which it influences the customer's perception of value affects the climate of the episode. The climate becomes in some ways a variable of the episode relationship value. It effectuates an evaluation of exchange and leads to considering consequently the climate and value.

At relations level, we observe business relationship value in a long-term perspective. Although "value creation and value sharing can be regarded as the raison d'être of collaborative customer-supplier relationships" (Anderson 1995 pp.348), publications about relationship value are relatively recent (e.g. Wilson 1995, Flint et al. 1997, Jantrania and Wilson 1999, Ford and McDowell 1999, Walter et al. 2001).

Jantrania and Wilson (1999) conceptualise relationship value by three dimensions as economic, strategic and behavioural (psychological) ones. The economic dimension consists of cost reduction, value engineering, investment quality and concurrent engineering effects of the relationship for both parties. Relationships should be driven by different strategic goals. Through the relationships partners can gain competitive advantage, force their core

competencies or create market position. Behavioural dimension contains social bonding, (Holmlund and Kock 1995), trust and the culture of the relationship. "With time a hybrid culture develops that will help bond the relationship. The culture is likely to carry values from both organizations and may develop values not present in either organization" (Jantrania and Wilson, 1999). To assess relationship value they suggest to begin with the economic value, then to evaluate the strategic one and finally to estimate qualitatively the behavioural value (Jantrania and Wilson, 1999).

Ravald and Grönroos (1996) go beyond the above definition by adding the variable of climate. They argue that "safety, credibility and security contribute to a reduction of the customer sacrifice, and this is something we believe that the customer finds essential and very valuable." (Ravald and Grönroos 1996) They emphasise the importance of continuity in a customer relationship. Considering value as a means of bonding customers "the discussion should not be limited to value-adding features in the offering. Customer perceived value needs to get a deeper understanding, a deeper meaning - a meaning which does not only relate to episodes, but to the expectations of the customer and the responsibility of the company to meet these expectations in a long-term relationship. Then customer perceived value can be increased on an episode level as well as on a relationship level" (Ravald and Grönroos 1996).

At network level, we distinguish two possible forms of network: chain and connected relationship. For the first form, we focus on "a set of independent firms that work together closely to manage the flow of goods and services along the whole value-added chain" (Johnson and Lawrence .1988, Payne et al., 2001). Stabell and Fjeldstad develop models of the value chain in terms of primary and support activity categories, driven by the cost and/or value system (reputation, scale and capacity utilisation). The reputation improves access to the best clients and projects in the network.

For the second one, we consider that value is created. thanks to "connectedness" (Kothandaraman and Wilson, 2001). As a consequence of connectedness, the different elements of this value seem to be non-economic. Here, the concept of value is close to the network identity construct (Anderson at al. 1994 pp.4) which "is meant to capture the perceived attractiveness (or repulsiveness) of a firm as an exchange partner due to its unique set of connected relations with other firms, links to their activities, and ties with their resources." The reputation is similar to actor-relation generalisability but the signs may or may not be harmonious to other relations (Anderson at al. 1994). The phenomenon of transferability and complementarity of resources as well as activities between different relationships in the same network (Anderson et al. 1994) presents dimensions of value at network level.

The number of connections between actors in the networks grows and brings out the possibilities of value creation (Blackenburg Holm at al. 1999). A structural model of business relationship development in a business network context demonstrates a casual chain from business network connection (supplier's other customer, supplier's supplier, customer's customer, customer's supplier) through mutual commitment and mutual dependence to value creation in terms of profitability with the relationship of both the supplier firm and the customer firm. The connectedness also implies not only creation but also possible deterioration of relationship value. We could anticipate the constructive effects on network value as well as the deleterious effects on network value similarly and in the spirit of Anderson et al. (1994). The deleterious effect (resource particularity, activity irreconcilability and actor-relation incompatibility) could be a predictor of dissolution (Dwyer at al. 1987).

