Organizing value creation and value capture in the innovation process: Evidence from video game SMEs

Gandia Romain

INSEEC Business School

rgandia@inseec.com

Guallino Gabriel

INSEEC Business School

gguallino@inseec.com

Abstract:

Today, video game developers are faced to a disconnection between the value creation resulting from innovation and the value capture generated by the sale of innovation. In the literature, this disconnection refers to a strategic dilemma (cooperation versus integration) and organizational dilemma (open model versus closed-model) within the innovation process. In our opinion, the literature does not give any clear answer about the organizational forms which could solve this dilemma. This article analyzes the way the video game developers organize their innovation process to combine the value creation with a high level of value capture. Based on a qualitative methodology and four case studies, we show that the question of the combination can be resolved by organizing certain phases of the innovation process differently. Therefore, by adopting an open model in the upstream phases (through cooperation), and a closed-model in the downstream phases (through integration), the developers can optimize value creation and value capture. Finally, this research contributes to the studies on innovation and value logics and participates in creating a better understanding of the video games sector.

Keywords: innovation process, value creation, value capture, video game industry, SME.

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INTRODUCTION

In the video games industry, value creation resulting from innovation (new games) and value capture generated by the sale of innovation (sale of games) may be strongly disconnected for two reasons. Firstly, they are often managed by different stakeholders (Johns, 2006), and secondly, they are organized during different phases of the innovation process. The creation of new games takes place in very creative developers, in the upstream phases of the innovation process (design, research and development). On the other hand, the value capture which results from the sale of games depends on the control of downstream phases of the innovation process (financing, sales promotion and distribution) that are managed by the publishers and distributors (Parmentier and Mangematin, 2009; Shankar and Bayus, 2003). These differences lead to conflicts and resource dependence that influence the level of value capture for each type of actor (Johns, 2006). The developers, generally small and medium enterprises (SMEs), only capture a very small part of the monetary value whereas the publishers and distributors, generally large companies, capture a very large part. Other constraints can influence value creation and value capture and strengthen the disconnection between them. Among these constraints, the specificities of cultural products, the fragmentation of the innovation process and the unbalance between the 'artistic' aspirations and the 'management' necessities are the most influential (Cohendet & Simon, 2007; Gil & Spiller, 2007; Storz, 2008). Thus, the situation of developers is problematic and many between them try to reduce the gap between value creation and value capture by adopting new models of organizing innovation.

In the literature on innovation, this disconnection is observed mainly on a strategic and organizational level (Adner & Kapoor, 2010; Lepak, Smith & Taylor, 2007). Value creation can be defined as "*the invention or the reconfiguration of assets and skills making it possible to create a usage value (new product, new service, etc.) subjectively seen as new and relevant for the potential user*" (Lepak, et al., 2007: 182). Value capture can be defined as "*the capacity of the company to capture a material (monetary) or immaterial (knowledge, reputation, etc.) sum received in exchange for a usage value created for a potential user*" (Lepak, et al., 2007: 182). On a strategic level, value creation seems to be facilitated by

cooperation strategy (Chesbrough, et al. 2006; Rogers, 2004; Stuart, 2000), but limited by integration strategy (Chesbrough, 2003) - whereas value capture seems to be facilitated by integration strategy (Teece, 1986, 2006), but attenuated by cooperation strategy (Casciaro & Piskorski, 2005; Chesbrough & Appleyard, 2007). On an organizational level, value creation seems to be facilitated by an open model, but limited by a traditional closed-model (Chesbrough, 2003), whereas value capture seems to be facilitated by a closed-model, but very difficult to manage in an open model (Teece 2006; West, 2003). Thus, companies are faced with a strategic and organizational dilemma in the innovation activity that affects SMEs hardest because of their limited resources. To our knowledge, the literature does not provide clear answers concerning the organizational ways to solve this dilemma. In this perspective, the analysis of the innovation process can provide some keys to understand how effectively manage this dilemma. Indeed, the innovation process brings together all of the stages and activities to create a new idea (value creation process) and commercialized it in a market to acquire money, reputation and others (value capture process) (Freeman & Engel, 2007; Rogers, 2003). As innovation is a source of value creation, the innovation process includes the activities that create value. As value capture depends, amongst other things, on the control of 'support' assets connected with the production and the diffusion of the innovation, (Teece, 1986), the innovation process also includes the activities that a company must control in order to capture value. Therefore our research question is: "**How can the innovation process be organized to combine value creation with a high level of value capture?**"

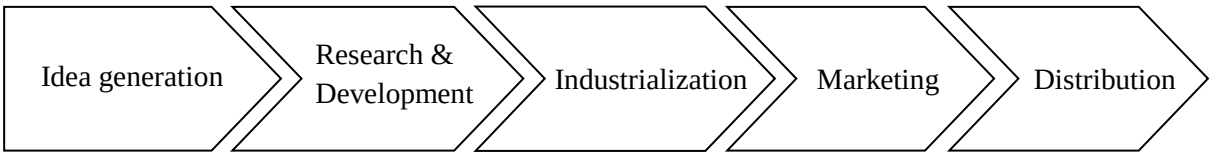
The first part of this article analyses the strategic and organizational dilemma related to value creation and value capture. Then, we study the innovation process with a focus on the organizational models. The choice of the video game industry, the method of data collection and treatment, and the four case studies are described in the second part. The third part presents the main results, discusses the connection between the organization of the innovation process and the combination of value creation and high value capture, and concludes by the limitations and the perspectives for future research.

