The hedonic and utilitarian value of digital games at product category level

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THE ENTERPRISES SIMULATION IN SECOND LIFE. THE CASE OF PERTING LTD

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Abstract

The diffusion of ICT applications in virtual worlds as Second Life (SL), Forterra, There and Multiverse created many interesting research opportunities, particularly in knowledge management and e-learning. Virtual worlds are strongly immersive and produce entrepreneurial and social initiatives in which personal, professional and business relationships move quickly and could be transferred into the real environment.

Enterprises, Municipalities, Universities and Chambers of Commerce are increasing the use of SL enforcing the methodological relevance of networking, a new approach that bases its impact, for the development of business, on the creation and maintenance of net links.

This paper will consider the case of Perting Ltd, the simulated enterprise created in 2001 by Forlì Faculty of Economics, that established in February 2008 its premises in SL and started managing businesses in different sectors.

The main subject of this analysis is the use of virtual reality in management not only for business but also in research and didactics. In managerial theories the research would be an opportunity for a new perspective to know the symmetries among ICT business platforms and to understand, in a better way, how the learning process could support organizations in their approach to the market of internet relationships.

Keywords: virtual world, simulation, e-learning, knowledge management systems
1 FROM INFORMATION SYSTEMS TO VIRTUAL WORLDS

It is widely accepted that ICT offers increasing opportunities for implementing innovative structures and processes in organizations. ICT is connected not only to the low cost processing of information, but opens new perspectives for networking\(^1\), interacting and communicating across the world overcoming physical distances (Ndou, Troshani 2008).

In recent years the increasing interaction between ICT and organizational systems moved the evolution of information systems towards the search of a major integration and coordination among the different business functions / area / departments and external relationships with customers and suppliers (Di Donato 2003).

The use of virtual reality by enterprises and public administrations showed the relevance of visual and perceptual impact on organizational behaviour and contributed to the implementation of BPR through the introduction of subjective factors and intangible assets as key – factors in the management of e-business (Caragnani 2005).

In a few years the targets of Internet usage changed from information distribution to the creation of business web sites including knowledge platform linked to products, services and enterprises, based on interactive processes as forums and blogs.

The same purpose derives from the creation and management of virtual worlds (3D Web) as NORRATH ( The first virtual space which introduced a virtual currency convertible in the market ), MMORPGs (Massively Multiplayer Online Role-Playing Game), METAVERSE (Fully immersive 3D virtual spaces as SL), MMOLEs (Massively Multiplayer Online Learning Environment), FORTERRA, THERE and MULTIVERSE, enable the business development in virtual environment (Kish 2007). The 3D creates the illusion of the real business world with Avatars which materialize the image of the decision makers, users and visitors moving in SL. One of the main features of the virtual world is the interactivity among Avatars that interact on the basis of an informatics platform appearing as landscape, buildings, roads, etc.

The organizational studies undertaken on management and technology (De Marco 2000) stressed the relevance of Practice Community (Brown, Duguid 2002) and the impact on individual behaviour and trust (Giddens 1990). Moreover it is emphasized their influence on the process of professional and entrepreneurial culture building, together with their dynamism and differentiation, opening the possibilities of a deeper specialization (Bertolotti et al. 2003).

Also the outsourcing of knowledge process (Virtuani 2005) coming from the network through data mining activities support business flows with a new approach based on links among the virtual world actors that represented a huge innovation comparing to the internal and traditional way of information management (Ciborra, Hanseth 2006).

Many Scholars pointed out the difficulties to define the “Virtual World” and the “Virtual Community” (Schoberth, Schrott 2001) owing to the multidisciplinary attitudes needed to approach the subject (Krcmar, Leimeister 2005) and considering the variety of languages used to this purpose by academic and unacademic Authors (Preece 2000).

Choi (2007) analyses the threshold to cross from the informatics and technology to business and network dynamics, defining the Virtual World as an environment in which the participants,

\(^1\) Although it is connected to the concept of Networking approach used by Authors to define a way of creating new organizations by stabilizing and implementing links with other entities, networking is used in the meaning of activity oriented to establish links among different individuals on a common knowledge platform, Real, Simulated and Virtual (RSV).
represented by Avatars, coordinate their business actions with an unknown speediness and overcoming the normal space and time limits (Table 1).  