A synthesized framework of the business relationship value considers three interrelated levels, and the two major components of this value (Mandják and Durrieu, 2000). The value of a business relationship presents a particular combination of economic and non-

economic components .The complexity of the system increases at each level, and the boundaries between economic and non-economic (social) components become more perceptible. Better understanding of this value and particularly of its nature at the network level is considered necessary. Business relationship value is always perceived, not only by one person, but also by a group of people involved in the relationship on a buyer's side. The collective representation of this phenomenon depends on individual mental models (Bendapudi and Leone, 2002) used to build up the capabilities for a more market-driven organization. A collective representation of a hierarchy of aspirations, strategic issues, problems and strategic options seen by each member can be represented in a causal map, which will help a managerial team to structure a problem and facilitate mutual understanding (Eden 1988).

## Cognitive mapping technique: an approach to understand business relationships value

The cognitive mapping approach allows us to bring out the "thinking" of managers. Causality reflected through causal maps is one type of cognitive relationship that has been widely used in the studies related to the understanding of managers' intentions and outcomes within a decision making process (see for example, Jenkins and Johnson, 1997).

In 1976, Axelrod R. introduced cognitive maps in organizational studies for analysis of politicians' decisions and the decision-making processes. During the last 20 years, the idea of a cognitive map has been crystallized. Weick & Bougon (1986) defined a cognitive map as a pattern of personal knowledge of an individual obtained through personal organizational experience. Eden and Ackermann (1998) suggested using the word "cause" and not cognitive to distinguish the fact that a cause map is an organized representation of the way in which a person believes a problem has come about (thus it is related with the questions of causality)[2].

[2] The book of Eden and Ackermann (1998) provide an excellent overview of the current state of the field.

It is natural that different members of a group have different individual maps as they have different visions on the particular subject. The use of the cognitive mapping approach lead finally to a coherent system to be used among all the respondents. A collective map of a group in our approach is seen as a collection of the shared beliefs of group members involved in a business relationship.

The construction of a collective map of a group is based on the results of the comparative analysis of ideas and links represented in individual maps. This implies the profound analysis of each causal map. The comparison of causal maps helps to identify the similarities and differences between individuals, develops an instrument for measuring the agreement between individuals and defines the zones of common interests and tensions (Bougon 1992).

## Major steps of the developed methodology

There are four major stages in the process of evaluating a business relationship based on the proposed cognitive mapping approach that are described below.

**Step 1. The process of data collection**

The process of data collection aims on listing all the ideas related with business relationship value. The pool of participants (people who are knowledgeable in the discussed area) was asked to think about the problem and compose a set of concepts or ideas, which they consider important for a discussion by a managerial team. This list of concepts (around 50-100) is based on individual interviews, group discussions, with some further concepts added from the literature reviews and consultations with experts in this field.

**Step 2. Validation of the final list of concepts and elaboration of categories by the team;**

A managerial team (of 6-10 members) presents the people involved in a business relationship. Members of the team are asked to analyze the ideas in the list and take out those concepts they consider non-appropriate for the context of the business relations they are

involved in. They are suggested to start initially with a standard scale evaluation of the degree of importance. A final list of concepts is validated in the process of a group discussion facilitated by a researcher. To make easier an application of causal mapping technique and a construction of individual causal maps, a managerial team groups the ideas into categories during an interactive discussion. A facilitator does not participate in this elaboration; his role is limited to formalizing the suggested categories. The number of categories is limited between 10 and 30 to minimize the time on an individual causal map construction and avoid the messy complexity of these maps. In order to construct individual causal maps each participant is asked to work on the elaborated categories and link them in together.

**Step 3. Analysis and comparison of individual maps**

Each individual map is analyzed with the following criteria: the complexity of a map[3], its density[4], ranks of concepts according to the principle of domain centrality[5].

[3] Complexity is calculated as a ratio of a number of links to a number of total possible links (M*M-M)/2, where M represents a number of ideas in the map.

[4] Density presents a total sum of numbers of links multiplied by the number of concepts with this number of links for each map

[5]The rank of a concept is determined by the total number of links for each concept forming the intermediate domain; the highest rank of 1 is assigned to the concept with the greatest number of links. More the concept is linked with others, more central it is – this is the principle of domain centrality.

