

Cognitive Mapping Methodology for Understanding of Business Relationship Value

Competitive paper

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Abstract

How do managers make decisions about the development, the consolidation or the suspension of a business relationship? It seems to be logic to suppose that the value of a business relationship is an important element of managers' decisions. We consider the basic concept of the business relationship value and develop a research design for its measuring.

We put forward the hypotheses that the value of business relationship is dynamic, measurable and presents a concrete combination in time of economic and non-economic (social) components (interrelated in between them). How can we develop the shared vision on the business relationship value? What tools can be implemented in order to assist a management team to evaluate and measure their business relationships? The cognitive approach sheds light on the collective representation of value phenomenon and permits to measure the three levels' (episode, relationship and network) and three-dimension conceptualisation of the focal relationship value.

We propose to apply the methodology of cognitive mapping to supply a researcher an efficient tool for constructing a collective map of a group involved into business relationship. The collective cognitive 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 about causal relations and the reasoning behind the purposeful actions. Shared vision of the group focuses on the key issues significant on the structural level of the group and the convergence of opinions of the group members involved in business relationship. On the level of meanings, convergence facilitates the discussion and a problem solving process. Cognitive mapping is an important tool in a representation of thoughts as it is able to reflect different views of team members, aide to structure a problem, facilitate mutual understanding. That is why we suggest applying this technique to measure the social components of the value of business relationships.

The major advantages of our approach are the representation of individual and collective perceptions of the non-economic (social) component of business relationship value; an evaluation and measurement of the focal business relationship value due to the cognitive mapping technique; a computerised comparison of individual cognitive maps as an effective tool

for exploring idiosyncratic beliefs of group members to elaborate a collective map of a group involved in business relationship; automatic construction of the four different types of a collective map of a group; a deeper and more clear understanding the focal business relationship value and a conceptualisation based on this learning. The acquisition of the collective knowledge of group based on measurement of the value of business relationship aims on improvement of organisational learning, which becomes an essential issue of the strategic development of business relationship management in the 21st century.

Subject areas: business relationship, group decision support, cognitive mapping.

Introduction

How do the managers see the important strategic concerns and strategic problems facing the organisation? What is their reasoning on perceived causes and consequences of the strategic issues? How do they make decisions about the development, the consolidation or the suspension of a business relationship? It seems to be logic to suppose that the value of a business relationship is an important element of managers' decisions. What does the value of a business relationship mean? What is the role of this value and what are its main components? We focus our research on these feasible questions.

How can we develop the shared vision on the business relationship value? What tools can be implemented in order to assist a management team to evaluate and measure their business relationships? These issues are becoming extremely important in the rapidly changing world of total globalisation, with the rapid expansion of e-commerce, which could bring profound changes in business relationships.

We propose to apply the methodology of cognitive mapping to address these concerns and supply a researcher with an efficient tool for constructing a collective map of a group to measure social components of the value of business relationship.

Why Business Relationships are important?

Our starting point about business relationships is the International Marketing and Purchasing group (IMP) interaction model (Hakansson 1982). Business relationships are realised between customer and supplier and demand different levels of efforts in investments (money, time, skill), organisation learning, adaptation, commitments and trust building from both parties. The different type of exchange episodes (products/services, financial, information and social) are the building blocks of the business relationships. The frequency of these episodes could build and strengthen this interactive relationship. In a business relationship, parties may or may not adopt their products or services, may build mutual trust, may or may not use routines but the *raison d'être* of a business relationship is the value creation for both (Wilson 1995, Mandják-Durrieu 2000).

Differences in the frequency, the structure and the perception of the exchange episodes are the main, but not the only, causes of the heterogeneity of business relationships. Each business relationship is unique and customised and has its own, long or short, positive or negative, simple or complex, harmonic or confused, history. At the same time, it is a part of the whole business relationship's portfolio of the organisation. It brings the real difficulty to the management of business relationships; they are simultaneously dealt with as being unique and as a part of a whole system of relationships. Managers "face a twofold task; on the one hand they must manage each individually significant relationship, and on the other they must also maximise the company's return on its overall portfolio of interdependent relationships." (Ford et al. 1998 p.88).

Business relationships have different non-sequential development stages (pre-relationship, exploratory, developing and stable) (Ford 1980, Ford et al. 1998).

