

COMMUNITIES OF PLAYERS: SCALE AND SCOPE, AND THE EFFECT OF SOCIAL MEDIAS IN THE VIDEO GAME INDUSTRY

*Thierry Burger-Helmchen**

University of Strasbourg, BETA – CNRS, Strasbourg, France

ABSTRACT

Research on user communities has produced insights into possible linkages between firm's development and innovation, altering the scale and scope performance approach of an organization. Many results show that user communities can improve the performance of a firm and in addition can bring the firm to a new level of development. However few works tackle the problem of the size of the communities in relation to the size of the firm and to the managerial resources allocated to their coping. Therefore we have a scale and scope duality between the firm, the communities and the resource they bring along and needs. We try to understand the broader performance implications for the firm of the size and diversity of communities. For this we extend the resource based approach of the firm, relative to the scale and scope question for examining how firms can exploit the knowledge of different types of communities to obtain better performances. Successful firms structure more efficiently their communities' portfolio, see these communities as resources, transform these resources into capabilities and leverage these capabilities to enhance existing products or create new generations of products. We develop a model linking strategies and communities based on this remark and illustrate this model by case studies in the video game industry. We examine different development / management modes of communities by firm, as a consumer of an internally developed product, as a resource acquisition, as a capability, and finally as a leveraged capability that brings a better performance to the firm. These actions correspond to a different scale and scope objective mix. We discuss the implications of these forms using a resource based framework.

* Email: burger@unistra.fr.

Keywords: Theory of the firm, user communities, resource management, value creation, video game industry

1. INTRODUCTION

Research on communities of practices and user communities has long focused on the development of ideas and capabilities without the hierarchical control of a specific firm. Early works on lead user innovation (Urban & Von Hippel, 1988; von Hippel, 1986) addressed the relationship between firm creation and product development. They gave a typology of different links between firms and user innovation. Some user innovation can lead to the creation of a firm, but also already existing firms can rely on users to develop new products or commercialize products invented by users. This body of literature also suggests that the strategy of the firm should incorporate the user communities and the communities of practice linked to some part of the user activity because they are responsible for a part of the firm performance. Some field research suggest that communities may be too small or too big for the firm to manage or that they sizes might make them irrelevant for different reasons (Jaeger, von Krogh, & Haefliger, 2009). Therefore we choose a classical reason why communities could be relevant for a firm: a scale and scope reason. Scholars studying the relationship between organizational scale and scope and firm performance have concluded that the firm's strategy influences the scale and scope but also that the efficiency obtained in scale and scope influences the strategy of the firm. However, the question of how the scale and scope of an organization are linked, coevolve or overlap the scale and scope of user communities and communities of practice is still mysterious.

One weakness of the existing literature is that little research addresses the question of how firms manage communities that can have a scale and scope in a completely different proportion than those of the firm. Stated differently the research on user communities has not addressed enough the rules, governance principles and practical behaviours through which a firm exploits the potential scale and scope advantages brought by massive communities of users. That reef, out of a theoretical corpus quite expensive, is actually hiding an large amount of major questions regarding corporate strategy. In particular the place of user communities is broadly related to the development of the resource based theory of the firm, dynamic capabilities and in a more practical way to the creation of value and cost reduction of the firm's operation. In this work we consider the managerial challenges behind the scale and scope duality of a firm and the communities and we seek a balance in focus between content and process. By scope of communities we refer to the diversification of their content and activities and by scale to their size. The process corresponds to the means by which firms manage and exploit the scale and scope advantages achieved through the different communities.

We bring to the literature of user communities and social software interactions a more classical resource-based view of the firm (RBV). By doing this we suggest that the users and the organization of the communities of practice are valuable resources for the firm, that the firm can use them to create value, but to that end several conditions must be met. Also all the VRIO (Valuable, Rare, Inimitable, Organized) conditions of the resources are not systematically met by the communities. It should be added that such communities are not

“owned” by the firm but that there is a subtle link between the firm and the communities. In the RBV literature resources must not necessary be owned by the firm, but they must be managed in a specific way (Barney & Hesterly, 2007). This specific management involves routines, dedicated processes and interconnection between the communities and the firm that changes all the routines (broadly speaking there must be dynamic capabilities). From this point of view the firm has to manage a portfolio of communities, identify some of them as valuable resources, train part of those and finally leverage them to obtain new and sustainable value for the firm and the users.

In doing this the contribution to the literature is twofold. First by developing the user communities’ aspect of the RBV, we recognize that not all communities are or can be resources, nor that the traditional characteristics of the RBV literature apply directly when the resources are represented by communities. Second, we examine how to manage different types of communities by using scale and scope criteria. The types of communities that we identify are related to the video game industry, but apply certainly to other industries with social software interactions. This industry gives us a context to use scale and scope aspects and analyse the performance implications for each of the communities types in relation with the firm. We suggest that adequate management is needed to tackle the scale and scope differential of the communities and exploit the potential capabilities each provides. Those different situations are illustrated through several cases coming from the video game industry.

In the next section, we review existing work on user communities in social software and video games, community types and performance implications for the firm. It is followed by a discussion on the management and resources needed to achieve superior performances, especially on scale and scope considerations. For this we present a closed loop model of interaction between firms and communities. Subsequently we introduce the research design, firm/community selection and the result we obtain. The community types and management framework we provide are used to show how these actions can be implemented. This gives a practical illustration of the different cases presented by proposing a scale and scope analysis of communities and firms in the video game industry. Finally, we conclude this work by replacing the findings in a broader strategic management field.

2. COMMUNITIES TYPES

Recent research in strategic management has stressed the facts that firms can be confronted to fast scale and scope variations in their environments. By scope variation we mean the diversification of the tasks the organizations have to perform simultaneously but also the depth related to some tasks (we come back and specify this definition latter). This is the case when a firm has to do a variety of novel tasks when it launches a new product. During the launch phase of some products, a single firm must simultaneously market/advertise the product, organize after-sale service for the users who had some troubles with the product, eventually continue the development phase (this is the case for games which can show problems on some machines and must be corrected, thus the development of the product still continues after its commercialisation). And, simultaneously the firm must “manage” the user communities, add new content for the early adopters so that their interest does not fade away. All these activities are almost simultaneous with the launching of the new

game. They correspond to a very large variety of tasks. When the game works fine after a while only the management of the user communities persists as well as the creation of additional content. Thereby the firm can redirect some resources to the creation of the next product. But during the launch phase some activities are very specific; therefore they broaden the scope of the firm for a period of time.