1. VALUE CREATION AND VALUE CAPTURE: A STRATEGIC AND ORGANIZATIONAL DILEMMA IN THE INNOVATION PROCESS

Value creation and value capture can be analyzed through strategic and organizational approaches centered on innovation. Indeed, innovation is a crucial source of value creation for

the long-term survival and growth of companies (Baumol, 2002). However, to profiting from innovation, it is not sufficient to create and develop new products or services, but also to capture the value resulting from the sale of the innovation (Pisano & Teece, 2007; Teece, 1986). For a SME, this step is crucial to ensure its future investments, especially for research and development. Thus, the combination and the optimization of value creation and value capture is a central preoccupation for all innovative SMEs. In the literature, the approaches focused on strategy and organization allow understand how a company can optimize these two activities. On the one hand, the literature on the inter-organizational forms of cooperation (e.g. Deeds & Hill, 1996; Dhanaraj & Parkhe, 2006; Stuart, 2000) and the studies on open innovation (Chesbrough, 2003) explain that the cooperation and the adoption of an open organizational model facilitate value creation. On the other hand, the *Profiting From Innovation* (PFI) approach (Teece, 1986, 2006) explains how and why certain innovative companies (especially SMEs) may fail to capture the economic benefits connected with their innovation, whereas other stakeholders in the industry are able to benefit from them. Integration strategy and the adoption of a traditional closed-model (particularly in-house R&D) would be therefore more adapted in order to ensure a high level of value capture. Finally, these approaches highlight a strategic and organizational dilemma that can be analyzed within an innovation process. The innovation process can be traditionally divided into five phases[1] (see Figure 1): the upstream phases of (1) generating an idea (making it possible to answer a need) and (2) creating the concept (research and development), and the downstream phases of (3) industrialization (feasibility and setting up production) (4) marketing and (5) distributing the innovation on the market.

Figure 1: The innovation process
(adapted from Freeman & Hengel, 2007; Rogers, 2003; Rothwell, 1994)



The way of effectively manage the innovation process depends both on strategic and organizational dimensions. More precisely, the success of the innovation process is based on several factors. Firstly, the choices of resources, the way of accessing these resources

[1] Given the heterogeneity of innovation process models (Rothwell, 1994), it is necessary to propose a general definition, adapted to this research and accepted by most research on the subject (Bernstein and Singh, 2006; Chesbrough, 2003; Forrest, 1991; Rothwell, 1994).

(cooperation and/or integration) and their attribution to the different phases in the process is part of the strategic dimension. Secondly, the way of coordinating the resources and organizing the tasks (initial and subsequent), and monitoring the work carried out, with a view to reaching the objectives that have been fixed for an organizational dimension. Therefore it is interesting to use the innovation process for analyzing the value creation and value capture and the dilemma that they cause for SMEs.

1.1. THE STRATEGIC DILEMMA: BETWEEN COOPERATION AND INTEGRATION

Value creation depends on a company's capacity to acquire, combine and effectively exploit the resources by using internal (capacity, assets) and external (networks, social capital, etc.) resources. Using external resources through different forms of cooperation is today largely recognized as a means that makes it possible to increase the potential of value creation (Amit & Zott, 2001). The forms of cooperation (alliances, innovation networks, partnerships, etc.) make it possible to discover new opportunities for innovating and creating value, to acquire and exchange knowledge and experience and increase the success of innovation (e.g. Ahuja, 2000; Calia, Guerrini & Moura, 2007). These elements are often difficult to access with integrated models that give priority to integrating resources (Chesbrough, 2003). Therefore, the positive influence of cooperation in value creation no longer needs to be proved. Other research emphasizes the importance of innovation networks (Chesbrough and Prencipe, 2008; Dittrich & Duysters, 2007), new forms of client integration (crowdsourcing) and user communities (Howe, 2008; Parmentier & Mangematin, 2014) or intermediaries and hub firms (Gardet & Fraiha, 2012) for the success of value creation. It becomes possible to co-create value, ideas, technologies, innovations between several complementary partners or users in alliances, cooperation systems and ecosystems (Enkel, Gassmann & Chesbrough, 2009; Von Hippel & Von Krogh, 2003). Finally, the forms of cooperation have quite positive effects on value creation whereas integration has quite negative effects. Thus, the value creation resulting from innovation is based on internal and external resources. We observed that the success of value creation is based on the interaction and the combination of these two types of resources. We also observed that traditional integrated models limit the value creation because they are only based on internal resources and do not integrate the sharing and exchange of external resources, which makes access external opportunities very difficult.