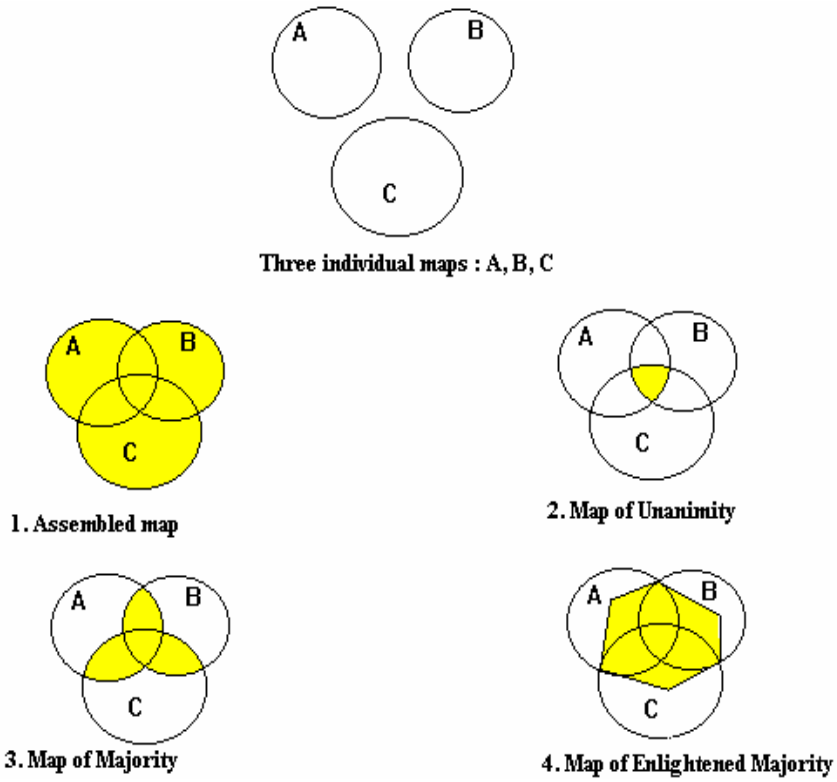



**Figure 1. Four types of a collective map of a group of three individuals.**

Several individual maps can be assembled in *an Assembled map* which contains all the concepts and links chosen by group members. It is normally too complex for analysis and group discussion. The comparative analysis of individual maps succeeds in emerging common concepts and common links chosen by all participants. This approach allows us to construct *a map of Unanimity* which is the map of common elements. A *map of Majority* is determined by the concepts and links common to the majority of individuals - (K/2+1). Then we propose to create a map *of Enlightened Majority,* a type of aggregated collective map. The criteria used for this map integrates two principles that of domain centrality and of democracy[6].This map (Fig. 1) contains all the concepts and links common to all individual maps; concepts that are the most valuable for the majority of individuals (K/2+1) in the group; concepts of the highest rank in the individual maps.

[6] Democracy in our definition permits each participant to see that the most important (centrality aspect) for him concepts are included into this collective map of a group.

**Step 4. Construction and validation of the final collective map of the team**

We undergo the quantitative analysis of distances between all individual maps, calculate the average number of links between concepts for a group. Distance ratios are calculated according to the methodology of individual by individual (Langfield et all. 1992) and each individual map by a summary map.

The quantitative analysis of individual maps is helped considerably through a qualitative analysis. This analysis specifies the nature of the shared vision of the group necessary to structure the discussion and construction of a collective map of the group. ANCOM enables us to explore and compare the elements of the map, which are the most significant for all the group members (see for example, for the detailed explanations of this quantitative issue [Chameeva et all. 1997].)

The discussion of a final causal map, which is validated by the team members, stimulates an exchange of views, presents a better understanding of each team member's reasoning and a shared vision of business relationship value and helps to attain the collective knowledge concerning its value.

## Case study of one French firm in the space industry

We present the results of one real business relationship case study applied in the French space industry. We undertook a series of interviews with managers (purchasing, project and program manager) of the major company (we will name it SPACE to facilitate our presentation) in this sector who are involved with the business relations.

In the first research step, 75 concepts about business relationship were generated (Anderson at al. 1994, Lapierre 2000). This list of concepts was validated during a group discussion with a pool of managers implicated in different sectors of business activities.