The scale refers to the size of some communities that interact with the firm through the products. Some of them can be very large, compared to the size of the firm and to the resources the firm can afford for their monitoring, collecting of interests, opinions and satisfactions. For some industries, these communities are important environmental characteristics in the same way as rival competitors or potential entrants. The speed by which they can grow in scale and scope and organize themselves are important elements of the dynamics of some industries making the sustainable benefits of some firms difficult to maintain or reducing them to temporary competitive advantages.

Some strategic management scholars propose that firms adopt proactive behaviours to change quickly in response to ever changing environmental contexts, particularly in a context of open innovation. Such behaviours should then include the management of the communities. A puzzling question in industries where user communities are important contributors to the value of the product as perceived by the overall customers is the following: are the communities the main environment of the firm, over which the firm has limited control and do those communities affect the selection process that causes changes in the firm and eventually the success or failure of some. Or, conversely, does the firm manage these communities (or even create them) and is it just one more challenge for the firm in the change management strategy, just one more part of a whole that the firm strategy must encompass but not something that will reverse the position of the firm toward the environment.

We do not choose in this work between one or the other of these two possibilities, rather we combine them which suggests the possibility that organizational adaptation and environmental selection may be interdependent processes and that the close relation between firm and communities heightens this interdependence. In this section we build on these concepts to examine both the scale and scope of communities' relation to the firm and identify the environmental context in which they occur.

Both scale and scope play key roles in the strategy of firms with or without communities. Scope refers to the diversity of tasks that a firm can do, the expansion of scope corresponds to the addition of a network, a product to the firm or the community. Changes in the scale reflect the development in size of one or multiple product lines and therefore also in the number and size of communities. In the video game industry scope refers to both the amount of different tasks that a firm can do by itself and to the number of different market segments (types of games) the firm is active in and their importance to the firm. Classically there are economies of scope if by doing these different activities the average cost decreases.

The products of the firm and the way the different lines of products evolve result from the strategic decision making where the scale and scope ratios of the firm toward the scale and scope of the communities are important. Organizational scale refers to the size of the firm's operations, resource endowments, production volume and market power within a single line of products. Classically, there are economies of scale when an increase in the scale creates a decrease in average cost.

Each firm's competitive position in the industry reflects the scale and scope achieved based on its unique resources, capabilities and economic performance. But achieving

organizational scale and scope alone does not ensure a superior competitive position. Existing literature (Jacobides & Billinger, 2006) suggests that economies of scale and scope are greater and performance is higher, when resources and value adding activities are integrated across the different products of the firm. We suggest that scale and scope economies of firm when they integrate the scale and scope of communities can achieve greater performance.

Adequate resource management should facilitate the integration between firm resources and capabilities and those of the communities. We propose that the establishment of different types of communities, the optimal structuring of a firm resource portfolio, the integration of those resources into valuable and difficult to copy combinations and finally the leveraging of them across different product type can be a source of competitive advantage and value creation. In the following subsections we examine the links between performance and different types of communities.

2.1. Community Types in the Video Game Industry

Several examples showed in the open source context vertical scope economies and the development of a market based on ideas originated by users. Thereby communities affected the profit of existing firms (Bonaccorsi, Giannangeli, & Rossi, 2006; Waguespack & Fleming, 2009). The communities emerged because the tasks to be fulfilled were too numerous for a single user. One user alone cannot perform all the computing and testing task required by a game in way to meet the actual quality standards, neither can he be proficient in all the activities (design, computing, sound editing...). Similarly technical enhancement and product specialisation in the video game industry have created conditions where the firm alone cannot perform all the tasks and created market segments in which single firms confront frequently a given set of rivals. This is similar to what is done in open innovation where the firm compete to catch the creative resource from outside. With one difference, usually in the open innovation literature the firm is 'open' for one category of tasks, here we extend this to several tasks of the firm. Some firms compete on a multimarket segment basis and therefore are confronted to a large number of rivals but a small number of them are present in several market segments. More often the competition between the firms is smooth in comparison to the rivalry existing between user communities corresponding to similar products but from different firms. The video game industry has created conditions in which frequently the success of a product can be measured by the number and size of different communities that gravitate around this product. When firms compete on such products, competitive attacks by one firm can even sometimes be countered by attacks from the opposite user community, potentially reducing the motivation for firms to initiate an attack (product development) without the cover of other communities of users, these would just increase the options for the other community to develop the rival product.

For example some firms invest large amounts of money in movies trademarks to produce games based on a specific story, characters or design. Rival firms produce games where the user can create visual features mimicking almost perfectly the branded game, without the firm having to pay for the trademark. This is the case for games based on modding (Jeppesen, 2009).

The firms that utilize communities to establish a presence in a market may have an advantage over firms competing without. To be relevant from a performance point of view,

the community and the firm objectives – strategies must be related. Relatedness refers to the degree of commonality in the value creation function of the firm and the community. The economic benefits of relatedness when the tasks to be carried out become more numerous correspond to economies of scope.

However, all types of communities do not offer the “services” to the firm neither do they need the same amount of resources. To clarify the situation we explored several possible criteria to distinguish the communities we confront in the video game industry and the link they can have with the firms (among others we employed the dimensions linked to the value created – for the firm or the community -, if the strategy and objectives of the firm are strongly/weakly related to the strategy of the community, if the game is a stand alone with out a community interface or if the product does not exist without a community interface). Finally we select two main dimensions that seem the most relevant for the following scale and scope analysis and firm strategy approach. The dimensions are: How is the game developed and what is the status or link between the communities and the firm. The following figure represents the three types of communities we identified with respect to those dimensions.

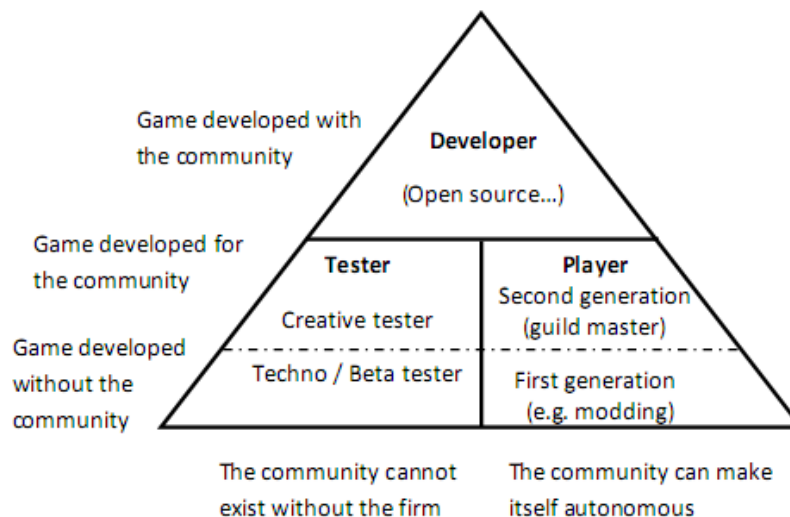


Figure 1. Types of communities in the video game industry (source: Burger-Helmchen & Cohendet, 2011).

