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Optimizing value creation and value capture with a digital multi-sided business model*

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Abstract

In digital industries, a multi-sided business model architecture allows optimization of value creation and value capture for the growth and survival of innovative SMEs. The optimization of value creation and value capture in a multi-sided business model is possible by creating complementary sides, which each independently add a part of the value proposition but are interdependent with regard to value creation and value capture. A multi-sided business model can be built from an architecture of user community (with interdependent user categories in one market) or from an architecture of technical platforms (with interdependent platforms of diffusion in multiple markets). The combination of open cooperation with users regarding artistic content and the SMEs' internal technology control optimizes economic value capture.

1 | INTRODUCTION

The business model (BM) is a source of efficiency for firms and entrepreneurs, because it allows managers to reflect on how to optimize value creation by multiplying sources and value capture by increasing revenue within and outside the firm's boundaries (Chesbrough & Rosenbloom, 2002; Teece, 2010). However, true optimization of these two elements remains a challenge for many firms, especially for innovative small and medium-sized enterprises (SMEs), because of their limited resources. Under these conditions, the BM is often collaborative, which may cause negative effects. Although collaboration fosters value creation (Chesbrough, Vanhaverbeke, & West, 2006; Stuart, 2000), it may limit value capture in that partners share the revenue from innovation (Chesbrough et al., 2006). In addition, cooperation does not exclude dependence phenomena (Gulati & Stych, 2007), opportunistic behaviors, or conflicts of intellectual property, which can limit value creation and value capture (Pisano & Teece, 2007). To counteract these negative effects, SMEs must aim to more intelligently organize the BM components to optimize value creation and value capture. In digital industries, some SMEs seem to have found a solution by developing a BM with a multi-sided platform.

Indeed, the literature focusing on platforms and multi-sided markets (Evans & Schmalensee, 2007; Rochet & Tirole, 2006) proposes a possible solution that considers the BM as not a single object, but a plural object with multiple sides. With the declining costs of acquiring information and intermediation, many multifaceted platforms have emerged on the Internet (e.g., eBay, Amazon, YouTube, Airbnb). These platforms adopt a BM based on intermediation and networking user categories that are complementary and interdependent. Using this approach, a SME can develop a multi-sided BM and break it down into multiple sides to optimize value creation and value capture (through categories of customers, products, and services). Thus, it is possible to cooperate on certain sides of the BM to optimize value creation and keep internal control of key resources on other sides to optimize value capture. We believe that the key to value optimization lies in managing the interactions and interdependence between the different sides of the BM. This article addresses the following question: How can we optimize value creation and value capture with a multi-sided BM? To address this issue, we first develop our theoretical framework on BM and multi-sided platforms. Next, we present our methodology and the selected cases of video-game BMs. Finally, we present the results and discuss the theoretical and managerial implications.

2 | THEORETICAL BACKGROUND

The BM is a model (Baden-Fuller & Morgan, 2010) that conceptualizes the way a firm organizes its value creation in a value chain and value network, its value proposition, and its value capture through a revenue model (Teece, 2010). Value creation can be defined as the invention or reconfiguration of assets and skills to create a usage value

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(new product, new service) subjectively viewed as new and relevant for potential users (Lepak, Smith, & Taylor, 2007, p. 182). Value proposition can be defined as a promise of value to be delivered to a specific target customer segment (Dubosson-Torbay, Osterwalder, & Pigneur, 2002). Value capture can be defined as the firm's capacity to capture a material (income) or an immaterial (e.g., knowledge, reputation) value received in exchange for a usage value, created for potential users (Dubosson-Torbay et al., 2002, p. 182). The BM is a key element for firms and entrepreneurs aiming to optimize value creation and value capture. However, true optimization of these two elements remains a challenge for innovative SMEs, especially because they must cooperate to create and distribute their innovative products or services (Wolff & Pett, 2006). This collaborative dimension may cause negative effects that traditional BM architectures fail to completely solve.