The second research step of our study was to conduct a group discussion with managers of SPACE. They were asked to work individually to consider the relevance of

concepts presented in the list for the focal business relationship and evaluate their importance on a four positions scale. After the group discussion the less important concepts have been taken out from the list. An interactive group discussion emerges into categories of business relationship concepts. The participants suggested to create ten categories such as, "Resolution", "Supplier's ability" etc, and concepts were put into these categories that do not overlap. Table 1 shows the results of this research step.

| Categories | Concepts |
|---|---|
| PERFORMANCE | 1;2;8;9 |
| SAFETY AND SECURITY | 6,7;12;16;17;18 |
| NETWORK CAPACITY | 10;11;19 |
| SUPPLIER'S ABILITY | 22;24;25;26;27 |
| MOTIVATION | 29;30;31;32;33; 34 |
| RESOLUTION | 38;39;40;41;48 |
| RELATIONAL TRUST | 43;44; 45;47:49;50;51;53 |
| CONNECTED IMPACT | 57;58;59;60;62;66;67;68;69;74 |
| PORTFOLIO MANAGEMENT | 55;56;63;64; |
| SUPPLIER'S ATTRACTIVENESS | 70;72;73 |

**Table 1. Categories suggested by the group.**

It is important to mention several concepts that were not categorized: “Production costs’ reduction”; “Costs reduction related to the RD of the products”;” Relation management costs reduction”; ”Criticality of the relation”; “Use of specifically developed competence“;”Opinions on the operations carried out by a supplier”. SPACE managers consider that the concepts related to reductions costs seem to be more important for suppliers and not visible for SPACE. Another aspect of industry activities is linked with the growing responsibility on the suppliers’ side.

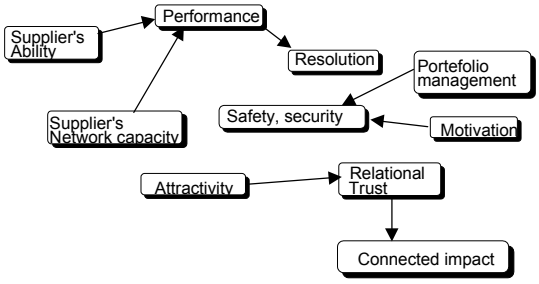
Ten suggested categories are characterized using economic and non-economic components of business relationship value and according to the three levels of relationships: episode, relation and network. Episode value is defined by “performance”, “safety” and “security” and “network capacity”. “Performance” consists of an economic and technical evaluation of the offer by the client. “Safety” and “security” is important for this relationship because of the criticality (resources and actors) and the specificity in this particular industry. By “network capacity” we define the credibility and the reputation of the supplier and the

impact of the firm’s offer upon the supplier's offer. This implies that the buyer takes into consideration network aspects at episode level.

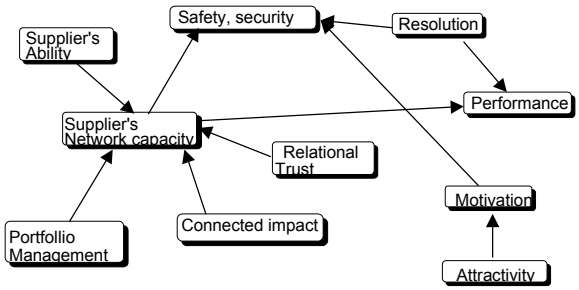
The “supplier's ability”, “relational trust”, “resolution” and “motivation” define the relational value. By “supplier's ability”, we understand the ability of the supplier to build a reliable, flexible and contractual offer for a specific client. “Relational trust” includes all the relational abilities (such as sincerity, exchange transparency, the reality of promises…) to maintain and develop trust between a supplier and a client. “Resolution” includes all the practices involved in resolving problems. We define “motivation” by the level of investment, the open-mindedness and the co-operation of the two organizations to develop the relationship.

“Network value” is defined by the attractiveness of the supplier, along with his connected impact and portfolio management. “Supplier's attractiveness” in the network focuses on his significance in the network. “Connected impact” is the consequence of connected relations on the focus relationship in terms of resource transferability, activity complementarity and actor-relation generalizability (Anderson et all, 1994). Portfolio management (an economic concept) concerns the management of a direct relationship not only in comparison with other relationships, but also aspects of leadership and references to the supplier.