Organisation's behaviour in a business relationship is not only influenced by themselves but by other (economic and non-economic) actors too. This indirect influence links together different business relationships. Business networks are created by this "connectedness". The focal relationship (between customer and supplier) is embedded in its atmosphere (Hakansson 1982), and its network. No company is an island (Hakansson-Snehota 1988) in the inter-organisational market. „Business markets are not random structures, where everyone can do business with everyone else at any moment, if only the product and price is right. Instead, business markets are the outcome of *organisation* by those involved in the network of business relationships" (Ford et al. 1998 p.67). And an organisation " is a collection of inert resources that are only activated through interaction with others. Companies interact with each other and develop relationships in order to exploit and enhance their own resources *and to gain the benefit of those of others*" (Ford et al. 1998 p.46). Organisations can not exist without business relationships. The question is not about the existence of business relationships but about its forms, characteristics, and intensity whether it is strong or weak.

The real managerial question is the allocation of always-limited resources to an optimal combination of customers (Turnbull 1990) or suppliers. Portfolio analysis could be a solution and several applications have been developed and published. Despite these useful and rather complex methods Turnbull et al. have found that "resource allocation decisions are often taken without full assessment of the potential of and threats to each relationships" (Turnbull et al. 1996 p.52).

Beyond the eventual methodological difficulties of the portfolio analysis the problem may be rooted in the complexity of business relationships and in the lack of a solid decision making basis about them. As resource allocation is always a strategic decision and as business relationships present one of the most important assets of an organisation it seems to be an important question to learn more about these types of decision making. How do the managers make their decisions about the development, the consolidation or the suspension of a business relationships? What is the basis of these decisions?

What is the value of the business relationship?

« Value creation is the process by which the competitive abilities of the hybrid [the business relationship] and the partners are enhanced by being in the relationship...Not all relationships are symmetrical, but for the relationship to flourish, each partner needs to see some benefit beyond working independently" (Wilson 1995 p.342). The goal of our paper is to adjust the basic concept of the business relationship value. Our basic research hypotheses are the following:

1. The value of the business relationships has three main components: time, economic and non-economic (social). On the contrary to the social components, the economic components can be measured and expressed in money.

2. The value of the business relationships is a concrete combination of economic and non-economic components in a time-scale. (These two components contain a group of elements)

3. The three components are interrelated.

4. The value of the business relationships always has its own interpretation at the seller (marketing) and the buyer (purchasing) side.

5. The value of the business relationships is dynamic which supposes that it is changing in time but not sequentially (time dependence is not linear).

6. The value of the business relationships is measurable. This measure (if it is found) could be useful at management level as well.

The theoretical interest of the research is the distinction of economic and social part of the value while the managerial interest is presented by a tool of managing the business relationship portfolio by its value.

We refer a reader to a literature review on the value of business relationship (Mandják - Durrieu 2000) structured by episode, relationship, and network level. Above North American and European (IMP) business relationship and channel publications we have studied a part of relationship marketing and supply chain management researches findings too. Based on this analysis we propose to regard characteristic value components in each of these levels.

At episode level, offerings determine the episode value. Offering as

- ◆ a sum of benefices received by customer in monetary terms (Anderson-Narus 1999),
- ◆ result of previous relationships (Normann-Ramirez 1993),
- ◆ a value carrier (Ravalad-Grönroos 1996),
- ◆ a set of economic and non economic elements (Reddy 1991),
- ◆ relationship benefices or sacrifices (Ravalad-Grönroos 1996)

are the different kinds of episode value. Here, the value is the result (static) of the exchange that receives the customer but this value contains some element beyond the exchange episode, which came from the relationship.

At relationship level, value exists, and it is dynamic. Different kinds of relationship value are: value as

- ◆ desired, perceived and judgement aspect (Flint et al. 1997),
- ◆ economic, strategic and behavioural dimensions (Wilson-Jantrania 1996),
- ◆ safety, credibility and security (Ravalad-Grönroos 1996),
- ◆ trust for a mutually profitable relationship (Gassenheimer et al. 1998);

creation value as

- ◆ stages of relationship development (Wilson 1995),
- ◆ mutual goals, non-retrievable investments, adaptations, structural bonds, co-operation and commitment (Wilson 1995),
- ◆ direct and indirect functions (Walter et al. 2000).