2.1 | Limits of traditional BM architecture in a collaborative approach

For innovative SMEs, collaboration in BM poses several problems. In the case of collaboration with an industrial partner, participation in value creation often leads to that partner's involvement in the value proposition, which ultimately limits the level of value capture for both partners (Chesbrough & Appleyard, 2007). Other factors can decrease value-creation performance and value capture, because collaboration can cause opportunism, conflicts of intellectual property (Chesbrough et al., 2006; Yunus, Moingeon, & Lehmann-Ortega, 2010), power imbalance and dependence (Casciaro & Piskorski, 2005), and uncertainty in the distribution of results (Chesbrough & Appleyard, 2007). In the case of collaboration with users, which often occurs in the digital industry (Wirtz, Schilke, & Ullrich, 2010), capturing user-created value can be difficult if the SME does not initially associate users with the owner of the value creation (Jeppesen & Frederiksen, 2006). Similarly, value creation is hampered when end users do not recognize the value proposition or have conflicting interests and motivations (Dahlander & Magnusson, 2008). Collaboration in value capture can lead to intellectual property conflicts relating to value creation (Fichter, 2009) or in the case of inadequacy of the value proposition to the target consumer and market segments selected (Porter, 2001). For SMEs, value optimization in a BM remains a challenge due to negative effects simply by collaboration, but also because traditional BM architectures are limited to solve these effects.

BM is an interdependent activity system in which the components of value creation, value proposition, and value capture are connected (Zott & Amit, 2010). In this way, a collaboration in one component, such as the value creation, can have negative repercussions on the other components (e.g., loss of value creation control, loss of income, loss of decision-making control). The value optimization remains complex. Another solution is to develop an architecture based on a BM portfolio (Sabatier, Mangematin, & Rousselle, 2010) to multiply sources of value creation and income. This architecture offers the possibility of collaborating on one BM to access technologies, key external resources, and so on, and developing another BM independently to capture more value with the licensing, the valorization of products and services in other markets, and so on (Sabatier et al., 2010). However, if SMEs have insufficient internal resources to develop their BM portfolio, then cooperation remains essential, and negative effects can be multiplied. In addition, managing a portfolio of BMs requires strong organizational skills, which can be difficult to acquire and implement for innovative SMEs (Sabatier et al., 2010). The last solution is to connect two complementary BMs (owned by two firms) to create a dual BM architecture[2] (Markides & Charitou, 2004). This architecture allows both firms to generate positive network effects that can optimize value creation and value capture. Even if this architecture does not solve the negative effects of the collaboration (because each BM is owned by a different firm), it provides strategic reflections to build a BM architecture with complementary and connected sides in order to generate positive network effects that will be a lever for value optimization. This type of architecture leads us to deepen the concept of side, using the literature on multi-sided platforms.

2.2 | Contributions of multi-sided approach to BM architecture

The multi-sided approach is based on the theoretical concept of a multi-sided platform,[3] which provides an effective means of optimizing value creation and value capture. In digital industries, a multi-sided platform is an economic environment based on a service marketplace (e.g., eBay), in which products and services are sold to different groups of users (Eisenmann, Parker, & Alstyne, 2006; Roson, 2005). By organizing and facilitating transactions between the user groups, the platform allows us to generate network effects. Within a multi-sided platform, the value of a product or service depends on the direct effects of networks on the same side (the value of goods varies with the number of users) and cross-side network effects (the value of goods increases with the number of users on other sides and vice versa) (Eisenmann et al., 2006; Katz & Shapiro, 1992).

In such a platform, pricing strongly influences the network effects and the overall value capture generated by the platform (Roson, 2005). In digital industries, platform managers commonly subsidize a side (e.g., end users), because the user contribution to a product or service provides an overall value greater than its resultant income (Eisenmann et al., 2006). For example, on a website of content generation structured as a multi-sided platform, the end user may create value as textual or graphic contents, creation of events, implying strong cross-side network effects (direct/indirect) (Albuquerque, Pavlidis, Chatow, Chen, & Jamal, 2012). In this case, the firm captures a monetary value

[2] For example: the dual BM of Nespresso (Markides & Charitou, 2004), which offers coffee machines on the one side and coffee capsules on the other side (two sources of value creation and value capture), with one value proposition based on coffee consumption. Positive network effects appear because (1) the greater the number of Nespresso machines sold, the more effective the BM of the capsules is and (2) the greater the diversity of capsules, the more customers want to buy Nespresso machines.