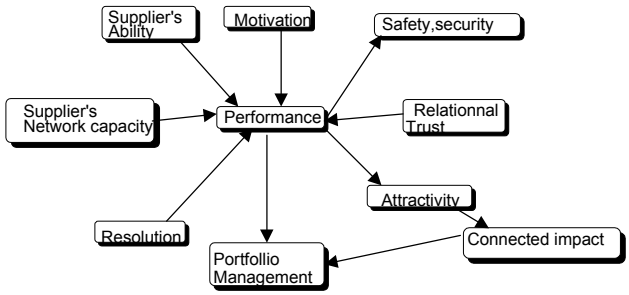
The value of the same business relationship has different meanings for the research participants. These differences are manifested in the individual causal maps. In other words, using the same elements to describe the value of the business relationship research participants, who are all, involved in the same relationship, shows that they have different perceptions. Then the managers were asked to draw individual causal maps linking the emerged categories. Figure 2 shows individual maps of the participants.




**The Individual map for project manager**




**The Individual map for program manager**




**The Individual map for purchasing manager**

**Figure 2. Individual representations of value phenomena**

The analysis and comparison of individual maps present the third step of our research. For the project manager's map, we can consider three sets of linked concepts shown as a broken down view of value. Secondly, the program manager's map considers the “supplier's network capacity” as central in his representation of value with six links and he also emphasizes performance. For him, “safety” and “security” is the end-goal, the main value of the relationship. The program manager considers the “supplier's network capacity” as a network resource that contributes to the value of the business relationship. He has a strategic view of the resource-based value. Finally, if the purchasing manager insists on “performance” as a central concept (7 links), the end-goals are “portfolio management”, and the “safety and security “of the supplier. The economic performance view can depict the representation of relationship value because the two economic concepts (performance and portfolio management) are important in the purchaser manager's map. Three different views of the relationship can be observed. In our opinion this might be due the diversity of their professional activities.

The fourth step of our research is linked to the construction of a collective causal map of the group where we consider what is common and valuable for the majority of the participants. The map of unanimity in this case does not contain common links. Therefore it does not provide us with sufficient background for constructing a shared vision of a group relationship value. This explains why we do not present this map here. The map of majority contains four common concepts ("motivation", "supplier's ability", "supplier's network capacity" and "resolution") linked to the "performance" concept. It is important to mention that "performance" concept appears to be central for all the participants. Otherwise this map seems to be simple for the analysis of business relationship value. The map of Enlightened Majority (Fig. 3) presents the most complex view.