Even at episodes level the value is mainly a result, while at relationship level it is a process of creation. The result of this process (or the outcome of it) is not only the relationship value but also the relationship itself. Different elements of this value seem to be mainly non-economic. The creation value is realised inside a focal relationship but this creation has also impact on connected relationships.

At network level, value is coming from the fact of connected relationships. Due to "connectedness", we can tie relationship value and network value. As consequence of connectedness, the different elements of this value seem to be non-economic. At the network level, value creation inside a focal relationship could have a positive or negative effect on connected relationships. Different kinds of network value are constructive value as resource transferability, as activity complementarily, or as actor-relation generalizability (Anderson et al. 1994), integrative value as collaborative closeness, integrative value as operational excellence (Morash-Clinton 1998). Deleterious values are resource particularity, activity irreconcilability, or actor-relation incompatibility (Anderson et al. 1994). At the network level, the value seems to be a process of sharing (spatial).

We have integrated the results of our literature analysis in an early holistic three levels and three dimensions framework of the focal relationship value in business network. This value is a condense of the combination of economic and non economic aspects in time of all the three levels values (Figure 1.).

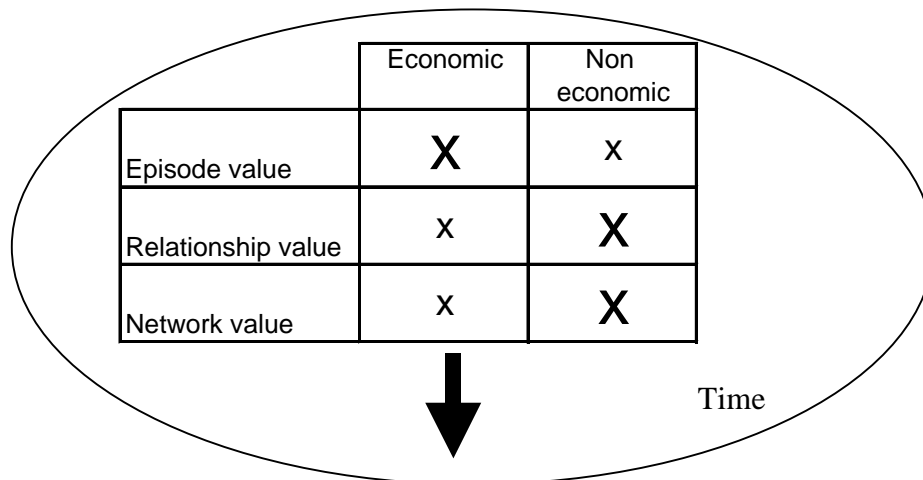


Figure 1: Focal relationship value framework

For each level, there are more or less economic and non-economic components which are changing in time. We suppose that economic, non economic (social) elements and time are the three dimensions of the business relationship value which are presented in each level of it (episode, relationship, network). At the episode level, the economic component is like the most

determinant. In the opposite, the non-economic component is like more important at the relationship and network level.

The real research question is coming from their actual proportion and dynamics. Other problem of understanding the values of the business relationship is the two-way interrelations between the three levels (Figure 2.):

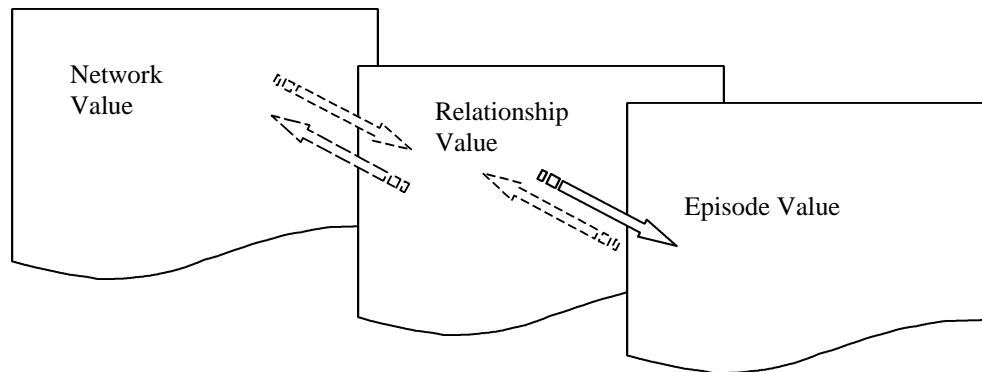


Figure 2. : The two-way interrelations between the three levels:

The complexity of the system is increasing on each level, the boundaries between economic and non-economic (social) components become more perceptible. We need more understanding about this value and particularly of its nature at the network level. Business relationship value is always perceived and not only by one person but by a group of involved people. In a business relationship, we speak about at least two groups of people involved into the relationship, one at the seller's side and the other is on the buyer's side. It means that the business relationship's value has at least two different collective representations. These representations depend on the mental models (Day 1994) of each involved person. To understand and to show this processus we propose a cognitive approach and application of cognitive mapping technique to collective representations of this phenomenon, as value is perceived. This collective representation permits a model building to measure the three levels and three-dimension conceptualisation of the focal relationship value.

Why Cognitive Approach is useful?

Cognitive approach allows us focusing the shared vision of the group involved on social aspects of business relationship value. Shared vision sheds light on the key issues significant on the structural level of the group and the convergence of opinions of group members (Axelrod R. 1976, Weick K. 1979). On the level of meanings, convergence facilitates the discussion and a problem solving process. The collective cognitive map of a group presents a hierarchy of aspirations, strategic issues, problems and strategic options (Eden 1991). Due to this technique, we can present the beliefs of members of a group involved about causal relations and the reasoning behind the purposeful actions.

We present here a small pedagogical example concerned with the representation of major relationship components seen by the seller (Fig.3) and the buyer (Fig.4).