According Teece (1986), capturing a high level of the value generated by the sale of the innovation firstly involves the construction of rare and inimitable resources, especially the

resources connected with the production and the distribution of the innovation (the complementary assets). Sirmon, Hitt & Ireland (2007) showed that the effective capture of the value created depends, in particular, on the management of these resources and the company's capacity to structure its resources portfolio in order to group them together and to exploit the market opportunities. Rare and inimitable resources are key factors in this management, as they can serve as protective mechanisms to face competition (Pisano & Teece, 2007). The protection of the value creation (particularly through formal and informal protection mechanisms of intellectual property[2]) contributes to increase the value capture and limit the opportunism (Fréchet & Martin, 2011; Pisano & Teece, 2007). Teece's model (1986) relies on the company's asset base (particularly the complementary assets), the type of intellectual property regulations and the strategic choices. The author made two recommendations for managing the beneficial value capture: (1) a contractual strategy when there is a strong capture system and the additional assets are available and easy to access for the stakeholders in the industry (dependence on weak assets) (2) an integration strategy when the capture system is weak and there is considerable dependence on the additional assets (showing the major importance of these assets). However, the author did not discuss cooperation. As this was lacking, it was of interest to study the effects of cooperation on value capture. Firstly, cooperation is an answer to access missing resources. This need to acquire missing resources can lead to negative dependence phenomena (Casciaro & Piskorski, 2005; Pfeffer & Salancik, 1978) that may influence the conditions for value capture. For example, a SME can be forced to transfer a high part of the monetary value (that resulting from the sale of a product or service) to companies which have invested the most resources in the collaboration (Pisano & Teece, 2007). Similarly, the power games between several actors in the collaboration can influence strategic and organizational decisions and ensure a level of value capture in favor of actors who have the most power (Jørgensen, 2004). Secondly a high level of protection of intellectual property is necessary during cooperation to protect value capture, as a protection against opportunism (Pisano & Teece, 2007). Thirdly, cooperation implies a dilution of value between partners and the contributions of each actor in the collaboration can be difficult to identify (Chesbrough & Appleyard, 2007). In this perspective, the final division of results and the economic benefits can be unbalanced. Thus, cooperation, even if it facilitates the absorption of knowledge and experiences, rather has negative effects on value capture.

[2] Formal mechanisms generally concern the patent and informal mechanisms concern the secret, the complexity of the product design and the technological advance (Fréchet & Martin, 2011).

Finally, cooperation seems to have positive effects on creation, but rather negative effects on value capture, whereas integration seems to have positive effects on value capture, but rather negative effects on value creation.

1.2. THE ORGANIZATIONAL DILEMMA: BETWEEN OPEN AND CLOSED-MODELS

In the literature, the innovation theories focused on the organization enabled us to distinguish three main organizational models for the innovation process: linear models (closed or open), the exploitation/exploration model and the non-linear model.

Linear Models are sequential models, where the innovation process is a succession of stages. These stages are divided between different categories of stakeholders: the conception of the innovation (idea and research) is the role of the researchers and creative stakeholders, the development is undertaken by the engineers, the sales promotion, and the distribution by the sales representatives and the marketers. The use of closed linear models shows that the organization of the innovation is insourced, whereas the use of open linear models implies that a company has opened its boundaries. The complete insourcing of the process makes it possible to reduce uncertainty, to increase its power and avoid opportunism (Pfeffer & Salancik, 1978), whereas opening the process allows increase the opportunities for innovation through a combination of internal and external resources (Chesbrough, 2003). Therefore, the process organization is based both on internal and external resources that are often difficult to reconcile. Using the exploitation/exploration model implies that two activities are carried out simultaneously (March, 1991) : (1) the exploitation, which is based on the use and the development of existing skills, and existing technologies and paradigms and (2) exploration, which is based on research and experimenting with new solutions, either within or outside the company. The combination of these two activities therefore requires delicate organization that may take place in-house or externally through a network or with independent companies. Finally the non-linear model distinguishes itself from the other models by its more chaotic vision that requires permanent renegotiating of the innovation conception and the roles of the stakeholders implicated in its development (Akrich, Callon & Latour, 1988). In this model, the method for organizing innovation depends on the way in which the process is used within the company and in its network. These models show the multiplicity and the complexity of the organization of innovation.

Whatever the model used, the innovation process phases can be organized like open, semi-open or closed. An open phase is based on the principle of opening company's

boundaries to benefit from external ideas and value creation opportunities - and also to market the innovations resulting from alliances and partnerships by multiple ways (patents, joint ventures, spin-offs, etc., Chesbrough, 2003). Opening boundaries facilitates the co-creation of value, licensing and creation of new business models, but implies the sharing of innovation (idem, 2003). However, an excessive opening can lead to the risk of opportunism and losing value because sharing innovation may encourage certain partners to appropriate the results from the collaboration, thus diminishing the benefits of the company that initiated it (Chesbrough & Appleyard, 2007). Opening boundaries also reduces the possibilities of developing /exploiting the intellectual property, as it increases the risk of leakage of protected knowledge (idem, 2007). Thus, it is difficult to adopt systems for effectively protecting intellectual property, and the effective value capture becomes a delicate matter (David & Greenstein, 1990). Opening is therefore a means that seems to facilitate value creation. A semi-open phase is based on the principle of controlled opening, which involves a limited sharing of the innovation and information (West, 2003). For example, a company may decide to share its technology without explain how use it, thereby forcing competitors to collaborate with the company in order to innovate. The principle of semi-opening is more applied in the upstream phases of the innovation process and allows benefit from the opening but only in a limited part of the innovation (a technological block, a tool, etc.). Thus, semi-opening is a means that seems to facilitate value creation. A closed-phase is based on the principle of managing the activities in-house. The closure facilitates the internal control of innovation and the protection of intellectual property and avoids opportunist behavior (Chesbrough, 2003). Adopting a principle of closure in the upstream phases of the innovation process shows an R&D model that is judged to be semi-obsolete today (idem, 2003) because of two reasons: (1) it requires too large investments and (2) the value creation possibilities are limited to internal resources and skills. Adopting a principle of closure in the downstream phase of the innovation process makes it possible to block the market access and control the value capture (Teece, 1986, 2006), particularly by controlling additional assets connected with the marketing and the distribution of the innovation. Thus, closing the company boundaries is a means that seems to facilitate value capture.