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armstrong and Hagel (1997)</td>
<td>Virtual communities are computer-mediated spaces where there is a potential for an integration of content and communication with an emphasis on member-generated content.</td>
</tr>
<tr>
<td>Lee, Vogel, Limayen (2002)</td>
<td>A virtual community is a technology-supported cyberspace, centred upon communication and interaction of participants, resulting in a relationship being built up.</td>
</tr>
<tr>
<td>Porter (2004)</td>
<td>A virtual community is defined as an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms.</td>
</tr>
<tr>
<td>Krcmar, Leimeister (2004)</td>
<td>A virtual community consists of people who interact together socially on a technical platform; The community is built on a common interest, a common problem or a common task of its members that is pursued on the basis of implicit and explicit codes of behaviour.</td>
</tr>
<tr>
<td>MacInnes and Hu (2005)</td>
<td>A virtual world is a persistent synthetic environment where people communicate with each other using a virtual person, Avatar.</td>
</tr>
<tr>
<td>Jackson (2007)</td>
<td>A virtual world is a technical platforms; computer-generated worlds where people participate using Avatars; an outgrowth of online gaming; evolving into rich ecosystems of online communities.</td>
</tr>
<tr>
<td>Thomas and Brown (2007)</td>
<td>Virtual worlds are persistent, Avatar-based social spaces that provide players or participants with the ability to engage in long-term, joint coordinated action.</td>
</tr>
</tbody>
</table>

**Table 1. Some relevant definition of “Virtual World” and “Virtual Community”**

In SL, the most diffused virtual world (Table 2), the language is very specialized (Thomas, Peters 2007). By the way, Land is defined as a place in which it is built the store/shop; Group is a community of residents sharing common interests and needs and People is the residents’ nickname.

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours used by all Residents</td>
<td>1.968.905</td>
<td>7.337.424</td>
<td>25.646.287</td>
<td>31.990.070</td>
</tr>
<tr>
<td>Size of Landscape (Km²)</td>
<td>293.65</td>
<td>963.66</td>
<td>1.429.65</td>
<td></td>
</tr>
<tr>
<td>Balance sheet of Linden Residents</td>
<td>520.703.616</td>
<td>1.418.354.523</td>
<td>4.183.573.385</td>
<td>5.173.515.776</td>
</tr>
<tr>
<td>L$ exchanged</td>
<td>2.031.208.854</td>
<td>2.507.966.464</td>
<td>2.507.966.464</td>
<td>2.507.966.464</td>
</tr>
<tr>
<td>Population</td>
<td>599.623</td>
<td>2.267.092</td>
<td>11.704.934</td>
<td>13.830.008</td>
</tr>
<tr>
<td>Residents Premium</td>
<td>12.433</td>
<td>49.776</td>
<td>93.219</td>
<td>88.585</td>
</tr>
</tbody>
</table>

---

3 Second Life is a 3D virtual world launched in 2003 and developed by Linden Lab. The users, named “residents”, interact each other through “Avatars” providing an advanced level of a social network service. Residents can participate to individual and group activities, create and trade items (virtual property) and services with one another. Second Life uses an internal currency called the “Linden Dollar” that are usually obtained by changing real money. http://www.secondlife.com
4 Linden Labs defines residents as the accounts created in Second Life. www.secondlife.com
5 Population is defined as the total of enrolled users
6 It is defined as the complex of users that have subscribed an account Premium and have bought Linden with real currency. www.secondlife.com
Score of Italy in the classification of Countries for the number of active users

<table>
<thead>
<tr>
<th>Active users in the range of age 25-34</th>
<th>7^</th>
<th>35%</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of use (in hours) by male</td>
<td>55.14</td>
<td>58.58</td>
</tr>
<tr>
<td>% of use (in hours) by female</td>
<td>44.86</td>
<td>41.42</td>
</tr>
</tbody>
</table>

Table 2. The general profile of activities in SL

The use of Internet stressed by SL moves from the management input-output processes to the coordination of transactions focused on actors, relationships, operative activities, integration mechanisms and technologies (Virili 2008).