[3] This concept is close to a multi-sided market concept (Rochet & Tirole, 2006) or a multi-sided network concept (Roson, 2005). They are similar from the point of view of network effects.

by billing one or more sides of the platform and users capture tangible or intangible value by acquiring knowledge, reputation, and affluence (using products and services). A multi-sided platform is characterized by a device of value creation, value proposition, and value capture that can be different on each side. A side is characterized by a homogeneous user group with specific needs and behaviors, which represents a market segment or one market (Evans & Schmalensee, 2007). A multi-sided platform can gather different user groups interacting with one another and cause positive network effects intra- or inter-market (Parker & Van Alstyne, 2005). Internet platforms promote strong network effects because transaction costs are low, acquiring users is less expensive than physical platforms, and social effects are strong (Shuen, 2008). AQ1

To create a multi-sided platform, it is necessary to conceive a value proposition that will interest several user categories and that provides mutual value. The crux of the problem of creating an effective BM lies in the structuration of the offer, the organization of sides, and the apportionment of billing between sides. The choice of a suitable BM in terms of structuration and billing of sides is the same decision for the success of a multi-sided platform (Rochet & Tirole, 2003). Implementing an activity in a multi-sided market or platform requires the creation of a specific BM, which we call the multi-sided BM. We propose that the multi-sided BM allows organization of activities of value creation and value capture of an offer (products and/or services) to complementary and interdependent user/customer categories through positive network effects in one or multiple markets. The multi-sided BM offers several places and types of value creation that lead to one or several value propositions, depending on user needs on a side. Network effects between sides produce more value creation than if the sides were independent. Moreover, as the firm controls the structuration and the relationships between sides, it is likely to capture the largest share of monetary value, leaving most of the non-monetary value for users. To examine this emergent concept and its role in optimizing value creation and value capture, we propose to study two SMEs in the digital video-game industry that have successfully implemented a multi-sided BM.

3 | METHODOLOGY

Our study addresses the multi-sided BM in the video-game industry. We chose this sector because of its highly competitive nature and rapid technological evolutions, which have driven innovative SMEs to review their BMs. In the video-game industry, cooperation with industrial partners and also with users is common, because the dematerialization of distribution networks promotes the power of online game communities (Johns, 2006). We chose a qualitative and exploratory methodology (Yin, 2003) because our research object, the multi-sided BM, is a complex object based on a minimum of knowledge (provided by the literature on multi-sided platforms), which first requires the collection of evidence of its existence. In this sense, the exploratory approach is suitable because it can provide knowledge on unknown or not clearly defined phenomena (Yin, 2003). Knowing that a multi-sided BM can be implemented on one or multiple markets, we have selected two innovative SMEs: (1) Nadeo, which has successfully implemented a multi-sided BM in one market with different user groups and (2) Ankama, which has successfully implemented a multi-sided BM in multiple markets with specific user groups. Our two case studies have non-homogeneous variables. Nadeo's multi-sided BM is based on the development of one digital platform of a racing-game simulation, Trackmania. Ankama's multi-sided BM is based on the development of a digital heroic fantasy universe, Wakfu, which operates in various interconnected media and is commercialized in specific markets. Finally, our exploratory approach has a descriptive purpose in that our two case studies describe the optimization of value creation and value capture in a multi-sided BM. Therefore, the study addresses the question of "how" (we do not try to measure the optimization), which requires a description of reality, useful in understanding the operation of a phenomenon.

3.1 | Data collection and treatment

To collect qualitative data, we used a longitudinal approach during a three-year period (2007–2009). A longitudinal study allows us to collect rich data by integrating a historical and contextual dimension (Miles & Huberman, 1994). We preferred this type of study to shed light on the dynamics of BM structuration over time, including the dynamics of optimizing value creation and value capture. We chose to explore the issue by using multiple sources of data collection (see **Table 1**): semi-structured interviews, internal data (project documentation, meeting reports, and community reports), and external data (e.g., community official and unofficial websites, newsletter).

