# **Business Cooperation Networks: Risks and Benefits**

José Luiz P. D'Oliveira<sup>1\*</sup>, Leonardo Guerra de Rezende Guedes<sup>2</sup>, Antônio Pasqualetto<sup>1</sup>, Solange Silva<sup>1</sup>, Marcelo Lisboa Rocha<sup>3</sup>

<sup>1</sup> School of Engineering, PUC Goiás, Brazil.

 <sup>2</sup> School of Engineering, Electrical, Mechanical and Computer Science from the Federal University of Goiás and the School of Mathematical Sciences and Computer PUC Goiás, Brazil.
<sup>3</sup> Federal University of Tocantins, Brazil.

\* Corresponding author. Tel.: + 55 62 81452525; email: joseluiz.doliveira@yahoo.com.br Manuscript submitted October 9, 2015; accepted March 23, 2016. doi: 10.17706/ijeeee.2016.6.2.120-127

**Abstract:** This paper is based on the premises that the cooperation between companies in a network has been highlighted as an alternative organizational configuration in response to recent economic and technological changes. This article has analyzed the business cooperation networks from the point of view of its hierarchical structures, its risks and benefits, and afterwards some considerable important actions were proposed. Studies have shown that with well-defined hierarchical structures, the identification of potential risks and benefits may be the way for business cooperation networks to acquire competitive earnings, and also to keep improving its practices and actions.

Key words: Business cooperation network, competitive advantage, hierarchical structures, sustainability.

#### 1. Introduction

In every economic crisis, new organizations and new forms of business survival are outlined. It wouldn't be different in an increasingly globalized society that keeps searching for optimization on the use of material and human resources. The cooperation networks are drawn up as an alternative approach from firms in order to ensure collective success to the activity for which they belong. In this regard, there are several difficulties that permeate this organization, all the way from the appropriate knowledge to join members, to the form of management of the cooperation network that results in competitive earnings. It is believed that defining hierarchical structures for both the risks and for the earnings, may be the way in order to guide the process to ensure greater success of the organization credibility. The identification of risks, as well as the domain and enhancement of the benefits of the business cooperation network should be of common knowledge.

Therefore, the objective was to analyze the business cooperation networks on the point of view of its hierarchical structures proposed by Tálamo [1], risks and benefits, proposing improvement actions.

## 2. Hierarchical Structures

José Roberto Tálamo proposes hierarchical structures, both for benefits and for risks, subjecting the unfolding levels, shown in Fig. 1 [1].

## 2.1. The Proposed Hierarchy Is Established According to the Following Steps

- Identification of the general goal. In this case, the companies' general goal is the increased profitability, which encouraged the formation of the network. This general goal will be the same for the hierarchy of benefits and costs.
- Identification of the secondary objectives from the general goal. Secondary objectives will be established according to the analysis and grouping of the items categories, where there is a sharing interest. Established secondary objectives will apply to the hierarchy of benefits and risks. It may be noted that the data are grouped into three categories: commercial growth in the domestic market; export; and cost reduction.
- Establishment of the general criteria that should meet the secondary objectives of the general goal. The general criteria will be the data itself indicated by entrepreneurs used in the formulation of secondary objectives. In this case, the items listed as interesting to share will be part of the hierarchy of benefits. Items that pointed out no sharing interest will be part of the risk hierarchy.
- Identification of secondary criteria under each general criterion. Secondary criteria will be established from the aspects indicated by entrepreneurs, as Benefits and Risks. This way, the secondary criteria listed as benefits or risks can integrate the hierarchy of benefits or the hierarchy of risks, according to the assessment of the criteria.
- Assessment for the existence or not of tertiary criteria, which will be shown from the model analysis as a whole, even though it wasn't mentioned by entrepreneurs, as long as it is relevant for the analysis.
- Options Identification or more appropriate results.
- If there are decisions with yes / no, the benefits from the solution of the application will be compared to the benefits of not applying the solution.
- Assigning values to the objectives, secondary goals and criteria. The assignment of numerical values is necessary for assessing the best cost / benefit among the various proposals.

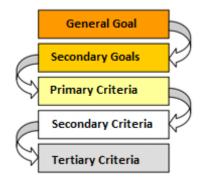


Fig. 1. Model of the analytical hierarchy analysis [1].

# 3. Risks

It is suggested by Tálamo [1] the following schematic use for the risks hierarchies in a Business Cooperation Network (BCN), as shown in Fig. 2.