In the literature, opening and semi-opening seems to have positive effects on value creation, but rather negative effects on value capture, whereas closure seems to have positive effects on capture, but rather negative effects on value creation. Under these conditions, some research (e.g. West, 2003; West & Gallagher, 2006) recommend combining different opening

levels within the process. However, the right balance between the different levels has not yet clearly identified, and the implications for companies, particularly in terms of value creation and value capture, remain largely unexplored.

2. METHODOLOGY: 4 CASE STUDIES IN THE VIDEO GAME INDUSTRY

This research has focused on the video games industry and more particularly on video games developers that have difficulties in effectively combining value creation resulting from innovation (new games) with a high level of value capture generated by the sale of innovation (money). This choice and the specificities of this industry, particularly with regard to value creation and value capture, are described in (section 2.1). We will then present the four case studies (section 2.2.) as well as the data collection and treatment.

2.1. CHARACTERISTICS AND SPECIFICITIES OF THE VIDEO GAME INDUSTRY

Innovation in the video game industry mainly depends of: (1) the specificity of the production of cultural products and (2) the fragmentation of the innovative process – which determines the conditions of value creation and value capture.

Firstly, the process of creation of video games is a complex mix of art and software technology (Cohendet & Simon, 2007). Overall, it includes four stages: conception, pre-production, production and post-production (Parmentier & Mangematin, 2009). Because of the very short product life cycle, the creative activity requires a sustained innovation system (strong creativity and originality) subject to high temporal and competitive constraints (Gil & Spiller, 2007; Shankar & Bayus, 2003). Faced with these constraints and the high technological instability that characterizes the video games markets, companies must renew their offers permanently. Moreover, the emergence of online games and new ways of consumption (Internet, mobile telephones) has completely transformed the logics of value creation and value capture.

Secondly, the innovation process is fragmented between different types of actors: the manufacturers, the developers, the service providers, the publishers and the distributors (Aoyama & Izushi, 2003; Tschang, 2007). This fragmentation leads to power relations that may complicate value creation and value capture (Johns, 2006). In a traditional process of video game creation, value creation (idea of the game and the concept) originates from developers which next negotiate with a publisher in order to obtain the necessary funding for

the game development (Parmentier & Mangematin, 2009). A contract formalizes the relationship between the publisher (the financer) and the developer (the creator). In return, the developers must develop a very high level of flexibility in their resources in order to respect requests and demands from the publisher (Teipen, 2008). Moreover, depending on the amount of financing granted, the publisher can capture a very large part of the value generated by the sale of the game (from 35% to 45%). Once the game has been developed, the publisher will collaborate with a distributor to supply wholesalers and retailers. In the same way as the publisher, the distributor captures a part of the value generated by sales (around 50%). In the video game industry, value creation is therefore focused on the developers and value capture is locked by the upstream stakeholders (publishers and distributors). This locking creates tensions and problems for developers which struggling to combine the value creation with a high level of value capture. In response, some developers try to organize their innovation process differently, in order to improve their creative freedom and profitability. These different reasons justify the relevance of our empirical field, and our focus on developers.

2.2. STUDY OF FOUR VIDEO GAME DEVELOPERS

This research aims to provide a better understanding of the organization of the innovation process adopted by developers so as to effectively combine value creation and value capture. For this, we studied four developers of different sizes between September 2009 and October 2010. Confidentiality agreements were signed; we used pseudonyms to designate the developers: ‘Flashgame’ (small: 17 employees); ‘Evolugame’ (medium-sized: 34 employees); ‘Jémulex’ (small: 12 employees) and ‘MOP’ (developer with 80 employees in a large interactive communication agency with 450 employees). Our qualitative research through case studies used primary and secondary data. We employed several data collection methods to exploit the synergistic effects of combining them through triangulation (see Table 2).

The main primary data source was semi-structured interviews with SME directors who make strategic and organizational choices and employees representing different functions (e.g., technological, creative, R&D) who have a good knowledge of the innovation process. We conducted 18 semi-structured interviews with video game developers. Each interview was 60–90 minutes long, taped, and transcribed. For each interview, we constructed an interview guide, structured around four steps. First, we asked respondents to tell the story of their company, so that we could acquire historical knowledge of the developer and its business specialization, strategic positioning, internal resources and skills, internal organization,

cooperation with other actors and strategic development over time. With this information, we determined the initial situation of the developer and its position within the industry. Second, we focused our discussion on the relations between the developer and the other actors in the industry. Our objective was to get a clear view of the developer's environment and professional network, to understand the role of these actors in the innovation process and then identify the way the value was created and captured. Third, we discussed innovation process in detail, using semi-structured questions and guidelines to identify the developer's specific difficulties in the combination of value creation and value capture. Fourth, we finally focused the interview on the innovation organization, in an effort to understand how the developer can organize its innovation process to improve its situation and effectively combine the value creation with a high level of value capture.