We processed the data using thematic coding, combining data from the literature and from the field. We identified five broad categories: (1) multi-sided structuration; (2) value creation; (3) value proposition; (4) value capture; and (5) positive network effects. Using the analyzed data, we developed a grid of the themes, also known as a "dictionary of themes." We codified these themes manually, and we distinguish descriptive, explanatory, and interpretive information (according to Miles & Huberman, 1994). This grid allowed us to characterize the architecture of Trackmania and Wakfu, qualify the value of transactions between the sides, and identify how the two innovative SMEs optimized the value creation and value capture.

3.2 | Trackmania's digital multi-sided BM

Nadeo is a producer of PC and console games that focuses on developing and publishing digital sports games. Its main game, Trackmania, is a car-racing simulation that can be played in single-gamer mode or online with tools to create circuits, cars, and movies. The producer developed the game in-house and collaborates with distributors for marketing and distribution. The game has a free restricted version and paid versions.

Trackmania's multi-sided BM is composed of three sides, which represent three complementary categories of gamers (creators, managers, and competitors) on a single digital platform and one market.

TABLE 1 Internal and external data collected between 2007 and 2009

	Nadeo/Trackmania	Ankama/Wakfu
Internal data	• Three interviews with the SME's director to understand the strategy, the development of Trackmania, and the different choices made to elaborate the multi-sided BM • Two interviews with community managers to understand the Trackmania community • 18 players heavily involved in the community, to understand their motivations and their practices inside and around the game	• 18 semi-directive interviews: artistic director (3), team managers (9), and community managers (6) to understand the SME's strategic behavior, the development of Wakfu, and the elaboration of the multi-sided BM • 16 internal documents: meeting reports (7), project folder (1), and user community reports (8) to complete our knowledge about Wakfu community and multi-sided BM
External data	We conducted longitudinal documentary research on the communities' websites (especially forums, to identify user contributions) and in the specialized press (major video-game websites such as jeuvideo.com and gamekult.com and large video-game institutions such as AFJV,[a] SNJV[b]) to complete our knowledge about Trackmania and Wakfu	

[a] French Association for the Video Game (www.afjv.com).
[b] National Syndicate for the Video Game (www.snjv.org).

Each category of gamers is a side, because their needs, behaviors, and activities in the game are similar, and they bring added value to all the other gamers (see **Table 2**). Even if a user can belong to three categories, there are boundaries between them, depending on their role and actions. On Side 1, creators generate new content (circuits, cars, and videos), available directly in the game or on external websites. In four years, they have created more than 150,000 circuits, tens of thousands of cars, and thousands of videos. This content contributes to the overall value of the game by adding diversity, which makes it more interesting for competitors and managers. Without their contribution, the SME would need to hire about 140 additional designers to develop the 150,000 circuits. On Side 2, competitors provide more intense racing experiences because they fill the servers at all times, preserving daily interest in the game. They enrich the creators by using their cars and circuits, and they enrich the managers by participating in competitions. Their strong investment in competitions provides an international game dynamic, impossible to reproduce by the SME, except by mobilizing hundreds of additional employees. On Side 3, managers put their machine in server mode to organize races and provide a steady stream of available races, at the national and international level. They valorize creators by choosing the most interesting circuits and animate races to make them more attractive for competitors. They also manage the racing team. Managers create permanent events and their work is equivalent to the recruitment of dozens of race managers by the SME.

Nadeo adopted an open cooperation with user groups by providing a specific value for each of them: (1) for creators, an open tool for content creation; (2) for managers, an open tool for event organization; and (3) for competitors, open access to the graphic sources of the game. The content is open to encourage gamers to make contributions, optimizing value creation. In turn, the user community optimizes the value proposition by promoting renewal and variety and maintaining the cross-side networks effects, which attract more gamers and optimize value capture. Indeed, the more creators there are, the more competitors participate in the game; the more competitors there are, the more creators and managers are involved in their activities; the more managers there are, the more events that attract competitors and creators. Nadeo has also produced an entirely free game version, which has attracted millions of new gamers likely to buy future paid versions of the game. These network effects optimize value creation and value capture because they enhance the value of the offer, increase the gamers' long-term loyalty, and keep the innovation dynamic by integrating user contributions in new game versions (**Figure 1**).