The three types of communities are (i) tester communities, (ii) player communities and (iii) developer communities. Tester communities correspond to users who test games at different phases of development of the product. The player communities are those communities which use specific technological artifacts to enhance the game, produce additional content or tune the game as they like, authorizing other users to make use of their creation. Finally developer communities are users who have computer skills allowing them producing programs or recoding some parts of the product. The tester and player communities could be subdivided following the development perspectives. Also we can identify some paths between those communities when the relation between the firm and the user intensifies. In the following we present these types of communities in more detail.

2.2. Tester Type Community and the Firm Performance

Some authors (Burger-Helmchen & Guittard, 2008; Llerena, Burger-Helmchen, & Cohendet, 2009) found that the relation between communities and firm evolves. In the beginning the firm uses communities for beta test, mainly in search of errors, bugs, misspecifications in the program. Then, they employ the community as a creative complement. Depending on the market segment in the video game industry the effect of firms during their early stages of development are often made into the independent communities/technologically linked or beta test communities. However, as time passes some firms become aware that the communities are not just a group of users to satisfy but can be a real resource. Then they often struggle for establishing an adequate strategy for using them, because maintaining multiple communities and coordinating the firm strategy with the community strategic forces makes firm confront transaction difficulties such as bounded rationality, uncertainty, complexity, division of knowledge/labour questions which can neutralize the benefits of coping with communities. As the size and number of communities based on the firm product continues to increase, information processing demands growth also making finally firms with dedicated communities more costly and difficult to manage. Knowledge that flows between community members is also often described as being sticky, its transfer creates costs as the applying, maintaining and discarding of this knowledge (von Hippel, 1994).

Also the increase of the number and size of communities and their place in the firm strategy may finally reduce innovation instead of boosting it. This is the case when the size of communities increases, information, processing demand and transactional difficulties are extended. Also, when there are several communities, there is a risk that they copy each other (copy the behaviour and creation of other communities and do not propose real innovation is coming from them. A possible response from the firm is then to shift efforts and resources from a long term objective and in-house innovation to a short term community control.

Additionally, relationship with Tester communities may play an important role in helping firms to legitimate their internal organizational structure. In a different context Baum and Oliver (Baum & Oliver, 1991) showed that inter-organizational linkage confers both legitimacy and resources thereby enhancing the probability of survival of small and younger firms. The linkage between the communities and the firm, as organizations, is susceptible to bear the same positive effects. Here the type of community is important because the relationships between organizations are contingent on external and internal conditions such as firm/product/market segment strategy and the demand, willingness of the existing communities to participate in either exploration or exploitation.

The complete orientation toward a community based firm creates a short term orientation inside the firm that reduces the control of innovation. Many authors in strategic management have neglected the role of the communities as part of the firm environment within which innovation is researched, thereby neglecting the potential benefits available from scale and scope coming from the communities. A notable exception, but without mentioning the communities behind is the work of Wezel and van Witteloostuijn (Wezel & van Witteloostuijn, 2006) who proposed an analysis where the degree of industry concentration affects scale and scope economies. They show the consequences on survival of scale and scope economies for firms on a population level. The chances of survival diminish with the increase in concentration. Surviving firms achieve better economies of scale and scope if they

have diversified their competitive position. One solution to broaden the competitive positions is to rely on a diversified community base.

2.3. Player Type Community and Firm Performance

The less the firm and the community are related, the less economic benefit there is for the firm. In some cases weakly related entities can bring performance when there is a stable strategy and adequate governance. This is the case when weak related communities are still viewed as potential labour or technology access, lobbying power that can, with opportunism and under information asymmetry be used by the firm. Loosely related firms can redirect such resources under good strategies. But such examples are rare and difficult to obtain. This is what firms try to do with the modding type of firms. When there is no direct relation between other communities and the firm, but a technological artefact is a means of exchange and finally when the community is part of the strategy of the firm, a capability the firm can leverage (first and second generation type of player communities).

Similar to the tester community the establishment of a Player type community and its relation to the firm offer several advantages that may affect the performance of the firm. For example Player type communities allow firms to take advantage of market opportunities in segments that are at the frontier of their core market segments by exploiting current resources and capabilities and in search for new resources. These Player type communities may enable firms to achieve cost benefits through economies of scale and scope. Also such types of communities may be more driven by competition between communities than by competition between firms. Indeed, the scale and scope advantages that Player type communities provide may limit the entry of rival firms (by extending their costs, because they also must create and nurture a community).

Yet there is no clear evidence of a positive relationship between Player type communities and firm performances. These results suggest that, although Player type communities may offer several benefits to the firms, the scale and scope advantages they need and create may be especially difficult to build and manage. For example, increasing the variety (and thereby the number) of such communities related to one or several products of the firm greatly increases coordination, communication and collection of the results produced by the community. The expansion of the variety of such communities exposes the firm to a diverse set of governance policies, cultures, qualities of exchange and therefore economic conditions. Firms with a variety of Player type communities operate in several environmental contexts simultaneously; some may be conflicting from a cultural point of view, which raises problems for the firm to maintain its image toward all customers. Thus, at certain levels the added diversity of supplementary communities may mitigate many of the benefits. Yet there is no clear empirical evidence of how big the number/variety of communities must be to obtain the cancellation of the positive effects.

Scholars argue that early efforts from the firm to exchange with Player type communities produce experience that leads to positive economies of scale and scope (Jeppesen, 2009). However, as Player communities continue to gain in scale and scope performance benefits decreases with increasing monitoring, coordination and integration requirements and can, in extreme cases turn out to be negative. Other scholars find a different time link between the cost/benefits of Player communities and firm performance (Burger-Helmchen & Guittard,

2008). They suggest that Player type communities in the early phase of their relation with the firm have a negative effect on performance. Later, performance improves as experience provides opportunities for learning by doing, potentially allowing firms to develop the knowledge and capabilities required for their next product and for the successful management of the operations jointly with Player communities.

However, in all these studies it is clear that the firm faces, in her relationship with the communities, a liability of newness and a liability of smallness. The joint effect of these liabilities can create a significant cost that reduces the firm performance during the early phase of exchange with the community. However as time passes, the governance structure develops, which allows some firms to overcome such liabilities. Then, once these liabilities are reduced, growing relations with Player communities may lead to improvements in firm performance. But again, it is probable that with especially high levels of Player communities in relation with the firm the information processing and transaction difficulties associated with managing the Player communities reduce firm performance by creating diseconomies, coordination challenges and loss of flexibility.