Risks process such as quantifiable values should be part of the medium and long term incorporated planning for companies and their network as a whole. All business and enterprises are subject to risks, which must be previously identified as very likely or unlikely to occur, and also the time and the period that it is more likely to happen. All of this is part of Strategic Management, linked to the purpose of each company which is the "Increased Profitability". The Internal Trade Growth is very sought after between companies in a network, but this effort may have some setbacks: such as the risks of not sharing customers

and technically weak sales teams are factors that can slow the growth of retail space occupation in the consumer market.

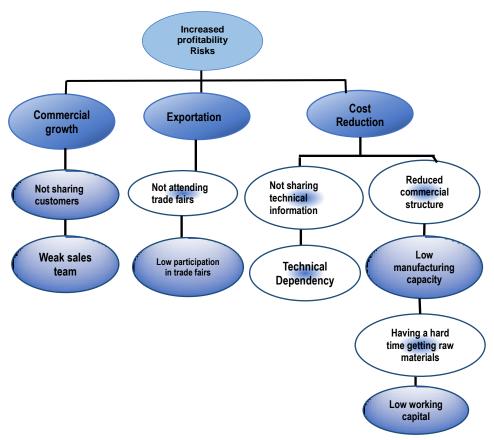


Fig. 2. Hierarchy of risks [1].

As for the processes of deployment and maintenance for the export trade service to other countries, one can identify an issue of the utmost importance for which the culture of an exporter, as well as knowledge of the market's buyer, with the quality standard it demands, prevail an interpersonal and inter-organizational business environment on the network: attending at trade shows. The non-participation in fairs and small participation in fairs may feature a disregard for foreign trade, making a significant risk to businesses events. Attending in fairs increases the ability of companies with its network, it develops sociability criteria, adds products' knowledge, processes, quality, etc. This kind of participation also disseminates the company's or the network's own brand for a like-minded audience. Participating within a group of affiliates in trade fairs or similar events becomes much more enjoyable and stimulating, because of the intra and inter-network competition.

#### 3.1. Cost Reduction

Work processes aimed at "Cost Reduction" suffer various risk factors that persecute the structuring of these goals. These factors may occur randomly in any company or associated companies in a network, working against a more favorable environment for a faster growth. Failure on sharing information, that is, stopping Benchmarking, generates delay on the development of associated companies. The technical dependency on manufacturing processes leads to a disadvantage against the competitive market, especially in terms of time and costs. The risks of Low Manufacturing Capacity, the difficulty in acquiring raw materials and small working capital, are situations that certainly lead to the risks of having a reduced commercial structure. Progressing to an ephemeral market share which in turn faces what might be in the

near future.

# 3.2. Benefits

As for the benefits of hierarchies in a BCN (Fig. 3), it is suggested the use of the schematic proposed by Tálamo [1].



Fig. 3. Hierarchy of benefits [1].

Companies within networks now have far greater opportunities to participate in new markets, which are more profitable, since there is a possibility of corporate associations for any innovation or improvement in markets. The investment's costs that are required for new purposes become prorated among interested members, if not for all.

As for Companies that do not own new technology management, they still have access to several tools for organizational and inter-organizational innovations through advisory services and associated training, for which they can aspire new business, even the one of exports abroad. In the inter-relationships of a network, it establishes a level of collaboration that enables a high level of Benchmarking, thus providing better conditions for real commercial internal growth. With all this new and old information, there is a general increase in the level of knowledge in each company, increasing the pragmatic conditions of discernment to achieve in each company a significant degree of process improvement and production, that results in significant cost reductions.

Besides exchanging ideas and individualized data, companies that choose to negotiate with exports, may have through the network several facilitators means for foreign trade, such as an agent abroad in countries and regions that want to sell their products and services. They may endeavor jointly in the foreign trade policy of the country, through federal politicians, aiming the establishment of external agreements, which are favorable foreign trade of its products. The quality standard internationally is often more demanding so enterprises within a network may establish knowledges, which surely will generate a new internal productive culture, thus evolving its production line, and hence the capacity of its contributors.

In the pursuit of internal growth, multiple work processes can be arranged by reworking within the network, and yet, due to the companies proximity, there may be a significant increase in their competitiveness. To this end, new paradigms must be improved: Product varieties, prompt delivery, responsiveness, technical expertise, superior quality, procedural experience, managerial flexibility, and other factors are now aimed in a natural way due to new working cultures and business that may be incorporated to the enterprises within network. Being able to count on the availability and readiness of coaching professionals that through the use of effective techniques can improve personal and professional performance of network members in several action plans. Simultaneously, one can have the possibility of expanding the distribution network, because with greater agility and speed, it is possible to have a broad customer base, a bigger and more structured supply chain, and the number of stakeholders increased in proportion to the degree of efficiency and effectiveness of each company in the network.