TABLE 2 Trackmania's multi-sided BM

	Creator: Side 1	Competitor: Side 2	Manager: Side 3
Value creation	Users: Creation of circuits, cars, and videos	Users: Participation in races	Users: Organization of races and competitions; management team race
	Nadeo: Toolkits for content creation	Nadeo: Online race game	Nadeo: Toolkits for event creation
Value proposition	Users bring more than 150,000 cars and circuits. They contribute to the diversity of the game and the renewal of the offer.	Users fill servers at all times. They make the most intense and interesting races.	Users participate in hundreds of races online at all times. They help develop a variety of races and competition.
	Nadeo provides a game with toolkits and integrates user content directly in game	Nadeo provides an online game with a list of races	Nadeo provides a game with toolkits and integrates event directly in the game
Value capture	Activities of creation and organization of gamers are not paid. Contents and events are directly integrated in the offer. They are the equivalent of hundreds of jobs that the producer does not have to pay for. The offer includes Trackmania paid versions and free versions to reward gamers.		
	Nadeo captures monetary value and the creativity of users. Users capture value with a game with more content and events, and knowledge and reputation		
Interaction with other sides	High: Side 2	High: Side 1	Low: Side 1
	Low: Side 3	High: Side 3	High: Side 2

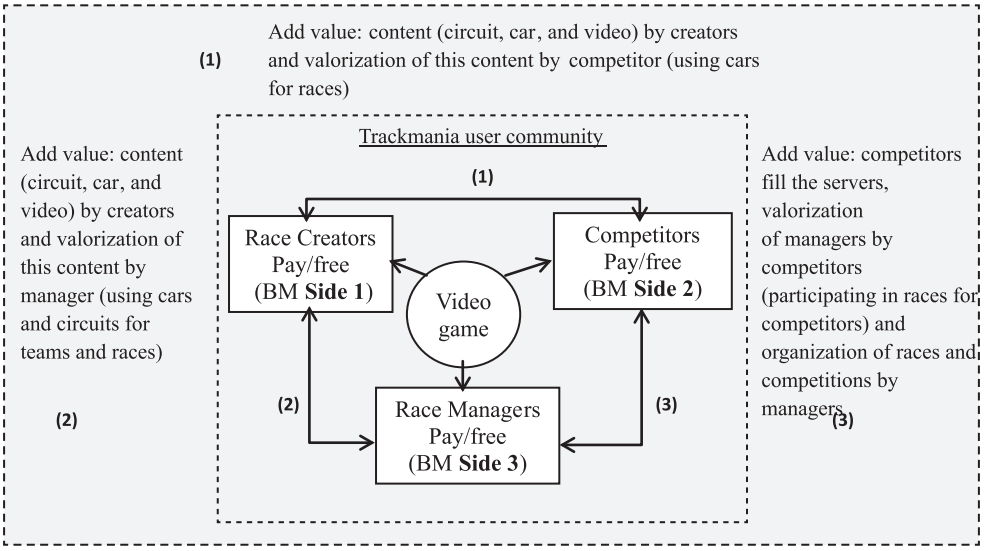

FIGURE 1 Value transaction in Trackmania's multi-sided BM

3.3 | Wakfu's multi-sided BM

Ankama is a producer of digital creations focused on the online video game and transmedia universe. Its flagship transmedia, Wakfu, is an artistic universe in which the story is told on complementary and interconnected media (online video game, animated television series, and web collaborative platform). Ankama developed the universe and the media in-house and collaborate with diffusers to broadcast the animated television (TV) series.