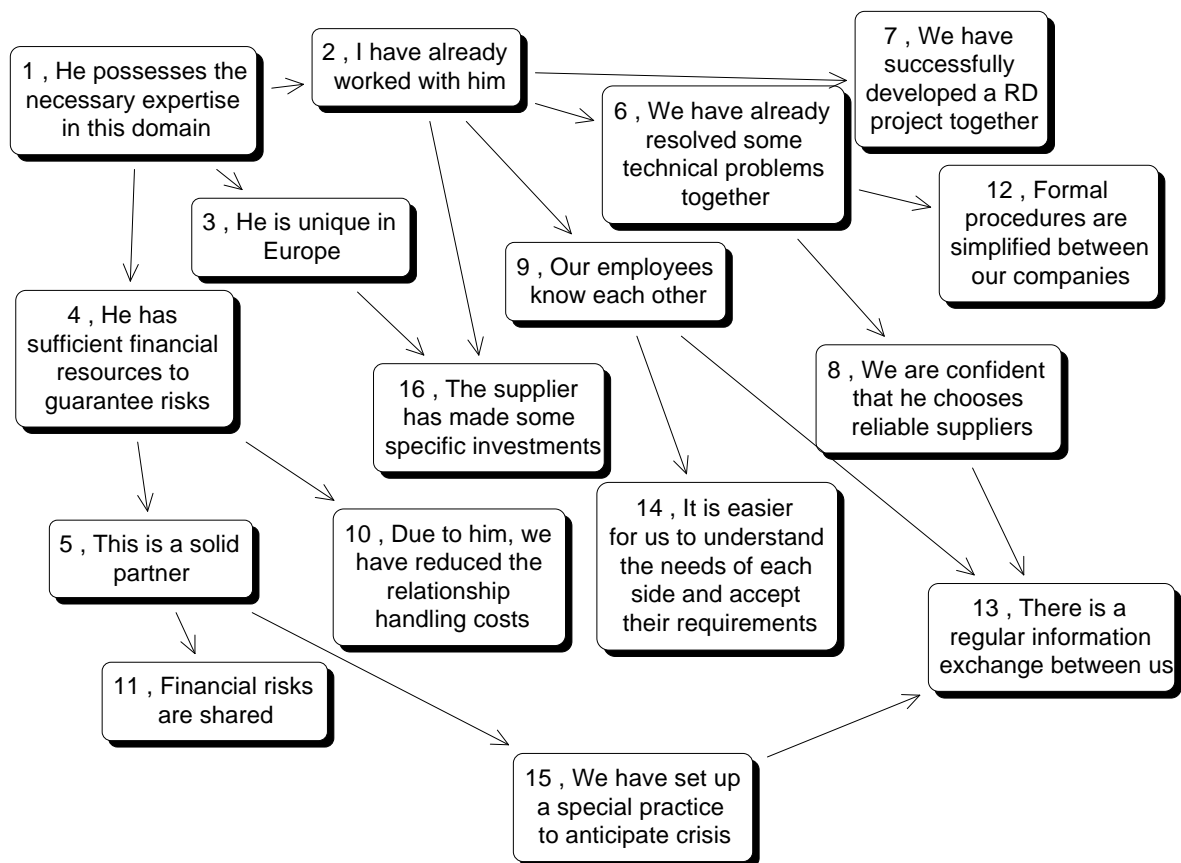


Figure 3. An example of a cognitive map of a buyer's side.

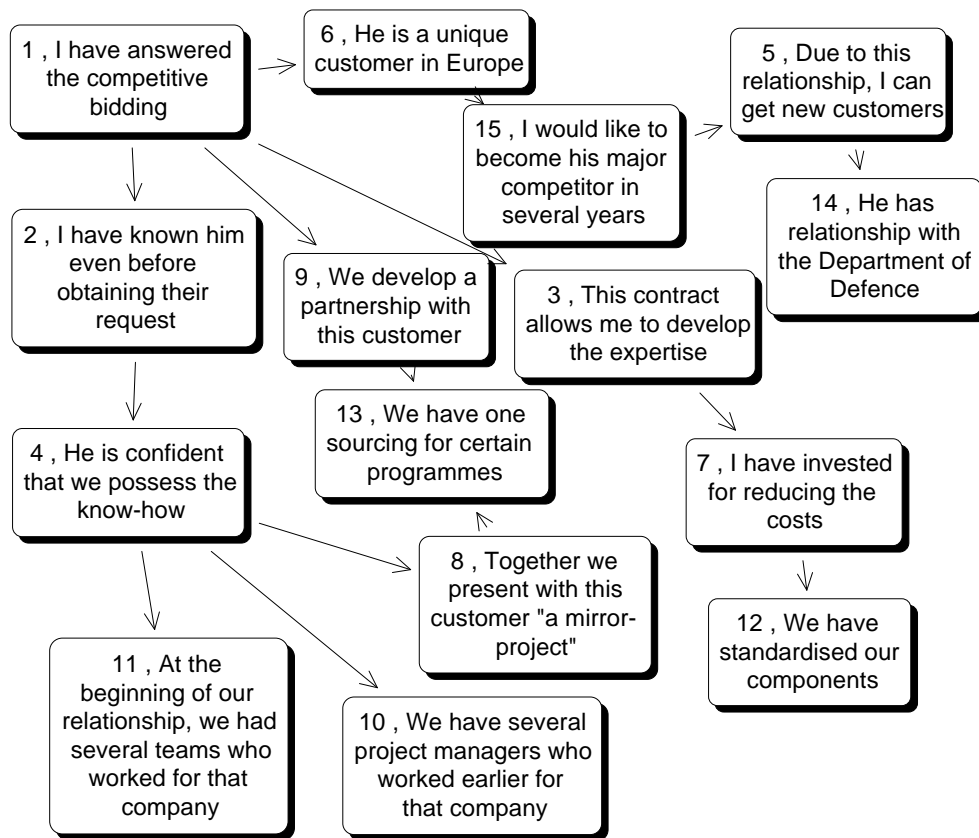


Figure 4. An example of a cognitive map of a seller's side.

This example illustrates the utilisation of cognitive maps to have a better understanding of business relationship. Cognitive mapping is an important tool in a representation of thoughts as it is able to reflect different views of group members, aide to structure a problem, facilitate mutual understanding (Eden, Ackermann 1998). That is why we suggest to apply this technique to measure the economic components (for example, on the buyer's side: "Due to him, we have reduced the relationship handling costs") and non-economic components (for example, on the seller's side: "Due to this relationship, I can get new customers") of the value of business relationships.

Role of Cognitive Mapping in Representation of Business Relationship Value

The construction of a collective map of a group is developed during several interviews while a group discusses an issue to create collective knowledge on the value of business relationship. A composite map is constructed on the several stages of communications in the process of discussions and negotiations while the group members try to find a common view on this subject (Eden, Ackermann 1998). A collective map of a group is an assembled or aggregated or average map constructed in two stages: construction of the individual maps of group members followed by the comparison of these maps on the basis of shared understanding and creating of a collective map of a group itself using different methodologies.