Finally, there is ample evidence in the strategic management literature that a firm's current stock of resources can influence the success of the relationship with Player type communities. Intangible resources, such as technological know-how, brands and management skills may be especially influential. For example firms with an advanced stock of knowledge intensive resources may have the absorptive capacity to capitalize on exploration opportunities with Player type communities. Similarly, Player type communities provide opportunities for firms to exploit some resources that would otherwise only be utilized seldomly (ex: market resources). Given the costs of developing intangible resources, a better return to exploitation of these resources is most likely when they are deployed in relationship with Player type communities.

As this discussion suggests, building a network of relationship with Player communities devoted to the firm is a highly complex task. An additional layer of complexity is introduced when firms pursue the development of different types of products but not necessarily of types of communities. This is investigated in the following section.

2.4. Developer Communities and Performance

Firms which operate in multiple product markets in an attempt to enhance the benefits they obtain in each market segment can use several types of communities simultaneously. Pursuing different types of strategies linked to communities can be seen as amplifying the complexity of managing the firm. However we believe that this complexity is not necessarily a source of extended costs, but on the contrary opposite can be a source of value for the firm.

Combining different types of communities and different products exposes the firm to intense demands of resources and challenges even more the coordination of the firm activities. Managers may therefore find it difficult to develop and maintain the absorptive capacity to understand and adapt the requirements of all the customers and communities. When the simultaneous maintaining of different types of communities involves unrelated product development and/or institutionally and culturally distant communities, firms encounter additional complexity and costs and may compensate by under investing either in management skills in innovation (because innovation could extend the differences). Only few

firms have the resources and capabilities to manage high quantities of new products and communities, therefore it is in the interest of the firm to link communities and product development, to save resources and leverage all available capabilities.

Based on this last approach, theory and empirical evidence suggest that the integrated pursuit of product development and community diversification can enhance firm performance. One possibility is that a community allows the product to be used by a wide base of consumers and that any new service has a sufficient scale of employment necessary to drive down costs. Economies of scope may also emerge through the sharing of resources across communities. This product and community co development may provide valuable learning experiences that the firm can use in the process of creativity and marketing for the next products.

3. MANAGING THE FIRM AND COMMUNITIES SCALE AND SCOPE TO CREATE VALUE

As we mentioned above, the development and access to different types of communities can lead to performance gains. But the economies of scale and scope to be obtained depend first on the scale and scope of the organizations (communities and firm).

RBV (Resource-Based View of the firm) provides an adequate foundation for representing the differences and similarities in scale and scope between organizations. A firm engagement in community building is partly determined by the incentive to find new resources or additional use of existing resources not fully utilised in the actual configuration of the firm or not utilised all the time. RBV then suggests that an improved performance may not be obtained if rivals compete by creating similar resources. This point is of particular interest when we see communities as resources because the firm does not completely control them. The firm can devise several methods to make the community members as sticky as possible to the product of the company (by offering server space, tools dedicated to their specific needs, organizing contests and prizes). But still the members of such communities are more volatile than traditional resources.

Although establishing communities may seem deterrent for rivals, if it is done particularly well. The community of a product can create persistent, renewed heterogeneity related to the product and services of rivals by utilizing either new or old resources in novel ways. Each community in a firm's user portfolio inherently influences the profitability of the products or development of other communities within the portfolio. Through integration, firms are able to take advantage of such interdependences by sharing and combining resources between communities and internal to the firm employees. When these resources combination are leveraged across multiple products/communities, the heterogeneities may be a source of higher returns. Indeed, the routines on which such processes are based may be highly complex, dependent on the firm's joint history with the communities and therefore difficult to imitate. But again there is here a specificity to the video game market, the fact that the competitors have difficulties to reproduce, so to say to build similar communities (because the time of a community member is limited he cannot be in several communities full time) or has difficulties to catch them does not mean that the firm can dispose of the communities as they wish. Communities are volatile; their dedication to a brand, devotion to a product (a

game) can fade away quickly if they feel manipulated by the firm. Thus we believe that focusing on the communities' management alone fails to consider the means by which firms derive value from investing in communities to extend their scale and/or scope. In this section we address how firms exploit scale and scope achieved through communities by utilizing the RBV framework.

The seed of RBV can be found in the work of Penrose, for whom the resources and capability endowment of each firm is unique (Penrose, 1959; Peteraf, 1993). Resources are either tangible or intangible assets owned or controlled by firms and that allows them to implement their strategies (Barney, 1991). Capabilities refer to bundled combinations of resources that enable a firm to perform its activities (Sirmon, Hitt, & Ireland, 2007). The RBV approach has showed to be immensely successful in the strategic management literature but this success does not come without criticism. Noteworthy points of criticism are (i) the RBV is silent about the way to manage the resources in order to obtain the famous long term competitive advantage, (ii) the RBV fails to incorporate the dynamics of the markets, genesis of capabilities and fading of the resources, (ii) the RBV fails to give a clear measure of what is sustainable (Priem & Butler, 2001a, 2001b).