Wakfu's multi-sided BM is composed of three sides (see **Table 3**), which are the three media of the offer (online video game, TV series, and web platform), delivered on several markets in which there is a specific group of users. Each side has its own component of value creation, value proposition, and value capture, and each side can enrich the other sides complementarily and cumulatively. On Side 1, the online video game offers a role-playing game based on the exploration of a heroic fantasy world for a large target market (gamers 12–25 years of age). A toolkit allows gamers to build a part of the world (e.g., farms, shops, cities) to create new places of adventure that attract other gamers and enhance the dynamic of the game. The game offers two types of access: (1) free restricted access to certain areas of the game and (2) full paid access with subscription. On Side 2, the animated TV series tells the future history of the universe, for the same consumer target market of the game to promote complementarity between the two media. The SME works with a large French television channel that purchases the rights to broadcast the episodes of the series. With the success of the series (because a lot of gamers watch the episodes), Ankama developed other foreign distribution agreements, that increasing the economic returns. On Side 3, the web platform offers a collaborative space to the user community where gamers and TV viewers converge. Various applications (e.g., forums, blogs, quizzes, polls) inform, share, and create content relevant to the community. Users can also submit their own content (artistic creation ideas, opinions, and votes) by using toolkits provided by Ankama. These contributions enhance the value of the universe, because users can improve it.

In Wakfu's multi-sided BM, value optimization is based on complementarity related to the mutual influence of the different media. These media remain independent, but are connected and can

TABLE 3 Wakfu's multi-sided BM

	Online video-game gamers (Side 1)	Animation TV viewers (Side 2)	Web 2.0 Internet users (Side 3)
Value creation	Ankama: game and content	Ankama: content	Ankama: technological platform and content
	Users: content	Users: nothing	Users: content
Value proposition	Ankama: MMORPG for 12- to 25-year-olds based on heroic fantasy universe	Ankama and TV broadcaster: animated series	Ankama: Wakfu community website with application to inform, share, and create content
	Users: content	Users: nothing	Users: content
Value capture	Free limited access		
	Paid full access through subscription	Purchase by TV broadcaster	Free for all Capture of content created by users
	Capture of content created by users	Free for spectators	
Interaction with other sides	High: Side 2	High: Side 1	High: Side 1, 2, 3
	Low: Side 3	Low: Side 3	

influence one another depending on the evolution of the narrative and users' actions. Indeed, both the TV series and the game are complementary and strongly connected, because the story of the heroes in the series may affect the narrative in the game. Similarly, significant actions of gamers and cities created in the game may be included in the TV series. There is also a strong complementarity and interaction between the user community and the various media of Wakfu through the web collaborative platform. Value creation is optimized by the forum system and open collaboration with users, which allows them to be involved in the narrative creation by suggesting improvements for media scenarios, by approving or disapproving of additional content offered by Ankama, and by creating their own content. The narrative interconnection between media allows the transfer of user profiles (gamers, viewers, and Internet users) on the various Wakfu media, which increases the number of users. This interconnection between media generates cross-side network effects (see **Figure 2**): TV viewers enrich the Internet user community and potentially increase the number of gamers, which optimizes value capture when gamers pay for the game subscription. Similarly, gamers are encouraged to watch the TV series to obtain clues to advance faster in the game. As the number of gamers increases, the number of viewers increases as well. Moreover, high gamer numbers enhances interest in the TV channel by increasing distribution of the animated TV series, which optimizes value capture by the sustainability of revenue. The collaborative dynamic established with the community through forums and other contribution and motivation mechanisms greatly increases Wakfu's product life, because users are personally involved in the evolution of the universe and actively participate in the daily dynamics.

4 | RESULTS AND DISCUSSION

The two case studies show that the optimization of value creation and value capture in a BM is possible by creating complementary sides that each independently add a part of the value proposition but are interdependent with regard to value creation (each side creates value for other sides) and value capture (smaller value capture on one side may increase value capture on another side). The multi-sided BM is a relevant architecture for value optimization because it provides multiple places for value creation and multiplies sources of value capture, especially in digital industries. Moreover, we show that the structuration of sides can take different forms depending on the type of user needs and diffusion platforms. The first case study (Nadeo/Trackmania) shows a multi-sided BM architecture based on complementary groups of users (creators, managers, and competitors) in the online video-game market. Each user group is a side of the BM, and the logic of structuring sides is based on the complementarity of their roles and responsibilities and their open collaboration in content generation. The second case study (Ankama/Wakfu) shows a multi-sided BM architecture based on different technological platforms (media) that deliver a part of the value proposition in different markets (video game, TV, and Internet). Each platform on the market is a side of the BM, and the logic of structuring sides is based on the narrative complementarity between media and open cooperation among users regarding the content. A multi-sided BM can be built from an architecture of user community (with interdependent user categories in one market) or from an architecture of technical platforms (with interdependent platforms of diffusion in multiple markets). However, in both cases, open cooperation about the content and the presence of additional users on complementary sides creates value for the other sides and generates network effects. These results make it possible to discuss various elements relating to (1) the type of value and the type of partner in the optimization of value creation and value capture; (2) the role of digital technologies in a multi-sided BM; (3) the relationship between a multi-sided BM and a user community; and (4) the distinction between multi-sided BMs and other types of BM.

