



THE LEARNING CHANNELS IN AN INTERORGANIZATIONAL NETWORK IN BRAZIL: EVIDENCES FROM VERTICAL GAMES

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ABSTRACT

The aim of this paper is to identify and analyze the learning channels most used in Vertical Games, an interorganizational network in Brazil which aims to stimulate relations among companies that operate in the digital games market and other institutions, such as the government, universities, researches institutes, non-profit organizations and distributors. The research was based on survey data collected from primary sources by means of a questionnaire answered by Vertical Games members. The questionnaire presented nine categories of classification of collaborative learning channels. A Likert scale with seven levels was used to measure the effectiveness of the learning channels, considering level 1 as completely inefficient and level 7 as very efficient. To analyze the results of field research, the average of the grades given by each interview were calculated. The results obtained reveal high levels of collaborative learning and show that the most important channels of learning within the Vertical Games are: relationship between small and medium sized enterprises and the leading and innovative companies, recruitment of staff (employees) from companies outside the Vertical Games, motivation for knowledge sharing among companies, management culture open to knowledge from outside the Vertical Games, technical training promoted by the companies, and relationships with innovative organizations outside the Vertical Games. We conclude that corporate participation in Vertical Games facilitates access to resources and locally available expertise. Also, allows the deepening of learning processes that enable strengthening of the competitiveness of the digital games sector. The research reinforces the proposition that business networks can provide collaborative learning environments. It is believed that this study contributes to the empirical theoretical development in a growing segment in the global economy.

KEYWORDS: Collaborative learning, learning channels, interorganizational network, Vertical Games.

1. INTRODUCTION

Specialized researchers agree that collaborative learning processes between companies are crucial for the creation of competitive advantage at the individual level of companies and together. The characteristics arising from a knowledge society, which has the competitiveness mainly focused on learning processes, on intellectual capital, and on innovation guide the development of the digital games sector. In this context the aim of this paper is to identify and analyze the learning channels most used in Vertical Games, an interorganizational network in South of Brazil.

The games industry stands out in the international arena as one of the most dynamic sectors of information technology, causing cultural and economic scale impact in addition to contributing to the employment of high-level human resources. It is an intensive knowledge industry, which is embedded in a global market whose figures have already reached \$33 billion annually (Brazilian Developers of Electronic Games Association- ABRAGAMES, 2008).

Although the worldwide market for games is a billion dollar industry, in Brazil it is weak and this is characterized by such structural problems as a shortage of skilled labor and piracy.

In this context, especially from the first decade of this century, we have seen an emergence in Florianópolis, the capital of Santa Catarina, in southern Brazil, in the initiative of entrepreneurs, start-ups that operate in development and the commercialization of solutions for the gaming and entertainment segment.

Seeking to increase its level of national and international competitiveness, the embryonic Florianopolis games industry, in partnership with the Santa Catarina Technology Association (ACATE), created "Vertical Games", an interorganizational network which aims to stimulate relations among companies that operate in the digital games market and with other institutions, such as the government, universities, research institutes, non-profit organizations and distributors.

Noting the importance of studies on the subject of network learning and understanding the relevance of the gaming industry in the knowledge economy, the aim is to discuss the theoretical knowledge of learning in networks with the practice of this process from the identification and analysis of the learning channels within Vertical Games.

This research is as much justified by its theoretical character as it is by its empirical one. We find that the video game industry reveals itself as an empirical field, whose bases characterize the dynamics of the new information economy. It is becoming increasingly important in the economy, using a complex combination of creativity, technology and digital entertainment. It's also a relatively new industry, comprising of companies with less than ten years in operation. According to the Brazilian Developers of Electronic Games Association (ABRAGAMES, 2008), the inexperience of the companies, regarding the best practices have influenced the industry's development in Brazil. This scenario highlights the need for research into the industry.

Regarding the relevance of research on learning channels in company networks, taking studies of interorganizational networks into account, such as facilitating environments for learning, is still to be further explored. (GUO, GUO, 2010; GANZERT, MARTINELLI, 2009; ASPROTH, 2007; LARSSON et al., 1998). In the interorganizational network scenario, Cunha (2007) states that theoretical and empirical knowledge are not enough to explain the merging of companies such as clusters, productive agglomerates and company networks as well as their potential to produce profits generated by mutual actions. The author points out that the lack of researches in this area can hinder future competitiveness in regional areas, implying the loss of opportunities created by the new economical, technological and organizational model which values local competencies.