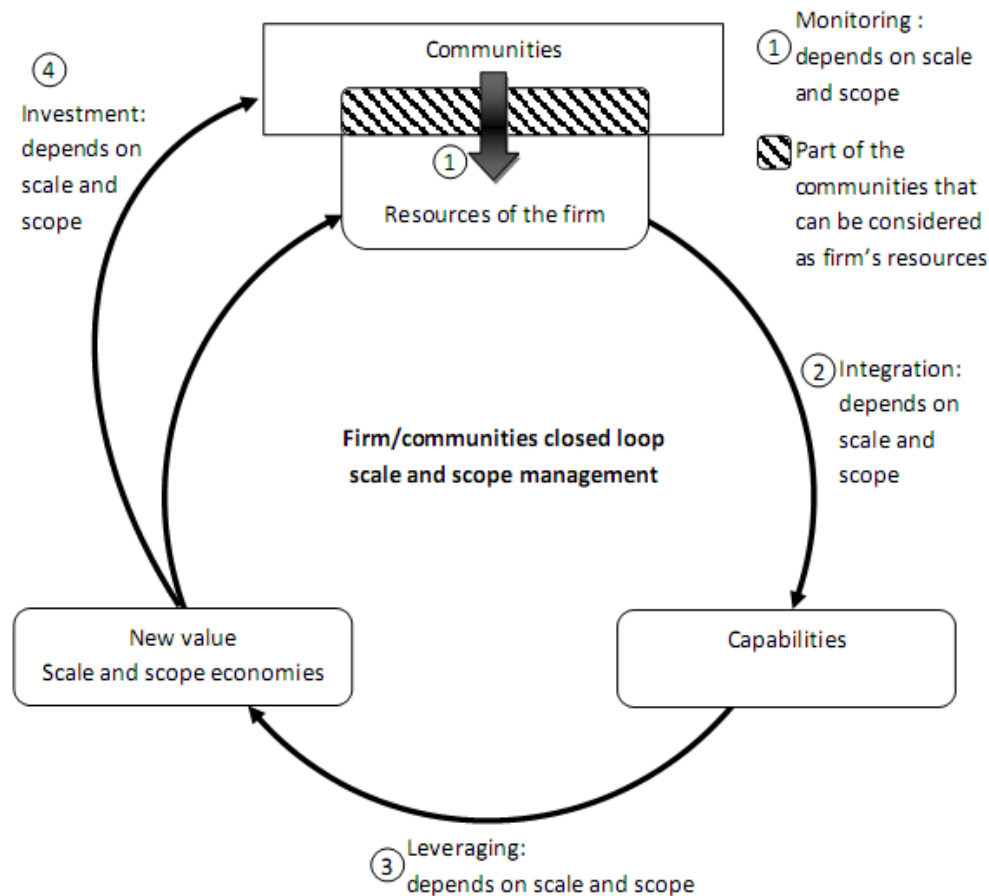


Figure 2. Firm/communities closed loop scale and scope management.

Those criticisms are all very vivid in the video game industry. First there is not such thing as a guide to efficient community building and management, but rather some general theoretical advice, which is an excellent starting point and allows us to adapt the managerial insights to the different types of communities. The video game industry is a very dynamic one, with frequent entry and exit of competitors, especially when a new technology is introduced, therefore the life time of a technology, a product can be a good measure of a sustainable advantage if a community lives more than the life time of a game, or survives a major technological change it can be deemed as sustained.

The RBV requires further development to take into account the specificities of the video game industry and the management of communities. We address these issues in the following. Figure 2 illustrates our representation of the firm/community relation as a closed loop process. Structuring the resource portfolio provides resources used by the firm to create capabilities through an integration process. Integration refers to the process that firms use to bundle and rationalize resources to create new capabilities and leveraging refers to the deployment of such capacities to take advantage of opportunities. Leveraging transforms the resources into value (Sirmon et al., 2007). The results of the leveraging are new products, sharing economies of scale and scope. We explore the resource management and the effects of different community types on scale and scope economies in the following. It should be noticed that to be integrated the scale and scope of the communities must have some commonalities, or encompass with the scale and scope of the firm.

At each step, the results are influenced by scale and scope conditions on the firm/community and capabilities, but also by external factors that we have not represented on the figure. Among the external factors we can count the rivals' actions, the uncertainty related to new technology development, substitution product coming from other markets and draining the resources from the communities.

3.1. Identifying the Resource Portfolio of the Firm

Community based strategies allow firms to obtain a larger resource portfolio. But for this the firm must be able to identify in the large cloud of community interactions what can be seen as a resource. In the strategic management literature the identifying process includes often the determination of the resources the specification of the accumulation, acquisition and access conditions²⁰.

Accumulation corresponds more to development of internal resources of the firm. It is hoped that firms have better information about the resources they control so that they are better able to recognize the value of this type of resources.

The accumulation of resources is most important when it is difficult to obtain any resources from the existing communities or other factor markets. Also when this type of resources is present predominantly, the next step,-transforming the resource in new capabilities allowing the firm to exploit opportunities by capitalizing exiting resources-, should be the easiest. But when such types of resources are predominant it can lead to isolating behaviours because the firm has less need to interact with the communities or is more suspicious about the resources brought in from outside the firm (Holcomb, Holmes Jr., & Connelly, 2009).

Nonetheless, the accumulation and recombining of resources in valuable ways can be enhanced by resources coming from communities, for example by detecting new profitable market segments, game concepts. Limiting too strongly the part of resources coming from the communities may limit the amount of change that a firm can operate. A significant increase of the scope of the firm capabilities requires new resources coming also from outside the firm (Morrow Jr., Sirmon, Hitt, & Holcomb, 2007). For doing this the firm cannot acquire access to external resources.

Accessing resources suggests that there is a market on which a firm can buy the resources (Priem & Butler, 2001a, 2001b). The concept of market when dealing with communities is elusive. Either we should see the community as a market, where the different members are the resources to be acquired, or we see the community as a whole as the specific resource and the cloud of communities forming the equivalent to the market. Community based strategies that allow firms to acquire additional resources may improve a firm's ability to compete by creating new capabilities or modifying existing capabilities. For example these resources coming from communities can potentially revitalize the creativity of the firm and overcome the rigidity of some processes or routines (Leonard-Barton, 1992). Usually it is argued that on markets information is asymmetrically distributed therefore the resource acquired has limited information about the possible use of the resource and/or the correct price it should pay for it. This is only partially true when the resources to be acquired are community based. A distinguishing factor of the community is that information circulates freely and plenty between the members of the community. It is the basis of the development of communities as repositories of existing information and knowledge and the sharing of these in ways to develop the existing stock of resources. Also the fair price is less clouded than on a market, partly because the firm has already spent capital in the monitoring and development of the community and partly because any subsequent investment of the firm in the community corresponds to the unfolding of a strategy. The firm knows more precisely what for a resource it invests in the community and how to employ the resources in its development. Therefore acquisition of resources through communities creates less uncertainty, the expectations about the future value of those resources are more homogeneous.

Employing communities to obtain resources to be integrated with those a firm already controls can enable it to create value over the costs of the resources. The resources are also likely to be inimitable and thus provide a good basis for obtaining a competitive advantage. This implies, when a sustainable advantage is sought, to hold and manage the resource for a longer period. Here it means to make the community live during a longer period of time, or to employ some members of the community. This can be difficult to do, expensive and risky whenever this resource disappears during the process of developing a product/service where such a resource is needed.

Finally, for communities, the firm can simply seek to gain access to some of the resources, like an alliance between firms a sort of alliance between a community and a firm can be created. Such an alliance requires lower financial investment from the firm, and allows her to focus more on the creation of value activity. The access to resource is most profitable when the environment changes quickly by providing the firm with the necessary flexibility and resources in the short term.

3.2. Integrating Resources, the Creation of Capabilities

The resource integration process is the way by which capabilities are formed. Each capability represents a specific combination of resources allowing the firm to fulfil specific actions (e.g., product development, marketing...) that create value. Several scholars in RBV suggest that it is not so much the endowment of resources that is important but the similarities and dissimilarities in the way of using them that shape the real competition between firms. Communities represent an appraisable resource for firms when they make it possible to successfully create new capabilities that provides superior performance (create more value) than without communities. Capabilities are more idiosyncratic to the firm than a resource, acquiring them through market mechanisms is a very difficult task.