### 3.3. The Profit

The social function of every business is "profit" which is essential and necessary for its survival. Every manager from a network and from every associated company is looking for the increased profitability and its benefits. And as part of this struggle, there is a key requirement: the "Cost Reduction". Companies arranged in a network have several advantages on how to get less expensively their products and / or services on the market.

In case of joint import of raw materials, all the way from the first contacts, the shopping, the shipping, and even customs solutions are facilitated by joint action of the companies and they can rely on the best advice and most efficient employees. Shared advertisement is made at a reduced cost, even in large promotional campaigns, thus achieving greater awareness of their products and the strengthening of their own brands, which are quality identifiers. With the benefits of a joint procurement projects the innovations and product implementations and new production processes becomes viable. Thus, speeding the desired effectiveness, even the software development by establishing appropriate systems to management and production processes. Another important factor to consider is: they may even have the external or internal advice of more skilled managers, members and associates of the Project Management Institute. They are able to deploy the Project Management Body of Knowledge, which has become the basic pillar for project management and direction in a conscious and proactive manner. The speed of prototyping is very important on adding competitive prices, aiming the expertise of new businesses and new products. With companies connected between the networks, the joint development of molds and tools becomes easier because of its declining individualized costs, and promptitude required by everyone at the same time. Not to mention the easy way of the companies' inclusions in the facilitators programs MR-MPS-SW (Reference Model for the Software Process Improvement) and even in the Brazilian MPS-BR (Brazilian Software Process Improvement), as well as the procedural integration of companies to ISO standardization systems. This is possible since we are able to count on several government incentives through CNPQ (Brazilian National Council for Scientific and Technological Development), CAPESi (Brazilian Coordination for Higher Education Personnel Improvement), FINEP (Brazilian Funding Agency for Studies and Projects), BNDES (Brazil's National Bank for Economic and Social Development), SEBRAE (Brazilian Micro and Small Business Support Service), and other institutions such as CNI (Brazilian National Industry Confederation), CNC (Brazilian National Confederation for Trades, Services and Tourism), CAN (Brazilian Confederation of Agriculture and Livestock), Trade Federations etc.

## 4. Prospects and Actions

Companies must give priority to build regional networks involving more organized and formal

cooperation, stimulated by trust, by norms and principles, which encourage companies to perform activities and innovate. Research and policy aimed at BCN should therefore encourage a continuous process of improvement and innovation to prevent possible barriers lead that can lead to performance decline of BCNs and possibly the economic failure of their respective region. The ideal situation is to think in terms of continuous improvement of performance and what makes the difference for a BCN to present a continuous development of behavior.

A cluster of companies without a certain degree of coordination does not constitute a regional BCN. To evolve to this condition, the existence of cooperation projects is required. This role can be taken through the creation and maintenance of institutional thickness, that is, formal organizations with a high level of interaction. The expectation of them is to support companies in various ways; or social institutions that foster dense, informal collaboration between people in companies and organizations. They are important for the growth and success of BCNs, as they stimulate the innovative capacity as a property of the region [2].

To introduce structures for BCN management more efforts are required to be made. In [3] it is also considered that, among other important issues, we need to understand more deeply what types of infrastructure are necessary and, perhaps most importantly, how to encourage small business to make good use of such infrastructure. It shows the importance not only of external economies, but also of deliberate actions to reach collective efficiency. It can be concluded that such formal and social institutions, which have a management structure in networks are the key to direct business to the continuous improvement of performance and innovation, thereby reducing the probability to decline, due to a rigid and inflexible structure for changes and innovation.

### 4.1. Effective Policies

Paraphrasing Ketels in [4], in order to promote more effective policies for this segment, one should keep in mind some important points:

- 1) More information about the current status of BCNs should be raised;
- The specifics between different BCNs and different regions should be considered at the BCN development policies;
- 3) BCNs should be seen as part of a broader competitiveness agenda, i.e. efforts for economic development of BCNs and regions need to be better integrated; and
- 4) BCNs can be perceived as an opportunity to define the rules of the private and public sectors in economic policy. In this case, each one takes responsibility for their specific areas of competence in the business environment.

One must remember that the information and the transmission of knowledge within the cooperation network flows through formal and informal learning processes. Consider, also, that joint cooperation actions that reduce risk, increase scale and share resources, as already mentioned, tend to have a more structured and formalized decision-making [1].

Admittedly, devoid of legal instruments, the structure of a network is impractical. Such legal instruments should anticipate the risks to opportunism as operating costs, according to [5]. Thus, the occurrence of opportunism is inhibited by punitive costs foreseen in the legal instrument, attributing inner confidence to the group [6].