First, the results show that the combination of open cooperation (Pisano & Verganti, 2008) with users regarding content (by using a

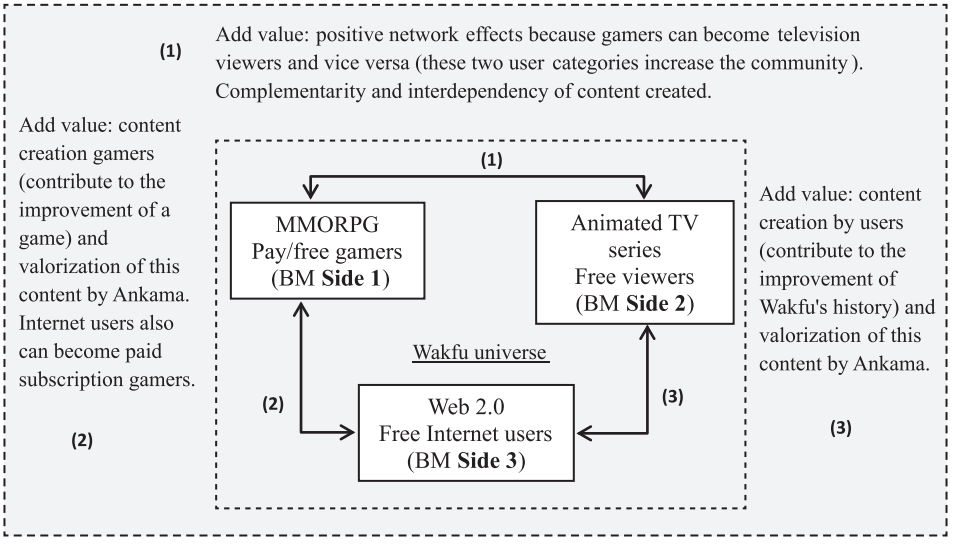

FIGURE 2 Value transaction in Wakfu's multi-sided BM

toolkit; Von Hippel, 2001) and the SMEs' internal technology control (control of complementary assets; Teece, 2006) optimizes economic value capture. The open innovation literature tends to emphasize the opening of technological value with industrial partners (Chesbrough, 2007; Chesbrough et al., 2006). This inevitably limits value capture, because each partner expects to capture a share of the economic value generated by the value created. The distinction between content and technology facilitates the optimization process, especially when the process is carried out with users in a digital environment. Indeed, users' interest in creating value with a firm lies in other motivations (Jeppesen & Frederiksen, 2006), because they prefer to capture a non-monetary value (e.g., artistic content, recognition, experience). In addition, although the complementary sides are based on the interdependence of content, open cooperation favors the network effects due to richer content and more variety. Users' active participation in the creative process allows the firm to more effectively optimize the value creation than if it were based solely on internal resources (Von Krogh, Spaeth, & Lakhani, 2003), without reducing its value capture.