The creation and exploitation of unique capabilities implies that the firm integrate them in her organizational structure. The structure will sustain, enrich and eventually enhance their value. For doing this, the structure must have certain properties toward the scale and scope aspects. When these conditions are met, a good structural alignment is obtained in ways to create synergies that make capabilities more valuable, of course one of the most interesting benefits is the appearance of scale and scope economies.

Integrating the resources to obtain a unique combination requires specific governance, especially when dealing with communities. This governance must be sufficiently hierarchical and self organizing in order to benefit from scale and scope economies with the communities. Often communities are depicted as self organizing structures whose interaction is best with other self organizing structures providing sufficient reactivity and flexibility. Nevertheless, coordination is needed in the firm to ensure coherence with the overall strategy. Therefore a certain amount of hierarchical organization and decision processes is required to allocate resources correctly within the firm and eventually outside the communities.

Not surprisingly differences in balance between hierarchy and self-organization produce different decisions processes and thereby different capabilities. The firm adopts a given balance depending on the expected outcome. Interpretation to obtain a small incremental change is not performed in the same way as integration to obtain a major shift. The integration process is eased when the previous steps of resource identification including comprehension are well defined (Winter, 2000).

Also, the scale and scope between the firm and the communities (as the types of communities) create conditions for different types of learning but also to discourage learning. For example when the scale and scope differential between communities and the firm is too large the temptation to integrate the resources of the community can disrupt the current firms operations (disturbing the actual process, going back some steps that should not be done). Also, the integration of resources forms badly fitted communities can affect the firm's capacity to learn because too fast an expansion can provoke diseconomies by time compression that limits the amount of knowledge that can be absorbed, exchanged or utilized in a given time period. On the contrary, if the community is too small, or expands too slowly, the firm may neglect her and lose some important resources. Therefore some authors suggest that, when dealing with integration of resources the firm and the source of resources (i.e., the community) expand at a regular pace allowing the firm to learn and integrate in an optimal way (Vermeulen & Barkema, 2002).

This learning is only possible if the firm is able to design structures and processes that allow and encourage knowledge sharing and the absorptive capacity of the firm. This is done

in the video game industry by building virtual exchange platforms, automated bots that collect the creation of users or open innovation websites. Also learning from user communities reduces the difficulties of integration for several reasons. First it helps to better fit the product design to the real needs of the users. Second it helps to create new options, new possibilities based on the existing resources and capabilities. This is known as the effectuation theory in the strategic management literature which supposes that users relentlessly search for new applications of resources and capabilities as opposed to strategies where the applications are set and the resources are selected in consequence.

3.3. The Leveraging Process

The leveraging process corresponds to the set of activities used to deploy the firm's capabilities in the market in order to take advantage of specific market segment opportunities (Sirmon et al., 2007). The presence of unfulfilled needs in unnoticed or not tested market segments creates opportunities for firms to leverage their capabilities to fulfil the needs of the customers and create profit, an everlasting goal in management (Cummings & Daellenbach, 2009). The process of leveraging needs a certain number of conditions to be specified, in particular the determination of where and how to deploy the firm's capabilities. Unfortunately for the firm a specific capability is not fungible through market segments; this does not mean that there is no hope for scale and scope economies to be possible. But some criteria must be met.

Value creation implies matching the firm's capabilities with the customer's needs for obtaining a unique competitive position. But customers demand can shift fast and in ways which are difficult to predict. The process of leveraging must therefore be performed fast and adopted dynamically to the market toward the spot where the firm can hope to create the most value.

Firms relying on communities must also be proactive in responding to conditions that delay the leveraging process. For example, a firm would like to diversify its portfolio of products in launching a game for a different genre, creating thereby another segment of the market. The firm, to ensure a minimal audience bases the game on a previously marketed product with an existing community. To put it more clearly, the firm tries to utilise a brand for a different type of game, hoping that the existing community related to the brand will follow, create a market teasing and insufflate ideas during the creative phase and fine tuning of the game production. By doing this the firm leverages the capabilities in a new market segment that is important for rivals. Those could supposedly adopt the reverse strategy and use their installed user communities in retaliation actions in that or another segment of the market.

Also the differences between the types of communities expose the firm to a set of diverse environments and cultures. Therefore the routines used to leverage capabilities in some genre or segment of the market must be applicable elsewhere. Employing community based capabilities for developing a new product for an already occupied segment of the market can make leveraging more effective. Firms can use valuable information coming from the communities (e.g., about customers needs) employing existing value added activities and learning structure developed previously. All of those are possibly not transferable to an unfamiliar submarket.

Whatever the difficulties of the leveraging process, it is crucial to realise the gains in scale and scope. Those scale and scope economies provide capital for further investments. A few of these leveraged capabilities will give the firm a sustainable advantage, the process of leveraging also generates opportunities for further resource development actions.

4. THE STRATEGIES BEHIND SCALE AND SCOPE OF COMMUNITIES AND FIRMS

The firm's decisions and actions implemented give rise to changes in scale and scope. In this work we use community oriented actions as a mode of organization for the firm to develop new products and enhance existing products. Different types of communities provide different access to resources. But the differences in the type of communities alone are not sufficient to explain the differences in performance between the strategies followed by the firm in general and in our case by the video game companies. Today, all game manufacturer, studio, create a dedicated web site to each new game, and attempts to build (or exploit) user communities are numerous but only a few are realised by the firms. Such strategic actions, as community building/leveraging, necessitate adequate organizational structures, routines, methods to be executed. Variation in those may explain the genesis and disappearance of many communities and firms. In this section we examine the three types of communities that firms in the video game industry can employ to create scale and scope based on field studies.

4.1. The Player Community

The Player community corresponds to the situation where existing resources are integrated and leveraged to create a new product/enter a new segment of the market. This type of community is preferred when the firm already possesses resources to create the product but is unlikely to provide all the resources needed to perform all the tasks (like marketing, branding ...).

There are important reasons for a firm to develop such types of communities. First the firm wants to ensure an optimal use of existing resources. Second, in certain activities where resources are rare communities can be a perfect substitute product, so the use of the firm's existing resources may be preferred on a critical set of tasks, while a large set of peripheral tasks can be carried out successfully by this type of communities. Also the existence of such a type of community can be helpful when the firms focus on internal resources to integrate new capabilities to create new products. From that point of view communities can be assimilated to the notion of complementary assets which bounded with the core assets of the firm are responsible for its innovation success^{27,28}.

- In this situation transaction cost are also lower.
 - The creativity comes mainly from the firm, so no risk of being copied or sued
 - The probability of obtaining a product with few bugs is greater.
- Such development paths build more on existing routines and processes.

Therefore such types of communities are most indicated when firms develop new products for known segments of the market or related segments because the relatedness improves the likelihood that a firm's existing resources will be applicable across different segments. Relatedness eases also the leveraging process by allowing a firm to employ existing knowledge of customer demand and to utilise existing value added activities to meet this demand.