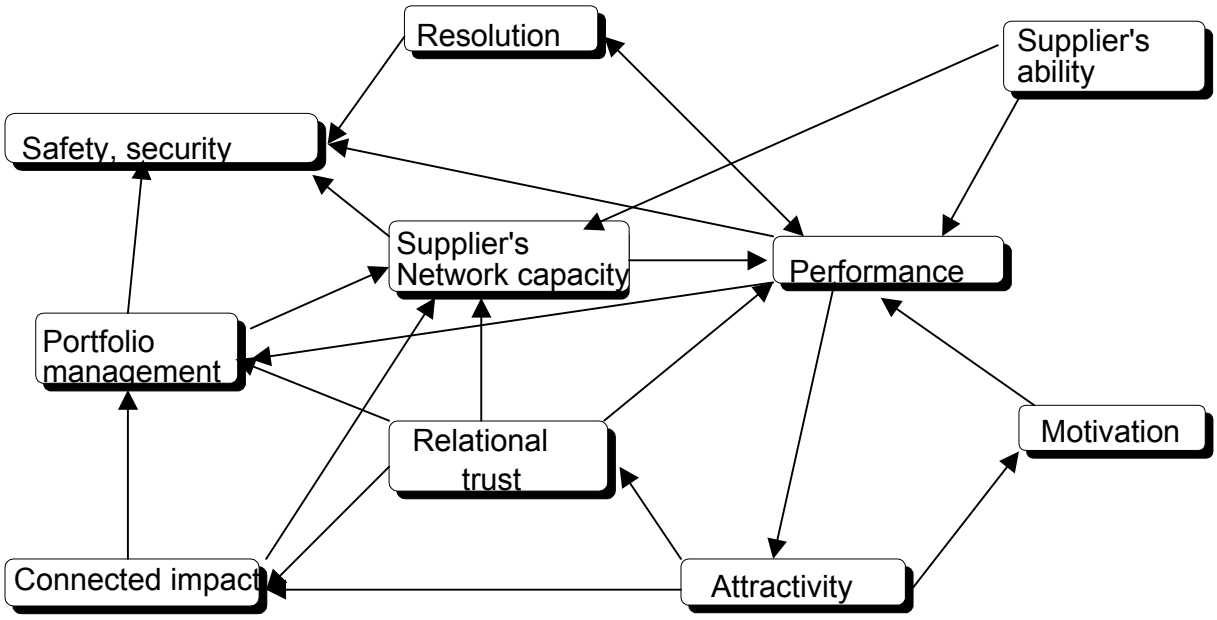



**Figure 3. Enlightened map of value phenomena**

What are the key concepts in this map? If "performance" is the central concept characterizing relationship value (8 links), the "safety and security" of the supplier represents the goal (4 links). All dimensions of relationship value aim at reinforcing the stability of the relationship. This is why this relationship is valuable for the firm. However, relationship value is not only described by episode value. The second group of core concepts is illustrated by "network capacity" (6 links), "portfolio management" (5 links) and "relational trust" (5 links).

Here we have an institutionalized aspect of relationship as “network capacity”, “relational trust” and “portfolio management”. This aspect shows the desire to be recognized by others as a referent and capable actor in bidding projects in the network. This aspect of legitimization in the network identifies a non-economic dimension of relationship value. The “supplier's attractiveness” (4 links) and “connected impact” (4 links) illustrate the third group of core concepts, which is related to the network dimension of business relationship value.

## Conclusions

We consider the basic concept of the business relationship value and propose a research design for capturing its major characteristics. The theoretical interest of our research is in representation of business relationship value seen by manager distinguishing economic and social parts of this value. In fact, the structure of relationship value revealed through our case shows that “performance” appears to be central issue in the vision of the value by managers. However, it is not the end-goal as well as “safety and security”. Managers take into account not only episode and relationship level value but also the network level. One of the major characteristics of the network level is related with the “connected impact”. This illustrates why business value depends on the relationship between firms that are connected (Anderson et al. 1994) with SPACE. The proposed methodology permits to reveal the particularities of the space industry. This affects the relationship, even in the choice of suppliers. For example, “safety” becomes a vital factor: at the satellite launch, we must be sure that there will be no maintenance problems while the satellite is in the space.

The methodological interest of the paper consists in using the cognitive mapping technique for constructing a collective map of a group to measure social components of the value of business relationship. The collective causal map of a group presents a hierarchy of aspirations, strategic issues, problems and strategic options. Due to this technique, we can present the beliefs of members of a group involved in causal relations and the reasoning

behind their purposeful actions. The shared vision of the group focuses on the key issues significant to the structural level of the group and the convergence of opinions of the group members involved in the same business relationship. Starting from individual perception of business relationship value, the causal mapping methodology induces to capture the value of the business relationship.

The managerial interest of our research is in creating a tool for managing the business relationship on the value-based portfolio (Ginsberg, 1989; Turnbull and Zolkiewski, 1997). The real managerial issue is the allocation of limited resources to an optimal combination of customers or suppliers. Resource allocation decisions are often taken without full assessment of the potential of and threats to each relationship. As resource allocation is always a strategic decision; as business relationships present one of the most important assets of an organization, it seems to be an important question to learn more about these types of decision-making.

We would like to expose the limits of our research. Only a small sample limited in a number of participants has been studied. We have analyzed the buyer's side of the business relationship. To obtain a more complete picture of the business relationship value, we aim to continue our research to achieve both a buyer-based and a supplier-based view of the business relationship value. We capture the characteristics of the business relationship value in space industry, which is a specific one. To validate the findings and verify the robustness of the proposed methodology, it is necessary to pursue studies in another sector, with more participants.

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