The paper is structured in fifth sections. First of all there is the presentation of the research's context, problem, purpose and justification. The conceptual basis that led the development of this paper are presented the second section. The methodology is described in the third section. The fourth section is the presentation and analysis of results. Then finally the fifth section shows the extent of the aims set and an index of the theoretical and practical references involved in the study.

2. THEORETICAL RESEARCH

The global competition is constantly changing. There is a strong trend that indicates a competition paradigm shift, which starts at the end of the 1960's, with an emergence of a new economy or society, called the knowledge society. In this new economy, knowledge is not just another resource, next to other traditional production factors - work, capital, land -, but the only significant resource (DRUCKER, 1992; TOFFLER, 1994; NADVI, 1999; STWART,

2002). The company is thought of as a knowledge repository and learning as a fundamental aspect for competitiveness (BOERNER et al., 2001).

It is believed that the industrial era has come to its end. And the knowledge era can endanger the competitiveness of the companies that refuse to face the new challenges and competitive standards.

Alike the industrial economy, which valued vertical integration, the knowledge economy stimulates the formation of inter organizational alliances and managerial arrangements built inside the networks.

In this regard, Catells (2003), Balestrin and Verschoore (2008), Cunha (2007) and Porter (1998) point out that the competitiveness moves from a unidirectional, individual and endogen process of firms to an open, multidirectional, collaborative and network process. In this context appears a lot of inter-related spaces in interorganizational networks, that promote an environment which encourages knowledge sharing and collaborative learning. Collaborative learning can be conceptualized as the collective acquisition of knowledge by a set of organizations.

Collaborative action directed towards collective learning is not just about searching for external knowledge on individual companies through relationship networking, but above all, on knowing how to develop it through partnerships. Thus, social and institutional knowledge and knowledge of network itself collectively builds a new knowledge that is learnt jointly in the group (LARSSON et al., 1998; ASPROTH, 2007).

One important way to learn is through others (HÅKANSSON et al., 1999; DAHL and PETERSEN (2004). So, is necessary to promote sufficient conditions of which are physical proximity and local embeddedness (MORRISON et al., 2013). For Håkansson et al. (1999), the extent to which learning takes place seems to be highly related to the existence of connections between the relationships. They show that the more each single relationship is part of a network more the company seems to learn from it in average. Further the research made by Simona and Axèle (2012), highlight that inter-firm relationships play a significant role in the process of knowledge transfer.

Mouzas et al. (2008) argue that developing network insight is a managerial challenge encompassing the amalgamation of dispersed pieces of atomized network pictures through heedful, multilateral interactions. For the authors a managerial activity transcends the task-specific knowledge base of managerial cognition and leads to objectified organizational

learning within a business network. Mouzas et al. (2008) also highlight that managers that develop insight in business networks are able to mobilize other actors and create a competitive advantage for their organization that is crucial for innovation and growth.

Generally speaking, the knowledge perspective literature on industrial clusters can be categorized into two perspectives: the Marshallian, and the localized knowledge spillovers (LKS). As for the Marshallian perspective, the research focus in past literature was heavily on transaction-based production systems, they usually hypothesized that 'knowledge in the air' is pervasively distributed and freely shared. According to the Marshallian perspective local firms are generally assumed to be more willing to share knowledge with others because common norms and values have prevented cheating and opportunistic behavior (GUO and GUO, 2011). By contrast, the LKS perspective asserted that knowledge related to innovation is not spread evenly between companies in industrial clusters, but instead flows in a highly selective and unequal manner between them (GIULIANI and BELL, 2005; GIULIANI, 2007; MASKELL and MALMBERG, 2007; MORRISON et al., 2013).

For Guo and Guo (2010), there is a wide range of knowledge transmission channels in clusters. The authors cite the relationships between companies in the client-supplier cluster type, relationships with suppliers of specialized services, raw materials and equipment, the processes of imitation, the mobility of labour, relationships with universities and research institutions and business associations. In the scope of the companies, the authors emphasize internal training and research and development departments.