But relying on such a community has also disadvantages. First because the firm relies on existing resources for creating new products, it supposes that the firm possesses a sufficient amount of resources. If the quantity and variety of resources needed are not largely possessed by the firm, such a type of communities is not adequate. Also, relying excessively on existing resources limits the variations/the changes the firm introduces into the new product. Therefore such types of communities are indicated for follow-on games based on a successful existing version. It gives a product that, at the time of the realise to the customer can be seen as too simple, too common in its features in comparison with other products that have been marketed in the meanwhile and that incorporate more novelty. The Player type community may reflect the organizational rigidity and the firm inability to adopt its business model/genre conception to a changing environment.

4.2. The Tester Community

Developing new capabilities usually implies the introduction of new resources. Tester type communities can facilitate the infusion of new resources and the integration process to obtain capabilities which are valuable and difficult to imitate.

Resource finding through Tester communities can be valuable when the competitive landscape requires new types of resources or in quantities the firm is not able to offer. Also Tester type communities can help rejuvenate the firm and break unproductive rigidities which are internal to the firm. The combination of resources coming from the firm and from Tester types communities has the potential to create capabilities that can be leveraged more effectively.

Tester type communities can also, moderately, protect the firm from rivals because they provide new (but not necessarily unique) market positions that enhance the ability of the firm to respond to the need for resources. Such communities can also make the firm gain in market shares. The increase of market shares can generate economies of scale and scope that in turn will increase competitiveness by reducing costs. A large market shares correspond also to a greater market power that among others grants power over suppliers but also the ability and constrain to manage an extended portfolio of communities.

In addition Tester type communities are less genre-related, so they can be redeployed, with other firms' capabilities into another market segment (Helfat & Peteraf, 2003).

Nevertheless, Tester type communities are inherently more risky to utilise by the firm. The governance of such communities is more complicated because the legal ownership of creative ideas or work done by the communities is not always very clear (sometimes even the users protect their rights better than do the firms (O'Mahony, 2003)). If much of the value created is transferred from the community to the firm, the community members can ask for rewards that can reduces the returns made by the firm. This problem can be exacerbated when the firm and the community cultures differ (e.g., the community turns more to open source

creation, the firm puts too much limitation to preserve its full proprietary model). This problem can lead to a managerial bias, like investing too much to get rid of these problems and thereby neglecting to allocate capital resources to other profitable investments. In other words this type of community can generate high opportunity costs. If such problems arise they may also limit the ability of the firm to participate in the creation and development of such a type of communities and in the associated resource and capabilities. Therefore a discrete investment must be done by the firm in a point of time to reduce all the asymmetry of information between the rights and ownership of the firm and the community members.

But despite these limitations, Tester type firm can be profitable for the firm if managed properly. Again there must be a good fit between the scale and scope of the firm and the communities, including also similarities in the management process (hierarchical, self organizing), the cultures... The existence of a good will hopefully lead to a good integration process and a resource sharing between the firm and the communities.

The strategies of Tester type communities are also likely to be more successful when their objectives evolve following a specific pattern in their relation with the firm. By starting as a beta test, technical community and slowly adding creativity oriented exchange with some members of the community the resource/capability gain are more likely for the firm.

4.3. The Developer Community

The developer type communities are a special form of cooperation arrangement between a firm and communities that utilise resources from one firm and one or several autonomous communities but highly linked to the product of the firm. Firm and communities exchange with the aim to improve the performances of both sides. The firm performance is measured by traditional economic measure, the performance of the community is measured by other criteria (depending on the purpose of the community, its ranking if in competition with others, its products...). Developer communities and firms have access to additional resources of the partner organization but do not have control over it. When a firm exchanges with developer communities to create new products or enter a new market segment several advantages are put forward (Harhoff, Henkel, & von Hippel, 2003). Developer communities can be used to access the resources of communities (or even through them resources of firms) when the firm is not able, or does not want to create and accumulate those resources internally. A possible explanation could be that the firm wants not to acquire them permanently. These developer communities allow those firms to create resource combination that they could not achieve alone.

Developer communities are particularly indicated when firms lack the necessary resources to enter a new market segment on a sufficient scale.

Several disadvantages characterise the developer communities:

- Lack of control over the resources outside the firm
- A risk of dependency of the firm toward the developer communities
- Relations with developer communities carry out elements of competition, but they are turned into elements of competition (e.g., card games)

- When trying to leverage the resources after the principal project is over the firm can encounter problems. Also the leveraging may suffer delays because the developer communities as integrated as they are have still decision autonomy.

Overcoming the challenges of developer communities often begins with a long selection phase of the community over even a co-construction of the community. This “selection” is important structurally because it creates a network of influences in the segment of the market but also over other segments, it provides also relation capital (interactions with other groups, which can be a bad output if the groups are pirates e.g.).

Developer communities should be embedded within an appropriate governance structure. Here is a major difficulty; it should be a combination of well-specified contracts but also informal mechanisms that institutionalize common goals. Unfortunately, contracting with communities is difficult if not impossible. Some example of this can be found when firms reward (including monetarily) some groups or guild leaders to collect and organize information.

5. DISCUSSION

Several empirical studies on communities/firm relations have shown that community based strategies do not obtain the performance outcomes expected by the firms. However, as previous scholars have made it clear, understanding how to implement these strategies in an effective way is as important as selecting or planning the strategy. From this point of view community based strategies do not differ from more traditional strategies (Mintzberg & Waters, 1982).

If firms can create scale and scope advantages by including communities in their strategies with the sole objective to achieve short term financial performance, such a perspective is a wrong goal. Firms should seek other advantages in communities, more long term oriented, even if scale and scope can lead to a better short term financial performance. Also, as we showed in this work, the outcome depends broadly on the type of communities the firm interacts with and the way these interactions are managed. To better understand the community based strategies of a firm we choose to tackle the big picture by using familiar concepts in strategy: the scale and scope and RBV. Our work suggests that factors internal to the firm crossed with factors at the frontier of the firm (e.g., coming from communities) have the potential to improve our understanding of survival of firms and variation in preference outcomes, especially in markets like the video games.

We can also find in this approach some implications for the evaluation of firms employing communities to develop their scale and scope. As noted, developer community based strategies push the development of organizational scale and scope but fail from a performance view. And if performance extension is showed those obtained may be short lived. Additionally, change in the industry, or in related industries may alter the competitive environment by affecting the communities linked to a firm or the links between them and/or the way the communities can be seen as resources. Therefore, firms must continuously scan their environment to identify emerging opportunities and threats, this helps find new markets segment or detect growing communities and game concepts to be leveraged to create value.