Second, the architecture of both multi-sided BMs studied relies on the use of digital technologies (e.g., Internet, mobile and wireless communication protocol, digital networks) that are particularly used to develop multi-sided Internet platforms because they facilitate networking products, services, and content, which can then be distributed to different complementary user groups in specific market segments (Yoo, Boland, Lyytinen, & Majchrzak, 2012). In the case of Trackmania and Wakfu, digital technologies are also used to create toolkits for managing open innovation with users, to control the level of openness in the creation of digital content and activities, and to assure a long-term user innovation dynamic (Parmentier & Gandia, 2013). Digital technologies consequently play an important role in designing a multi-sided BM. In addition, daily renewal of innovation attracts new players, who by becoming paying users help develop the BM's economic efficiency. The adoption of a multi-sided approach on the Internet allows a faster return on a BM based on novelty (product or service innovation), because it is possible to dedicate certain sides to innovation and others to efficiency (product purchases and their extensions), and in particular to address the issue of time-to-market (Zott & Amit, 2008).

Third, adopting a multi-sided approach makes it possible to progress from a novelty-based BM to an efficiency-based BM and respond to time-to-market issues (Zott & Amit, 2008). Firms can lock the market and maintain content creation through the contributions of the user community. The advantage of the Wakfu and Trackmania communities is the complementarity and interdependence between the user profiles that generate network effects and ensure sustainable economic returns. The multi-sided BM is not only a good recipe for value creation and value capture (Baden-Fuller & Morgan, 2010), but also a growth engine in that SMEs can capitalize on sustainable optimization of the existing sides and develop new sides with the user community. Previous research identifies managing the user community as a key element of innovating with users (Parmentier & Mangematin, 2013). The use of toolkits for innovation and social software adapted to each user group is crucial to obtain their attention and motivation in value creation (Burger-Helmchen & Cohendet, 2011). The multi-sided BM enables sustainable connections to be developed with users to integrate the value of creativity, knowledge, and competencies in the growth engines of firms.

Fourth, the multi-sided BM is clearly different from other types of BM architecture (single BM, BM portfolio, and dual BM) from the perspectives of value optimization and its robustness in the long run. Indeed, a firm that bases its business on a single BM risks being unable to evolve quickly enough in the face of profound change in the technological and economic context (Teece, 2010), while the multi-sided BM allows us to explore several sources of value creation and value capture. Even if the BM portfolio makes it possible to test several BMs and quickly adapt the firm activity depending on the performance of each model (Sabatier et al., 2010), it requires new skills that may not necessarily be complementary to the SME's initial skills. In the multi-sided BM, the sides are organized depending on complementarities between firm skills and user skills. In addition, by providing toolkits for the creation of content and activities, the firm can access several user skills and innovations in the long run (Parmentier & Gandia, 2013). In the case of dual BM, the user must purchase additional products to access the global offer (Markides & Charitou, 2004), while the multi-sided BM does not force the user to consume each side, because they are complementary regarding the global offer but interdependent with regard to content. This optimizes value creation by opening the creation and value proposition of the most creative sides, and optimizes value capture on the sides with the highest willingness to pay, while maintaining strong network effects that trigger increasing returns to adoption.

5 | CONCLUSION

Finally, our study contributes to a better understanding of the value of organizational logic within a BM, including how a firm can optimize value creation and value capture with a multi-sided approach. Our contribution also lies at the intersection of the literature on the multi-sided approach and the BM literature, which enables us to consider the BM as a plural object, in which each side is a way of creating, proposing, and capturing a specific type of value (content, technology, or revenue). This contribution is attractive to firms, because it encourages managers to rethink the way they design their BM. We identify two ways to conceive a multi-sided BM architecture: (1) from an architecture based on technical platforms or (2) from a user community architecture. We also provide key mechanisms to organize and optimize value creation and value capture: (1) by opening the content to the contribution of users through toolkits; (2) by making interdependent user groups with complementary roles and responsibilities regarding value creation and value proposition; and (3) by interconnecting sides by means of complementary content and activities, to generate positive network effects. More questions remain unanswered. Can we design a multi-sided BM for traditional products and services (different cultural products)? What are the determinants of performance from one side to another? How do we effectively integrate industrial

partners in a multi-sided BM? The multi-sided BM is an emergent concept that can apply to all industries that involve complementary user and customer categories by using new digital technologies. It allows us to reconsider architecture products, relationships with consumers, and firm boundaries. It could also inspire new strategies for firms seeking to spread their innovations effectively, despite the many existing barriers in mature markets.

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