We consider the collective map of a group as a collection of the shared beliefs of group members involved into a business relationship (Chameeva T. et al, 1997). A group in this case is a sum of individuals who form a group (see Fig.5). It is natural that different members of a group have different individual maps - it is almost impossible to imagine that there could be two identical individual maps. The shared vision (common ideas and collective ideas) presents the guide for a better understanding of the value of business relationship and interpretation of actions of a group.

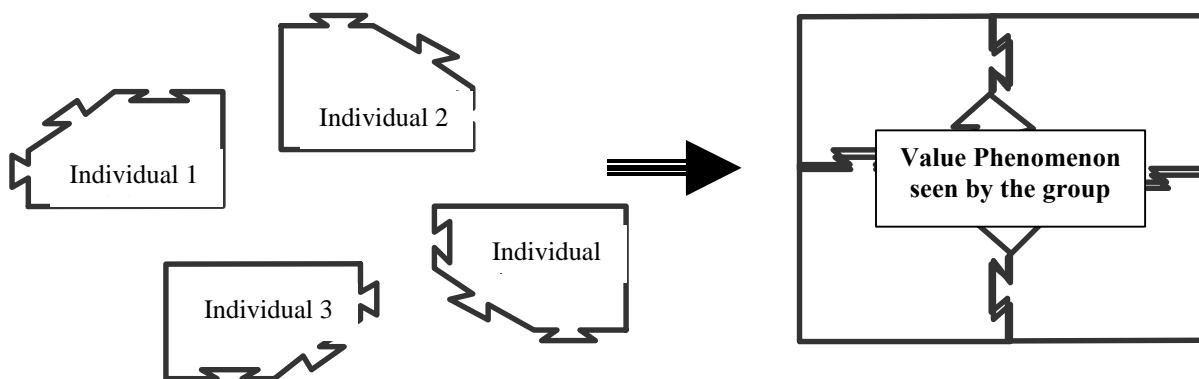


Figure 5. : From individual to collective representations of value phenomenon

Comparison of individual maps of a group is a tool to construct four different types of a collective map. The comparison of cognitive maps permits to identify similarities and

differences between individuals; develops an instrument for measuring agreement of opinions between individuals; defines the zones of common interests and tensions (Bougon M. G. 1992). The construction of a collective map of a group is based on results of this comparative analysis. The discussion of a final cognitive map, which is validated by group members, stimulates an exchange of views, presents a better understanding of reasoning of each group member; presents a shared vision of business relationship; and assist to attain the collective knowledge on its value.

Comparative research of cognitive maps has to acquire all the ideas and links for validation and comparison of cognitive maps. Then it is important to transform the expressions and phrases used by an individual into a standardised vocabulary and use different formats for description and comparison of maps. The type of collected data (ideas and links) and the format of data representation must be chosen accurately. It is necessary to standardise the procedure of an individual map analysis, formulate the principles of cognitive maps comparison and select the appropriate methods for the comparison.

The comparison of maps is traditionally done for two individual maps and can be performed in two levels: structural level and the level of content. The last one includes the comparison of ideas and links for each map. *Therefore the comparison of maps comprises the choice of collected data (natural or standardised), the choice of the representation format, the choice of the appropriate technique of comparison.*

The comparative analysis implies the profound analysis of each cognitive map. A researcher identifies the common elements assuming some degree of agreement about syntactical equivalence, recognises the holistic properties of maps, detects the emergent properties of each map, compares structural and graphical properties of the maps (Ginsberg A.1989). Such type of analysis requires huge efforts and automated support is essential to facilitate and speed up this process.

We divide the process of interviews into two main stages dealing with the two different groups of participants - a pool and a group. The first group of participants (a pool) consists of the people who are knowledgeable in the discussed area. The second group of participants presents the people involved in a business relationship who are faced the necessity to manage the real problems and have to be supported during the eventual decision-making process.

The pool of participants is asked to think about the problem and compose a set of concepts or ideas they consider to be important for the discussing issue. A list of concepts is created on the base of individual interviews or a group discussion with extra concepts added due to the information taken from the literature review and consulting with experts in this area.