We also consulted internal sources, including 8 contracts, 15 project documents, 36 emails, and 16 statistical reports. These items provided a better understanding of the relationship between developers and other actors in the innovation process. Project documentation and emails were particularly useful in revealing the role and the impact of external actors in the value creation process and value capture process. Finally, we studied the website hosted by the developers and 18 digital journal articles from popular video game industry publications. Through this investigation, we gained background information about the developers (e.g., history since their creation, reputation, business specialization, network collaboration, video games created, internal staff, turnover), as well as accurate, external information about the innovative game they had produced through their development projects.

Table 2: Presentation of the four developers studied and the data collected

	Primary data		**Secondary data**	
	People interviewed	**Number of interviews**	**Internal data**	**External data**
Flashgame	Sales director (1) + Team leaders (2)	3	Prototyping folder (2) + project specifications (3)	Website + digital journal articles (3)
Evolugame	Technical director (1) + managers (2)	3	Project reports (5) + contracts (8) + email (4)	Website + digital journal articles (4)
Jémulex	Director (1) + managers (2)	3	Statistical reports (16) + email (3)	Website + digital journal articles (7)
MOP	Artistic Director (1) + Managers (3)	4	Project meeting report (5) + email (8)	Internet Site + digital journal articles (4)

To code the data from different sources, we used typical content analysis procedures (Miles and Huberman, 2003). We coded all data into categories. The data analysis followed identical steps for each of the four video game developers and each type of data. We conducted thematic coding by crossing our obtained data with findings from prior literature and thereby developed a dictionary of topics. For the codification of these themes, we manually classified the data into three broad categories: (1) the value creation, (2) the value capture and (3) the organization of the innovation process.

Flashgame: created in 2003, it today employs 10 people. It is specialized in the creation of adventure video games for hand-held consoles. 75% of the turnover figures emanate from service activities for publishers and 25% from game creation. The developer works with publishers and only receives a tiny part of the value generated by the sales (around 5% of the sale price). To improve this situation, the developer decides to co-create a new game by cooperating with a medium-sized developer. An open collaboration is set up for the conception and production phases. The pre-production phase is undertaken in-house by Flashgame, and the post-production phase is undertaken in-house by the partner developer. For the funding, the two companies were able to obtain 15% of royalties attributed by the publisher because of their larger capacity for investment. Flashgame receives about 6% out of this 15%, as its share is calculated according to its level of participation in the project. Finally, open collaboration seems to be a 'good opportunity' for Flashgame in terms of value creation because the game is a success. However, it seems less advantageous in terms of value capture as the cooperation with the partner developer has led to an unequal share of the value.

Evolugame: with 40 employees in 2009, it started in 2004 with 23 employees for an activity of developing games for hand-held consoles. In 2006, the developer invested in the creation of game prototypes. However, the prototypes were strongly criticized by the publishers and the economic returns were low (around 5% of the sale price). In 2007, to face with this situation, the developer began to create virtual worlds on Internet, which integrate video games, animation series and community websites. An animation developer and a Web agency joined the project and were associated to the open innovation project of Evolugame (in the conception and pre-production phases). The financial cost proved to be minimal as the products were diffused online. The relation between Evolugame and its partners takes form with service contracts (purchases on the Internet site and acquisition of the rights to diffuse the animation). Finally, this collaboration enables Evolugame to innovate in an original way.

However, the profitability is low because of its limited success worldwide (slightly more than 1,000 subscribers corresponding to 10% of Evolugame's turnover).

Jémulex: created in 2000, and with 12 employees in 2009, is specialized in the development and production of sports games on computers. As the technology is less expensive than that of a hand-held game, the developer was able to finance all the development. However, it sought a distributor to handle the marketing and the distribution. In return, Jémulex had to transfer a part of the value connected with the sale of the games to the distributor (around 40% of the sale price). To increase its profitability, the developer created a car race game in 2003, diffused exclusively on Internet. The digitalization enabled it to insource the marketing and distribution of its game by its own means. This enabled it to capture the totality of the value generated by the sale of the game. This latter was a rapid success (more than 500,000 copies sold in 2006). Thanks to this success, Jémulex decided to open its innovation process (for the conception and pre-production phases) to users by integrating a tool for creating circuits. Today more than 5,600,000 users are registered and several million circuits have been created. These are managed by the users and the developer has no control over these creations.

MOP: with 80 employees in 2009, it represents the 'video game' division of a large interactive communication agency (400 employees). Created in 2002, the developer is specialized in the huge online multiplayer role-playing games (MMORPG) of which the advantage is the low cost of development and diffusion. The developer had sufficient financial capacity for developing, producing and marketing the game. In 2007, it launched a project creating an artistic world in different media (MMORPG, TV cartoon series, Mangas, 2.0 Web community, etc.). The development of MMORPG is entirely insourced by MOP that also decided to integrate a tool for collaborating with the users. With this tool, the users have the possibility of creating and improving the game's environment. Thus, MOP opens the phases of conception, pre-production and production during the innovation process, and users can contribute to all the stages of the game. However, the developer retains control of the creations and the improvements made by the users in order to avoid excesses and opportunist behavior. Therefore, this organization enables MOP to control the value creation (connected with the game) and to capture all of the value generated by the sales of the game.