The existence of hierarchy traits will always occur, either as a business owner who takes the Operations Management, or as a hired manager, that even when subordinated to the group, he/she will establish priorities.

The network cannot be "built", such as the attempt undertaken with the action research. It has no volitional basis, but rather motivational. It is a mistake to structure it from a mere impulse. Rather, it is necessary to identify the fundamental interests of its primary agents, and the recognition that these

interests can be shared, so that it may generate common earnings that will be notably possible to happen, through the culture of participation and exchange [1], [7], [8].

# 5. Conclusion

As for the process of structural analysis of BCNs, the construction of the model's basic point is the quantification of the most important aspects of analytical hierarchies. To quantify the criteria it should be noted how often it occurs. One way to help quantify the data is through the following topics: the most important criteria; the most important goals; the actions to be put into practice; what should be planned; and the expected results. It is possible to note that every aspect under the common view of BCNs should be evaluated, never under the individual point of view.

Profitability is the reason for the existence of companies and networks. A view of the victories to be conquered may be predicted with quantified and estimated risks. Although risks are inherent in any activity they should be monitored, and actions must be taken to soften the impact involving the network of business cooperation. Even if the risks occur, their responsibilities are shared among the companies' obligations.

Benefits are always expected as a result of cooperation between companies and should be enhanced with constant actions for management improvement and network performance.

## References

- [1] Tálamo, J. R. (2008). Training and business cooperation network management. Thesis (Doctorate in Production Engineering). Polytechnic School of the University of São Paulo. São Paulo.
- [2] European Commission. (2004). Observatory of European SMEs 2004 SME in focus: Main results from the 2004 observatory of European SMEs. Retrieved from the website: http://ec.europa.eu/enterprise/enterprise\_policy/analysis/doc/execsum\_2004\_en.pdf
- [3] Andriani, P., Jones, C., Perkman, M., Sena, V., & Delbridge, R. (2005). The prospects and pitfalls of clustering for innovation and economic development. *Advanced Institute of Management Research*. London.
- [4] Ketels, C. (2004). *European Clusters*. Harvard Business School. Boston, MA. USA.
- [5] Gulati, R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Management Journal*.
- [6] Williamson, O. E. (May-August 2004). The economic institution of capitalism. *Management & Production*. São Carlos, *11(2)*, 1-20.
- [7] Tálamo, J. R., & Carvalho, M. M. Selection of the fundamental objectives of a network of business cooperation. *Management & Production*, San Carlos, *11(2)*, 1-20, (May-August, 2004).
- [8] Tálamo, J. R., & Carvalho, M. M. (2004). Selection of the fundamental objectives of a business cooperation network on small and medium enterprises — Analytical hierarchy process application. *In IX Production Engineering Symposium.*



**José Luiz Prudente D'Oliveira** is associate professor at Pontifical Catholic University of Goiás. He earned his bachelor's degree in civil engineering and his master's degree from PUC Goiás in the field of production engineering. José Luiz has also been the president of the Goiás State Engineering Board of Professionals.



**Leonardo Guedes** is an electrical engineer with more than 15 years' experience in engineering research and development that were gained in major Brazilian research centers. In 1993 he received a Grant from Conselho Nacional de Pequisa - CNPq (National Research Council) for graduate (MSc and PhD) research in communications systems at the State University of Campinas, UNICAMP. He has been the president of Goiás' State Research

Support Foudantion, the president of Brazilian Association of Electrical Engineers, Goiás Section and full professor at both Federal University of Goiás and Pontifical Catholic University of Goiás.



**Antonio Pasqualetto** is an agronomist graduated from the Federal University of Santa Maria, and earned his master's degree in plant science (plant production) from Federal University of Viçosa and his PhD in plant (plant production) from Federal University of Viçosa. As a professor at the Pontifical Catholic University of Goiás he coordinated the undergraduate course of environmental engineering between 2007 and 2012, and is the

coordinator of the graduate program in urban planning and regional development.



**Solange da Silva** has a bachelor of science from the Pontifical Catholic University of Goiás. She earned a master in electrical and computer engineering from the Federal University of Goiás, and a doctoral degree in sciences from the Federal University of Uberlândia in the field of internet and mobile networks mobile. Since 1994 she is an associate professor at the Pontifical Catholic University of Goiás conducting researches on business collaboration

network (RCE) and local productive arrangements (APL).



**Marcelo Lisboa Rocha** holds a degree in computer science from the Catholic University of Petrópolis, a master in computer from Fluminense Federal University, a master and doctoral degrees in electrical engineering from the Federal University of Rio. He is an associate professor at the Federal University of Tocantins. He has experience in computer science, metaheuristics, combinatorial optimization, mathematical programming,

computer networks and high performance computing.