Knowledge transmission channels can be intentional or unintentional. From this perspective, Guo and Guo (2010) consider that literature emphasizes the analysis of intentional channels, somehow ignoring contributions of informal or unintended channels. The exceptions are the studies made by Saxenian (2006), Dahl and Pedersen (2004) that show the importance of informal contacts such as knowledge transmission channels.

Research on the knowledge system structure in clusters show that leading companies generally behave as gatekeepers of knowledge. These type of companies are usually the largest ones and more dependent on their research and development departments for the acquisition of technical knowledge. In clusters of emerging economies, medium and small sized companies have difficulty obtaining sufficient financial and human resources to create and maintain departments of research and development, and they are obliged to acquire external technological knowledge (BRITTO, 2004).

3. METHODS

This research is developed on the basis of the exploratory paradigm and theoretical empiric. The technicals procedure used in this research are based on the bibliographic research and a case study. The bibliographic research is characterized by the utilization of selected current publications: books, periodic, articles and materials gathered from Internet make part of this type of research. Was consisted of the search for indexed scientific articles on databases. After gathering the theoretical material, the problem was fixed and the conceptual basis was developed.

In relation to a case study, the picture of the event is characterized by a specific case study, by which it will have knowledge of the fact or phenomenon studied by the analysis and interpretation process. The case chosen to represent "good judgment" of the research universe. To this end, the research universe was Vertical Games. The choice of Vertical Games was down to the ease of access to necessary information, the emerging importance of the games industry in a new competitive setting enforced by the knowledge of the economy, and among other reasons, the need for research in the games sector, specially in Santa Catarina and Brazil.

The identification and analysis of learning channels most used in Vertical Games were based on survey data collected from primary and secondary sources. The information was collected: a) through research on secondary sources: scientific articles, theses and dissertations, books, magazines, websites and b) field research, questionnaire and participation in two regular meetings. The research was based on survey data collected from primary sources by questionnaire answered by eight Vertical Games members.

The questionnaire was elaborated from the researches of Guo e Guo (2010), Belberbos (2012), Lundvall (2009), Zeng et al. (2010) and Meyer-Stamer (2001). The questionnaire presented nine categories of classification of collaborative learning channels: (1) interpersonal relationships: relationships among companies; (2) relationships with suppliers: of raw materials, of equipment and specialized services; (3) contracts: hiring of company employees, hiring of company employees from outside the Vertical Games; (4) imitation: of companies that belong the Vertical Games, of companies from outside the Vertical Games; (5) study and development: the research and development department; (6) training: given by major clients, offered by educational institutions; (7) collaborative development: with universities and/or

research centres, among companies, collaborative development with companies from outside the Vertical Games; (8) coded knowledge; (9) relationships with the government: public policies that stimulate studies and transfer knowledge among companies, public policies that stimulate studies and knowledge transfer between companies and companies outside the Vertical Games; and (10) cultural environment: motivation for knowledge sharing among companies and an openness to knowledge from outside the Vertical Games.

A Likert scale with seven levels was used to measure the effectiveness of the learning channels, considering level 1 as completely inefficient and level 7 as very efficient. To analyze the results of field research, the average of the grades given by each interview were calculated. In turn, the five most effective learning channels in Vertical Games were classified and identified.

4. RESULTS

Vertical Games, founded in 2010 and brings together technology companies that operate in developing and marketing solutions for the gaming and entertainment segment. It has four ACATE associated companies and approximately six others who are in the association process. Apart from companies, the network also consists of ACATE representatives, the Secretaria do Estado de Desenvolvimento Regional (SDS), Projeto Novos Talentos, the Fundação para Pesquisa e Inovação do Estado de Santa Catarina (FAPESC), the Serviço Nacional de Aprendizagem Comercial (SENAC), Midi Tecnológica, the Federal Universidade Federal de Santa Catarina (UFSC), the Universidade do Vale do Itajaí (UNIVALI) and the newly created International Institute of Innovation, I3.

Most of the non-associated companies is still in the embryonic phase and have no financial resources to afford tuition. Among the associated companies are Palmsoft and Hoplon, both pioneers in the development of games in Florianópolis. The SDS, SENAC, FAPESC and I3 participate in order to assist the development of projects aimed at raising funds for companies. The Projeto Novos Talentos seeks to encourage, discover and prepare a workforce, with emphasis on young people from low-income families, for the growth of the information and communication technology sector, specially games and digital entertainment.