To this purpose the diffusion of different ICT tri-dimensional premises is performing a strong impact on the structures and processes of trade, mainly in term of knowledge management, assuming an increasing function of support and assistance in managing changes (Barabasi 2004) from the direct product-driven to the indirect one (Buttle 2004). This translation of perspectives is based on the personalization and on the maintenance of business links through an adequate knowledge management completely based on specialized software typed on CRM.

Together with the 3D relational marketing we have to consider, in addition, the opportunities of networking among operators that from the traditional concept of “fair” and “business meetings” or “business tours”, have been developed in events, forum and blog building, structured as instant media.

2 SECOND LIFE AND THE ENTERPRISE SIMULATION

Many public and private organizations set a place inside SL, exploring the way in which virtual worlds may change their business management. In recent times SL is considered as an effective entrepreneurial environment. For many individuals the first business experience into SL is represented by the creation of a store for marketing and branding targets but other key business areas have been explored to this purpose (Table 3).

The usage of SL in the enterprise simulation has the main aim of allowing the residents to interact directly with the teachers and students during lectures and seminars enforcing an interactive approach that can be considered the added value achieved by this methodology rather than the traditional e-learning platforms by which students can only download the didactical materials.

The attitude of SL in enterprise simulation is particularly useful for the development of entrepreneurship in transition countries, characterized by scarce entrepreneurial initiatives and an environment not favourable to entrepreneurship, in which the virtual reality could be considered as a

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7 For 2005, 2006 and 2007 the data refer to 31th December, for 2008 at 31th May.
8 In each activity of support and transformation of supply chain we can consider different operative applications of Internet: for the infrastructure management, human resources, technologies development and purchase, the ICT tools are intranet, knowledge management and community; the e-commerce refers to logistics in and out; the conversion process uses CAD (Computer-Aided Design) and CAM (Computer-Aided Manufacturing); while marketing and selling uses the e-franchising, email and web site. The service post sale utilizes the mailing list, forum and extranet (Benassi 2005).
9 In the era of e-commerce the problem of channel management is linked to the conflicts management of different and new channels of communication (Castaldo 2001).
10 In the fashion sector, www.fashionblog.it; www.fashionteen.it/blog/.
way for the first expression of entrepreneurial behaviour and to attract talents for the development of local systems that could be imaged and designed in a very innovative look.

<table>
<thead>
<tr>
<th>Area</th>
<th>Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and Training</td>
<td>Realization of lectures and videoconferences based on interactive approach.</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
<td>Organization of meetings and conferences</td>
</tr>
<tr>
<td>Sales</td>
<td>Branding, Marketing, Customer Relationship Management, Improving Customer Loyalty</td>
</tr>
<tr>
<td>Innovation</td>
<td>Testing and developing products and services</td>
</tr>
</tbody>
</table>

**Table 3.**  *Emerging key business areas in SL*

Another area of interest refers to the operative marketing with the target of increasing the revenue by products selling according to CRM strategies implementation to know and fidelize the customers. At the same time SL could work as test laboratory to develop new products and services, that can be realized in the real world.

In the education field the framework of enterprise simulation proposed opportunities in the: 1) Definition of the educational process: each participant rotates among the different departments, carrying out tasks connected to the job and to the organizational goals achievement; 2) Development of behavioral capacities, both internal to the enterprise simulation, and external with other foreign companies; 3) Providing adequate and consistent responses to the needs of real companies; 4) Learning to manage a role with the process of know-how transfer; 5) Increasing the basic motivations through greater participation in the processes of learning and cooperative environment; 6) Problem solving activities with customers and suppliers; 7) How to learn and work in team.

The applied methodology is the learning by doing based on the synergy between the knowledge acquired during the studies and the practical skills achieved through the simulated activities.