We anticipate five major stages in the process of evaluating business relationship based on the proposed cognitive approach.

1. *The process of data collection* to construct a final list containing between 50-150 ideas, that is given to the participants of the group involved. Group members are asked to choose a fixed (by a researcher) restricted number of concepts (preferably between 20-40) which they consider the most valuable for the value of their business relationship. The formulation of ideas (expressions, phrases, etc.) might lead to a narrow view on the subject because it depends on the researcher's personality.

2. *Construction and comparison of individual maps* automatically performed within ANCOM.

The stage of a summary matrix construction restrains the amount of individual matrices - not more than 30. In reality, this restriction is reasonable because the average size of a group rarely exceeds 12-15 members. Comparative analysis of individual maps by means of our program includes the calculation of a number of common concepts and common links chosen by all participants; complexity of each individual cognitive map (a ratio of a number of links in the individual map to a number of total possible links $(M * M - M) / 2$); density of links of each individual map and of a group in total (a total sum of numbers of links multiplied by the number of concepts with this number of links for each map); the quantitative analysis of distances between all the matrices; the average number of links between concepts for the group; ranks of concepts in each individual map according to the principle of domain centrality (to define the rank of a concept we calculate total amount 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). Distance ratios are calculated according to the methodology of (Langfield -Smith, Wirth 1992) - individual by individual and each individual map by a summary map. Quantitative analysis of individual maps is accomplished by the qualitative analysis. This analysis specifies the nature of the shared vision of the group necessary for structuring the discussion and a construction of a

collective map of the group. ANCOM permits to explore and compare the elements of the map which are the most significant for all the group members. We refer to the earlier works on this methodology for the detailed explanations of this quantitative issue [Chameeva T. et al 1997].

3. *Construction of collective cognitive map of the group* automatically performed within ANCOM.

There are four types of a collective map constructed automatically on the base of comparative analysis of the opinions of group members combining quantitative and qualitative measures performed by ANCOM:

1/ *an Assembled map* which is obtained by adding all individual matrices and contains all the concepts and links chosen by all group members;

2/ *a map of Unanimity* which is the map of common elements;

3/ *a map of Majority* constructed on the base of all the concepts and links common for the majority of individuals - $(K/2+1)$ and

4/ *a map of Enlightened Majority* as a type of an aggregated collective map which we propose. The map is created with a respect to the importance of each concept and the value of each link in the initial set of N concepts for the group of individuals. The criteria we use for this collective map integrate the two principles - of domain centrality and democracy. This map contains all the concepts and links common for the maps of all individuals; c concepts that are the most valuable for the majority of individuals $(K/2+1)$ in the group; c concepts of the highest rank in the individual maps.

Conclusion

We consider the basic concept of the business relationship value and prepare a research design for its measuring. We put forward the hypotheses that the value of business relationship is dynamic and measurable and presents a concrete combination in-time of two main interrelated components always having its our interpretation at the seller's (marketing) and the buyer's (purchasing) sides. On the contrary to the social components, the economic components of this value can be measured and expressed in money. The theoretical interest of our research is in the distinction of economic and social part of the value (if it is existing) while the managerial one is a tool of managing the business relationship portfolio by its value.

We propose to apply the methodology of cognitive mapping to address these issues. Our goal is to supply a researcher with an efficient tool for constructing a collective map of a group to measure social components of the value of business relationship. Application of cognitive mapping technique to collective representations of value phenomenon permits to measure the three levels' (episode, relationship and network) and three-dimension conceptualisation of the focal relationship value.

The major advantages of our approach are

- representation of individual and collective perceptions of the non-economic (social) component of business relationship value;
- evaluation and measurement of the focal business relationship value due to the cognitive mapping technique;
- computerised comparison of individual cognitive maps as an effective tool for exploring idiosyncratic beliefs of group members to elaborate a collective map of a group;
- an application of *qualitative and quantitative*.measures of analysis;
- automatic construction of the 4 types of a collective map of a group;
- a deeper and more clear understanding the focal business relationship value and a conceptualisation based on this learning.

The acquisition of the collective knowledge of group aims on improvement of organisational learning which becomes an essential issue of the strategic development of business relationship management in the 21st century.

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