Observing the dynamics of relationships among organizations, Vertical Games is characterized as an interorganizational network, which undergoes positive effects of agglomeration economies such as: 1) the best way of facing and coping with uncertainties

inherent in the competition and the advancement of new technologies in the competitive and dynamic gaming industry, 2) the dynamic impact resulting from the information circulation flow, and 3) the learning obtained by interactivity.

The results presented in Table 1 reveal high levels of collaborative learning, and show that the most important channels of learning within the Vertical Games are in first place three channels: relationship between small and medium sized enterprises with the leading and innovative companies, recruitment of staff (employees) from companies outside the Vertical Games, and motivation for knowledge sharing between companies. In second place it was showed others three channels: management culture open to knowledge from outside the Vertical Games, technical training promoted by the companies, and relationships with innovative organizations outside the Vertical Games. In third place is imitation of the best practices among companies and imitation of the best practices of companies that do not belong to the Vertical Games. In the fourth place is the development of projects between universities and companies. And in the fifth place is the development of new technologies into products and processes by the departments of research and development of companies.

Conforming to the proposal of Dyer and Nobeoka (2000), it can be seen that the effectiveness of collaborative learning at Vertical Games comes from a motivation for knowledge sharing and, in respect to the perception of its members, of the advantages in terms knowledge and relationships which networking provides.

A collaborative culture was identified in Vertical Games. For Dennis Kerr Coelho, Vertical's Director, collaboration enhances the competitiveness of an industry, in this sense means that Vertical Games is an opportunity for small and medium enterprises to engage with the largest and most experienced, and jointly develop projects for the network as a whole.

Coelho is noted for encouraging a transparent and open culture, bringing a unique view of competitiveness to the group, creating a facilitating environment for knowledge exchange between organizations. The participants of Vertical Games feel free to contribute to the network, helping colleagues and learning from the more experienced. In this sense the research identifies that leadership is a factor that influences the learning network.

Table 1: Learning Channels in Vertical Games.

Ranking	Score	Learning channels
1	6,75	Relationship between small and medium sized enterprises with the leading and innovative companies. Recruitment of staff (employees) from companies outside the Vertical Games. Motivation for knowledge sharing between companies.
2	6,62	Management culture open to knowledge from outside the Vertical Games. Technical training promoted by the companies. Relationships with innovative organizations outside the Vertical Games.
3	6,25	Imitation of the best practices among companies. Imitation of the best practices of companies that do not belong to the Vertical Games.
4	6,37	Development of projects between universities and companies.
5	6,12	Development of new technologies into products and processes by the departments of research and development of companies.

The results show that corporate participation in Vertical Games facilitates access to resources and locally available expertise. Also, allows the deepening of learning processes that enable strengthening of the competitiveness of the digital games sector. Corroborating with Britto's proposal (2004), it is observed that the effect of "leakage" (spill-over) is reinforced by the existence of systematic channels of interconnection between network members and that the continuous exchange of information aids the coordination of network strategies. Also in accordance with Britto (2004) it can be seen that Vertical Games' generated knowledge is focused on the needs of participating companies.

5. CONCLUSIONS

We can conclude that Vertical Games has stimulated relations among companies that operate in the digital games market and with other institutions, such as the government, universities, researches institutes, non-profit organizations and distributors.

Vertical Games operates conforming with the new competitive paradigm imposed by the knowledge economy, in which the business world is becoming increasingly interconnected (TAPSCOTT and WILLIAMS, 2011) and knowledge sharing is becoming an inducing factor of success in knowledge-intensive companies (STYHRE, 2002).

The research reinforces the proposition that business networks can provide collaborative learning environments. It is believed that this study contributes to the empirical theoretical development in a growing segment in the global economy. It strengthens the empirical reality, once with this study the companies in the digital games have a scientific reference about their praxis. We highlight that this research can be used by managers to enable the understanding of the mechanisms and determinants of learning channels and can also influence the knowledge diffusion more effectively.

Finally, it appears that the research provided a reflection on the existing knowledge and practices in the digital games sector, and may even encourage further investigations into the expansion of knowledge about company networks, collaborative learning and network learning.

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