3. RESULTS AND DISCUSSION

This research emphasizes the crucial role of organizations in the innovation process in solving the dilemma between (1) the strategic and organizational recommendations facilitating value creation resulting from innovation (collaboration and open organization) and (2) those facilitating value capture generated by the sale of innovation (integration and a closed-organization). We have shown that innovative stakeholders in the video games sector (the developers) have to organize certain phases of the innovation process differently to improve their innovation conditions and the financial profitability. By adopting a closed-organization in the 'downstream' phases of the process (production, post-production, marketing and distribution), and an open organization in the 'upstream' phases of the process (conception and pre-production), the developers are able to effectively combine value creation and value capture. Moreover, we also observed the open organization did not seem incompatible with favorable value capture. From this point of view, our results challenge the literature on *Open Innovation* (Chesbrough, 2003) and PFI (Teece, 1986).

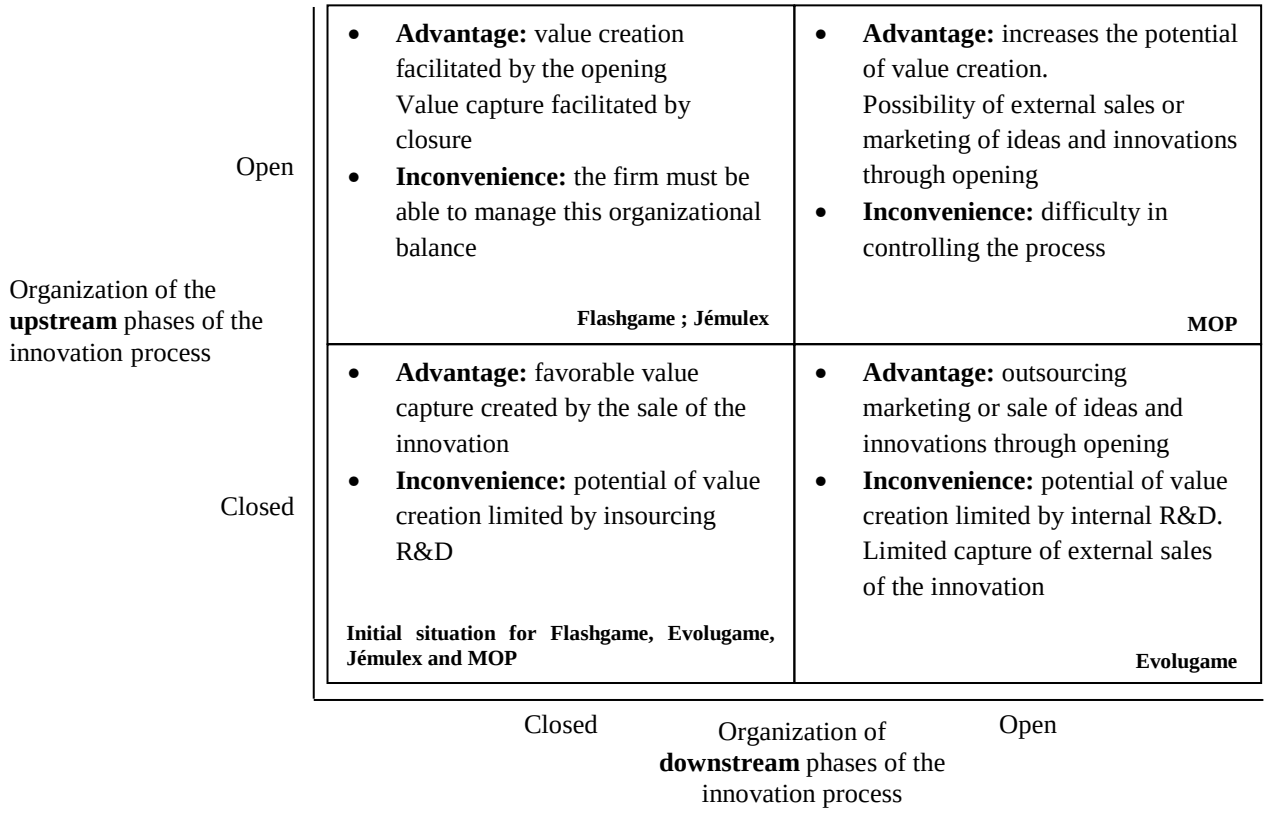
3.1. THE COMBINATION OF OPEN AND CLOSED PHASES WITHIN THE SAME INNOVATION PROCESS

By means of the four developers studied, we show that it is possible to include a different organization in the innovation process phases. This contradicts the separation formulated by Chesbrough (2003), even if other researches confirm our result (Von Hippel & Von Krogh, 2003; West, 2003). In fact, a company can benefit from the advantages of open innovation and closed-innovation by developing hybrid strategies making it possible to combine open and closed-models (West, 2003).This idea of alternative strategies or models was also developed by Von Hippel & Von Krogh (2003), who proposed a 'private-collective' model based on cooperation with the users focused on innovation, and the privatization of activities and services necessary for implementing this innovation. This wish to open models, which are traditionally closed, matches with the need for overcoming companies' in-house shortcomings in relation to innovation. In this way, West (2003) insists on the right balance between open and closed-models that should make it possible to benefit from the advantages of each of the models. This idea of a balance can be applied to our research because we show that opening and closing phases can be combined within a single innovation process, through a specific

organization: an open model in upstream phases (research and et development) and a closed-model in downstream phases (production, marketing and distribution).