Enterprise simulation program faces the ICT challenges in using Internet as the main tool to manage relationships with customers and suppliers, together with the communications within internal departments. Last implementation in SL increased the enterprise simulation innovation for didactic and research purposes.

Particularly the ICT sector on the use of virtual reality is resumed by Carpenter, Harrison and List (2005) through researches on boundaries and networking establishing new benchmarking for private and public organizations. On this purpose more than 300 Universities and educational organizations have set up platforms in virtual worlds and are exploring ways and concepts for distance learning purposes.

Virtual Worlds enable new ways of communication and collaboration over the Internet by applying 3D environments and VoIP technologies. Through the combined use of innovative Internet technologies and due to their immersive features, virtual worlds offer new possibilities for the computer-mediated communication and co-operation. Hence, virtual worlds provide innovative learning arrangements and are particularly suitable to transfer experimental knowledge. Students can take part in a distance learning environment to develop a real sense of community in which they cooperate with each other and there is a regular sense of classroom interaction.

Furthermore, Virtual Worlds offer new opportunities for enterprises to interact and understand their existing and potential customers’ needs and desires (Lang, Fetscherin, Lattemann, 2008).
3 THE CASE OF PERTING LTD

Most of the key business areas in SL, above mentioned, are implemented in Forlì Laboratory for enterprise simulation. Forlì Laboratory reproduces for didactical and research purposes the structures and the activities of an enterprise simulating the business in connection to an international network of other simulated enterprises named Europen.

This experimental activity is managed by students under the mentoring and supervising of the teacher and tutors. The sector chosen in Forlì is the business services and IT products trade, under the brand of Perting Ltd, a simulated enterprise with its general meeting and board of directors. In the network this enterprise makes business with other firms of the Europen Network operating as suppliers and customers (Table 4).

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>Academic Year</th>
<th>At 31th October</th>
<th>At 31th March</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. of Teachers</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>N. of Tutor</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>N. of Students</td>
<td>51</td>
<td>52</td>
<td>48</td>
<td>57</td>
<td>63</td>
<td>54</td>
<td>55</td>
<td>76</td>
<td>44</td>
</tr>
<tr>
<td>Hours of Activity</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>N. of Customers</td>
<td>14</td>
<td>11</td>
<td>48</td>
<td>13</td>
<td>121</td>
<td>92</td>
<td>113</td>
<td>15</td>
<td>55</td>
</tr>
<tr>
<td>N. of Suppliers</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td>7</td>
<td>51</td>
<td>28</td>
<td>45</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>N. of Visitors in SL</td>
<td>172</td>
<td>1613</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. The profile of activities carried out by Perting

The corporate purpose of Perting Ltd is the consulting in management, accounting and internet business. Moreover Perting is committed in the trade of informatics equipments (PC, printers, photo cameras, modems, software and so on).

From the academic year 2008-2009 the Laboratory used SL as innovative tool to realize lectures, video conferences and interactive e-learning platforms improving the didactic and research activities. By using SL the number of contacts activated by Perting highly increased from 172 to 1613 enforcing the networking approach creating a network of individuals and organizations.

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11 The Laboratory is managed by University of Bologna – Forlì Faculty of Economics.
12 The data linked to the number of teachers, tutors, students and hours of activity refer to the first semester. The data related to the number of customers, supplier and visitors in SL refer to 31th October 2008.
13 The data linked to the number of teachers, tutors, students and hours of activity refer to the second semester. The data related to the number of customers, supplier and visitors in SL refer to 31th March 2009.
Summarizing the main relevant steps of Perting Ltd:

- In October 2001 the creation of Perting Ltd was the first milestone of the enterprise simulation Laboratory\textsuperscript{14} connected with the course of Business Management\textsuperscript{15} and supported by Fondazione Cassa dei Risparmi of Forli. Perting Ltd operated in organizational consulting, business networking and merchandising of ICT products as the first unit of Enterprise simulation established by an Italian University\textsuperscript{16}.