FUTURE WORK DIRECTION

With this in mind, we propose several work directions. First, but this is not new, there is a need to develop measures of community size/quality that can be linked to economic performance of firms. The scale and scope we employed is a first step in that direction but much work must be done to be able to evaluate a firm's community portfolio as well as a resource portfolio and the leveraging value creation that can be expected.

Second, but this also is an old question, we need better understanding of how to implement strategies with the novelty of to it when there are communities included. This includes questions from RBV like how to synchronize resource development from inside and outside the firm.

Third, in this work we mostly concentrated on firms that are multiproduct and active in different segments of the video game industry. It seems obvious that the structure of the firm is of utmost importance for how she can develop and implement the strategy linked with communities. Probably, as the structure of such firms evolves at each computer/console generation, insights from the evolutionary literature on organizational change should be integrated (Barnett & Burgelman, 1996).

CONCLUSION

This work has suggested that research on firm performance in the presence of communities tied to the firm should consider these communities as a source of resources, capabilities and possibly value creating entities. We schematized the ideal relation between firm and communities by employing the RBV framework and the scale and scope measures. This led us to present a closed loop model where communities are first identified as resources, then integrated with other resources of the firm to create new capabilities and finally are leveraged to create value by satisfying new customer needs and adding to the performance of the firm by realising scale and scope economies. We illustrated these steps with examples coming from the video game industry. In particular we assume that in this industry there are different types of communities and that the way to manage them can differ widely. By doing this we hope that we have contributed to the understanding of the strategy implementations in the presence of communities in industries based on social interactions between users and between users and firms.

REFERENCES

- Barnett, W. P., & Burgelman, R. A. 1996. Evolutionary perspectives on strategy. *Strategic Management Journal*, 17: 5–19.
- Barney, J. B. 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1): 99–120.
- Barney, J. B., & Hesterly, W. S. 2007. *Strategic Management and Competitive Advantage: Concepts and Cases* (2nd ed.). Prentice Hall.

- Baum, J. A. C., & Oliver, C. 1991. Institutional Linkages and Organizational Mortality. *Administrative Science Quarterly*, 36(2): 187–218.
- Bonaccorsi, A., Giannangeli, S., & Rossi, C. 2006. Entry Strategies Under Competing Standards: Hybrid Business Models in the Open Source Software Industry. *Management Science*, 52(7): 1085–1098.
- Burger-Helmchen, T., & Cohendet, P. 2011. User Communities and Social Software in the Video Game Industry. *Long Range Planning*, 44, 317-343.
- Burger-Helmchen, T., & Guittard, C. 2008. Are users the next entrepreneurs? A case study on the video game industry. *International Journal of Entrepreneurship Education*, 6(6): 57–74.
- Cummings, S., & Daellenbach, U. 2009. A Guide to the Future of Strategy?The History of Long Range Planning. *Long Range Planning*, 42(2): 234–263.
- Harhoff, D., Henkel, J., & von Hippel, E. 2003. Profiting from voluntary information spillovers: how users benefit by freely revealing their innovations. *Research Policy*, 32(10): 1753.
- Helfat, C. E., & Peteraf, M. A. 2003. The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10): 997–1010.
- Holcomb, T. R., Holmes Jr., R. M., & Connelly, B. L. 2009. Making the most of what you have: managerial ability as a source of resource value creation. *Strategic Management Journal*, 30(5): 457–485.
- Jacobides, M. G., & Billinger, S. 2006. Designing the Boundaries of the Firm: From “Make, Buy, or Ally” to the Dynamic Benefits of Vertical Architecture. *Organization Science*, 17(2): 249–261.
- Jaeger, P., von Krogh, G., & Haefliger, S. 2009. Learning in Online Communities. The Case of Machinima. *presented at EURAM - Liverpool*.
- Jeppesen, L. B. 2009. Profiting from innovative user communities: How firms organize the production of user modifications in the computer games industry. *Copenhagen Business School, Working paper*.
- Leonard-Barton, D. 1992. Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, 13: 111–125.
- Llerena, P., Burger-Helmchen, T., & Cohendet, P. 2009. Division of labor and division of knowledge: A case study of innovation in the video game industry. In U. Cantner, J.-L. Gaffard, & L. Nesta (Eds.), *Schumpeterian Perspectives on Innovation, Competition and Growth*: 313–333. Springer Verlag.
- Mintzberg, H., & Waters, J. A. 1982. Tracking strategy in an entrepreneurial firm. *Academy of Management Journal*, 25(3): 465–499.
- Morrow Jr., J. L., Sirmon, D. G., Hitt, M. A., & Holcomb, T. R. 2007. Creating value in the face of declining performance: firm strategies and organizational recovery. *Strategic Management Journal*, 28(3): 271–283.
- O’Mahony, S. 2003. Guarding the commons: how community managed software projects protect their work. *Research Policy*, 32(7): 1179.
- Penrose, E. T. 1959. *The Theory of the Growth of the Firm*. Oxford University Press.
- Peteraf, M. A. 1993. The cornerstones of competitive advantage: a resource-based view. *Strategic Management Journal*, 14(3): 179–191.
- Priem, R. L., & Butler, J. E. 2001a. Is the resource-based “view” a useful perspective for strategic management research? *Academy of Management Review*, 26(1): 22–40.

- Priem, R. L., & Butler, J. E. 2001b. Tautology in the resource-based view and the implications of externally determined resource value: further comments. *Academy of Management Review*, 26(1): 57–66.
- Sirmon, D. G., Hitt, M. A., & Ireland, R. D. 2007. Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32(1): 273–292.
- Urban, G. I., & Von Hippel, E. 1988. Lead user analyses for the development of new industrial products. *Management Science*, 34(5): 569–582.
- Vermeulen, F., & Barkema, H. 2002. Pace, Rhythm, and Scope: Process Dependence in Building a Profitable Multinational Corporation. *Strategic Management Journal*, 23(7): 637.
- Von Hippel, E. 1986. Lead users: a source of novel product concepts. *Management Science*, 32(7): 791–805.
- Von Hippel, E. 1994. “Sticky Information” and the Locus of Problem Solving: Implications for Innovation. *Management Science*, 40(4): 429–439.
- Waguespack, D. M., & Fleming, L. 2009. Scanning the Commons? Evidence on the Benefits to Startups Participating in Open Standards Development. *Management Science*, 55(2): 210–223.
- Wezel, F. C., & van Witteloostuijn, A. 2006. From Scooters to Choppers: Product Portfolio Change and Organizational Failure: Evidence from the UK Motorcycle Industry 1895 to 1993. *Long Range Planning*, 39(1): 11–28.
- Winter, S. G. 2000. The satisficing principle in capability learning. *Strategic Management Journal*, 21(10/11): 981.