In the Open Innovation theory, it is recommended to have an open R&D phase (upstream phase of the innovation process) to maximize value creation (Chesbrough, 2003). However, Chesbrough is discreet about value capture and rather recommends an open downstream phase within the innovation process in order to market or sell (through licenses) the innovations on new markets, located outside companies' traditional markets. In the PFI theory, it is recommended to integrate additional assets connected with the production and distribution activities of innovation (downstream phases of the innovation process) to facilitate value capture (Teece, 1986). However, Teece does not consider cooperation. Therefore, these two approaches seem to be strategic recommendations for the different phases of the innovation process: Chesbrough prefers upstream, whereas Teece prefers downstream. In this way, it is possible to identify four types of configurations for organizing the innovation process (see. Figure 2) depending the upstream and downstream phases.

Figure 2: Possible open and closed configurations of the innovation process phases



Thus, for effectively combining the advantages of open and closed configurations, it seems that a balance is necessary between open upstream phases and closed downstream phases in the innovation process. This balance will enable companies to control, improve and even create their own conditions for value creation and value capture.

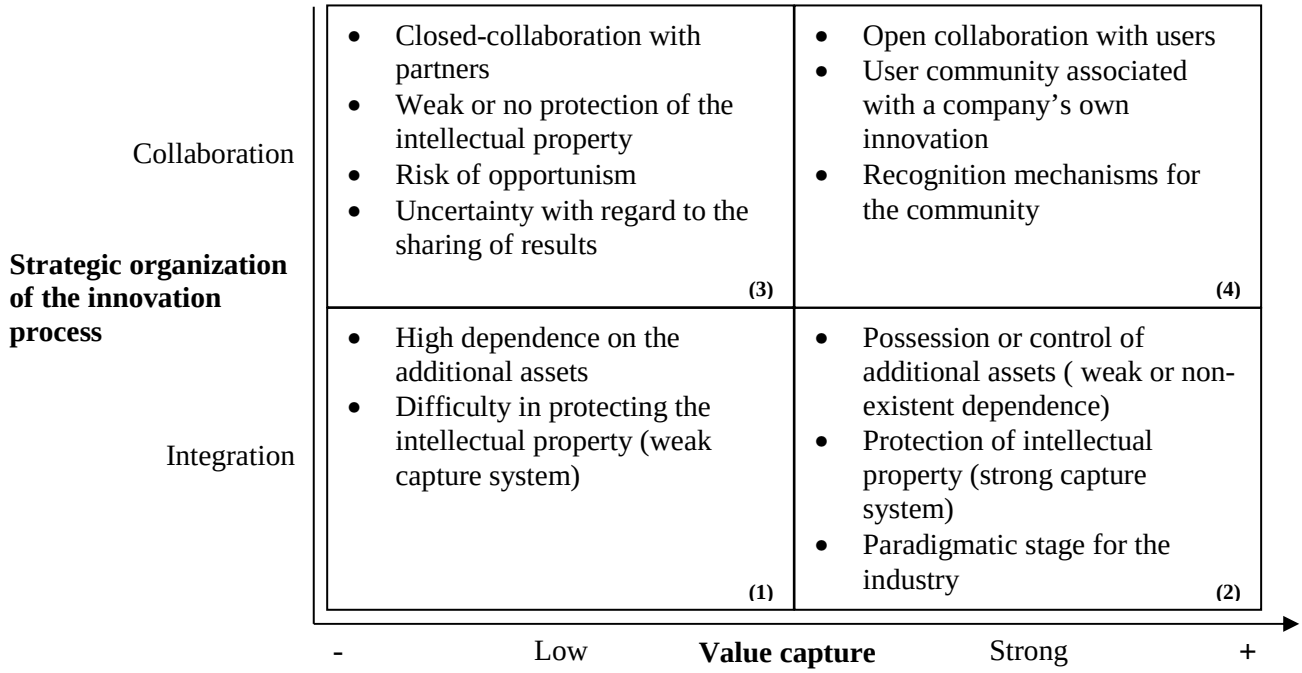
3.2. THE RELATION BETWEEN OPEN INNOVATION PROCESS AND VALUE CAPTURE

Our case-studies shows that an open innovation process is not incompatible with a high level of value capture. This relation may be considered in comparison to *Open Innovation* (Chesbrough, 2003) and PFI (Teece, 1986). Firstly, an open innovation process implies several restricting elements for the value capture process: the free sharing of the intellectual property (Fichter, 2009), absence of protection mechanisms (Chesbrough, Vanhaverbeke & West, 2006), dependence or opportunism engendered by the cooperation and difficulty in sharing the results (Chesbrough & Appleyard, 2007). Therefore, it seems to be a negative relation between an open innovation process and value capture. Some of our results contest this relation. Indeed, Jémulex and MOP case studies shown that open upstream phases of the innovation process through collaboration with users do not negatively influence value capture. On the contrary, the users deliberately contribute to innovation and improve the offer without wishing for a share of the value created. This phenomenon is in line with the results of Jeppesen & Frederiksen (2006) who showed that a form of legitimacy can be acquired by associating a user community with an innovation initiated by a company. Therefore, the users only contribute to recognition on the part of the companies (Jeppesen & Frederiksen, 2006). Thus, open innovation with users can lead to a positive relation to value capture if it fulfills two conditions (1) to associate a user community with an innovation initiated by a company and (2) to develop recognition mechanisms for the community to maintain its implication in the innovation and the value creation process.