- In 2004 Perting participated to its first international project for the “Formation and technical assistance for SMEs development in Durazzo harbor district”, financed by the Ministry of Foreign Affairs. To this purpose the first Simulated Unit supported by Perting was created in Shkoder (Albania): the KK Personal Robe, operating in textile sector.

- During A.Y. 2005-2006 Enterprise simulation Laboratory of Forlì contributed actively to the start up of the Unit “NoRisk” at Economics’ Faculty of Parma University, a simulated company offering insurance services and trade of products for the safety at the workplace.

- In 27th February 2008 Perting opened its headquarters in SL, becoming the first enterprise simulation created by a University and seat in this virtual world (Figure 1).

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{secondlife.png}
\caption{The headquarters of Perting Ltd in SL\textsuperscript{17}}
\end{figure}

The simulation is very realistic because all the managerial processes, from the business plan to the product/service conception, to the delivering of orders and related invoices are carried out as in the reality. At the end of each year on the basis of cost and revenues a balance sheet is prepared and submitted to the Europen Center that certifies the result.

This activity allowed the students to realize a real internship in a concrete job while applying of knowledge received in theoretical courses. This learning is connected to the building of the sense in entrepreneurship and self achievement. For this reason the Laboratory was involved in many international projects for the development of small and medium business in transition countries. As it could reproduce entrepreneurial and marketing practices Perting Ltd was used in researches on enterprise start up and on the management of relationships with suppliers and customers.

\textsuperscript{14} Managed by Daniele Gualdi, Professor in charge of « Simulimpresa » course.
\textsuperscript{15} Massimo Bianchi, Full Professor of Business Management in Forlì Faculty of Economics.
\textsuperscript{16} Certified by Network Europen
\textsuperscript{17} www.secondlife.com; http://slurl.com/secondlife/Kouhun/246/248/54
In the premises of Perting in SL the reception desk, the departments (Figure 2) and the conference room are located. In the reception the residents can ask information and join the Perting group. There are the offices in which, with the mentoring of the tutors, the students can receive visitors carrying out the operative activities and the conference room in which the participants organize meetings. The Forum Area is addressed to perform lectures and video conferences and the international projects exhibition that shows the initiatives in which the simulated enterprise participated (Figure 3).

![Figure 2. The departments](image1)
![Figure 3. The forum area](image2)

The new challenges of Perting are connected to the start up of a new business represented by New Fashion Perspectives (NFP), a micro enterprise in fashion sector, with a Laboratory in which the operative tools as clippers and stapler can be used by Avatars to simulate the real activities reproducing the true premises of a micro business undertaken by a mentor supporting didactics from the real market (Figure 4).

![Figure 4. The laboratory of NFP in SL](image3)

The reason of this support, although the impressive harvest of contributions published on line (Barabasi 2004), is the main source of practical knowledge on the rapidly evolving world of micro enterprises, particularly in fashion sector, could be individuated only in the real market.

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18 The mentor or « impresa madrina » is a real enterprise owned by Etienne Meite, supporting the simulation with its practical and continuous up to date know how. The relevance of this support is stated by the basic simulation methodology (Gualdi 2001)

19 www.secondlife.com
4 EARLY EMPIRICAL STATEMENTS

At the moment we would focus on some hypothesis about Perting case and the experimental materials gathered from the impact of virtual reality on previous seven years of experiences in enterprise simulation:

1. The relations among real, simulated and virtual different levels of representation, operate within a multi dimensional symmetry.

2. The real, simulated and virtual business platforms, although working on the same entrepreneurial subject, could apply different strategies and operative methods.

3. The Virtual world is mainly based on exploring strategies while the exploiting refers to the simulated environment.

4. The level of strength and weakness in relationships among organizational entities changes significantly moving from Real to Virtual world.

The research focused on the relationships expressed by the number of contacts with suppliers and customers in real, simulated and virtual world. In particular the research sample composed by New Fashion Perspective (Virtual) Perting (Simulated) and the Mentor Micro Enterprise, evidenced the increasing level of networking when previous stages of simulation started to move in SL.

One of the first problems was to understand the role of the three levels of real, simulated and virtual in making business.