In his theory, Teece (1986) did not deal with cooperation, but rather the contractual relationship. Therefore, by showing that cooperation (in a perspective of an open innovation process) has an influence on value capture, we introduced a new dimension into the PFI. With Jémulex and MOP, we show that only an open innovation process based on ‘open’ cooperation with users, (in the sense of Pisano & Verganti, 2008) enables a positive link with value capture. For Flashgame, Evolugame and Créajeux, which open their innovation process with ‘closed’ collaborations with other companies (in the sense of Pisano & Verganti, 2008), the link is negative. This can be explained by the digitalization that modifies the ‘traditional’

conditions of value capture described by Teece (1986) and that rather applies to closed-innovation models (in the sense of Chesbrough, 2003). Based on these observations, it is possible to show the relation between the strategic organization of the innovation process (cooperation or integration) and the level of value capture (low or strong) in the form of a matrix (see Figure 3). This summarizes the conditions connected with four situations: (1) closed-organization of the innovation process implying a low level of value capture, (2) a closed-organization of the process implying a strong level of value capture, (3) an open organization of the process implying a low level of value capture and (4) open organization of the process implying a strong level of value capture.

Figure 3: Strategic organization of the innovation process and level of value capture



Finally, regardless the level of opening or closure of the innovation process, it can lead to beneficial value capture but only under certain conditions. In case of closed-organization, it is necessary to respect the principles and the recommendations of Teece (1986) to ensure a high level of value capture. In case of open organization, effective value capture will depend on the type of cooperation. If the company develops an open cooperation with users, the level of value capture can be high if the recommendations of Jeppesen & Frederiksen (2006) are respected. If the company develops a closed-cooperation with industrial partners, the level of value capture will be limited because of the sharing of results.

4. CONCLUSION

Our results point to a locked value chain in the video game industry, where an innovative SME does not have the possibility of controlling the conditions of value creation and value capture. By analysis different ways to organize the innovation process (both integrated, collaborative open and closed), we have shown that certain SMEs succeed in combining the different theoretic recommendations facilitating value creation and value capture. This combination is possible by opening upstream phases in the innovation process and closing downstream phases. We emphasized (1) the determining role of the organization of the innovation process in effectively combining value creation and beneficial value capture and (2) the relation between an open innovation process and advantageous value capture that depends on the type of cooperation and the type of partner. Following this research, several contributions and limitations can be identified.

On a theoretic level, our first contribution refers to the use of the innovation process, and more precisely its organization, as a permanent framework for analyzing value creation and value capture, emphasizing the difficulty in studying the combination of these two processes. (Lepak et *al*., 2007). By mainly focusing on the strategic level, the literature is confined to studies about value creation (Adner & Kappor, 2010; Chesbrough, 2003; Chesbrough et *al*., 2006) or value capture (Pisano & Teece, 2007; Sirmon et *al*., 2007; Teece, 2006), but rarely both. This research provides keys elements to develop a finer level of analysis (the innovation process) to study this combination. This is a second contribution. In fact, by proposing a way of resolving the theoretic dilemma connected with value creation and value capture, we have contributed to the recent studies on these two elements (Adner & Kappor, 2010; Chesbrough & Appleyard, 2007; Lepak et *al*., 2007; Pisano & Teece, 2007; Sirmon et *al*., 2007; Teece, 2006) as well as on Open Innovation (Chesbrough, 2003) and PFI (Teece, 1986, 2006).

On an empirical level, this research contributes to a better understanding of the video games industry and its specificities. Up until now, the empirical studies on video games have concentrated on the evolution of the industries (Aoyama & Izushi, 2003), innovation and creativity (Cohendet & Simon, 2007; Parmentier & Mangematin, 2009; Tschang, 2007), the transfer of skills (Aoyama & Izushi, 2006) or collaboration with the user community (Parmentier & Mangematin, 2014).Few studies have concentrated on the means of organizing the innovation process, or even less have studied the conditions of value creation and value

capture. Therefore, this can be an empirical contribution, in line with previous studies on innovation in the video game industry.

However, our research has certain limitations which can drive future research. The first limitation concerns the lack of depth in the analysis of the organization of the innovation process. On the one hand, we remained on an organizational level by concentrating on the organization of the innovation process phases and on the integration or collaboration choices connected with this organization. On the other hand, the approaches used (*Open Innovation* / PFI) do not enable an in-depth analysis of the elements in the innovation process. Future researches should deeper analyze the internal elements of the innovation process and their influence according the different phases. A second limitation refers to the scope of our results, which questions the possibility of generalization because of the specificities of the video game industry. However, our research presents some elements of a generalization, but the results need to be extended to other industries in order to really verify the scope. A third limitation refers to our focalization on developers. Our research has not studied the other actors in the sector. Therefore, our vision of innovation, value creation and value capture was only constructed with the developer's point of view. Although they are generally at the origin of innovation (which justifies our choice to focus on them), the publishers also participate in the development of innovation. Moreover, many have their own internal developers, thereby developing their own ways of organizing innovation. Thus, it would be interesting to compare with those of the other independent developers.

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