A basic topic is concerning the symmetrical relationships among three steps in business development as a) Business in Real World b) Business Simulation and its transfer to the Virtual platform c) Business purely virtual among actors and organizations living in 3D.

The Figure 5 summarizes these Symmetries on a two axes basis as a framework to manage the business simulation in the virtual world underlining the role of interpersonal links overcoming difficulties in perceiving the indirect real, simulated and virtual connections.

These links enhance the central position of trust processes deepened in recent years on the mechanisms requested for individual and business relationships (Sitkin, Weingart 1995) and on the indirect approach among actors or decision makers. The combination among real, simulated and virtual worlds underlines the range of business opportunities together with the need of selecting strong and personal relationships not only on the basis of trust but on the selection of most reliable links too so as to limit the enormous and uncontrollable mass of contacts and connected information. In these terms the approach to face the start up of new businesses and particularly of new enterprises operating...
in real, simulated and virtual worlds can be linked to the balance between the trust towards new relationships according with an exploring strategy and, on the other side, the trust on existing links as the result of an exploiting approach. The first one is addressed to a higher renewal of system elements and so to weak links among the organizations that belong to the environment. The exploiting strategy is mainly addressed to a low renewal and so is adequate to strong organizations that have overcome the start up phase (Dittrich, Duysters 2007).

On this purpose weak and strong links coming from respectively by the exploring and exploiting strategies produce a low and high level of commitment, measured by the scarce and high frequency of collaborations in the partnership.

In particular the exploiting strategy aims to widen the existing technological capacities, to enhance strong links due to the high trust in the commitment and so to establish equal agreements.

The exploring is characterized by the search for new technological capacities producing, in the start up period, weak links with the adoption of opportunistic behaviour and of low commitment, that allow the organizations to establish not equal agreements.

In the relationships between real, simulated and virtual worlds is possible to survey an operative symmetry, as agreed by many Researchers on the setting up (Mei Alves de Oliveira 1994) but also in the analysis of organizational borders (Bianchi 2003).

The Enterprise Simulation is based on the reproduction of interactive internal and external processes in order to improve the performance of participants. On this purpose the falsification of symmetry in the reproduction of organizations can be recognized as a criterion for performance evaluation (Bianchi, Tampieri 2008). Moreover the increasing interaction among real, simulated and virtual environments can be expressed by the e-commerce and the virtual platforms built by real enterprises for branding and marketing targets. Concentrating the attention on R-V comparison, the analysis of organizational relations (Table 5) could be defined as a set of contacts in which the enterprises are inserted.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Buyer (Real / Virtual) (R-V)</th>
<th>Seller (Real / Virtual)(R-V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Store building in SL</td>
<td>R</td>
<td>V</td>
</tr>
<tr>
<td>e-commerce</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>e-commerce</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>Customer loyalty process</td>
<td>V</td>
<td>R</td>
</tr>
</tbody>
</table>

Table 5. The network structure

Considering the processes of structure building, the Network Dynamics approach faces the competitive and environmental complexity analyzing the inter organizational network (Reagans, McEvily 2003) as the passage from atomistic structures and processes with separated entities to the network and the metaorganization (Antonelli 2004), in which, in a restricted perspective, the hyperlink (Bianchi 2001) that involves structure and process elements, allows to define the phenomena in a synthetic way (Bruni, Perrotta 2007).

The different structures of network (Vicari 2001) aim to develop a variety of coordination forms able to create an adequate dialogue among organizational systems. To this purpose the fundamental elements of network organization (Grandori 1998, 1999) in virtual environment are: the entities, the relational objective of network, the links form and the institutional mechanisms of coordination as social and contractual ones (Lomi 1997; Mercurio, Testa 2000). In particular the links network can assume different forms according to the modalities through which the entities interact each others. In recent years these new innovative business models belonged to b-web (business-web) (Tapscott et al
In this perspective the issues related to real, simulated and virtual world will be the target of further studies as one of the main mission for didactics and business management.

References


20 The b-web is defined as a system of suppliers, merchandisers, commercial societies, customers that use Internet as the main channel of communications and transactions.