Redesigning the business model: from one-sided to multi-sided

Guy Parmentier and Romain Gandia

Guy Parmentier is Associate Professor in Innovation Management at the University of Grenoble Alpes, Saint Martin d'Hères, France. Romain Gandia is Assistant Professor in Innovation Management at INSEEC Business School/IREGE, Le Bourget du Lac, France.

Introduction

Over the past several decades, the diffusion of information and communication technologies has created new business model (BM) opportunities with multi-sided platforms for digital industries. Indeed, with the declining costs of acquiring information and intermediation, many multi-sided platforms have emerged on the internet, including eBay, Amazon, YouTube and Airbnb, by adopting a business model based on networking and intermediation of complementary and interdependent categories of users, implying positive network effects. However, the success of a multi-sided platform strategy is rare because companies must deploy many resources to implement the platform technologically, attract users rapidly and massively and organize sides by creating several complementary user groups. These conditions are necessary to reach a critical volume of users who will create value, thus triggering network effects. In addition, designing a suitable business model to support multi-sidedness also requires new strategic thinking, new tools for managers and new capacities for the firm (Rumble and Mangematin, 2015). A model conceptualizes the way a company wants to organize its value creation within a value chain and value network, adapt its value proposition to a target customer and establish its value capture through a revenue model. It is a cognitive tool to elaborate the business of a firm. From a multi-sided perspective, business model design requires simultaneously targeting several consumer groups, developing and implementing new technologies and supporting the scalability of the platform. This challenge is even greater for small and middle-sized enterprises (SMEs) already in place on the market, due to their limited resources. To help them, we propose studying the way to develop the multi-sided strategy, but starting from the existing business model. Indeed, we think that companies can adopt the multi-sided strategy without needing to be large (with extensive resources) or to create a start-up. This can be achieved by redesigning their existing one-sided model into a multi-sided one. Thus, we address the following questions:

Q1. What are the reconfiguring operations for designing a multi-sided business model from a one-sided model?

Q2. When must these reconfiguring operations be implemented?

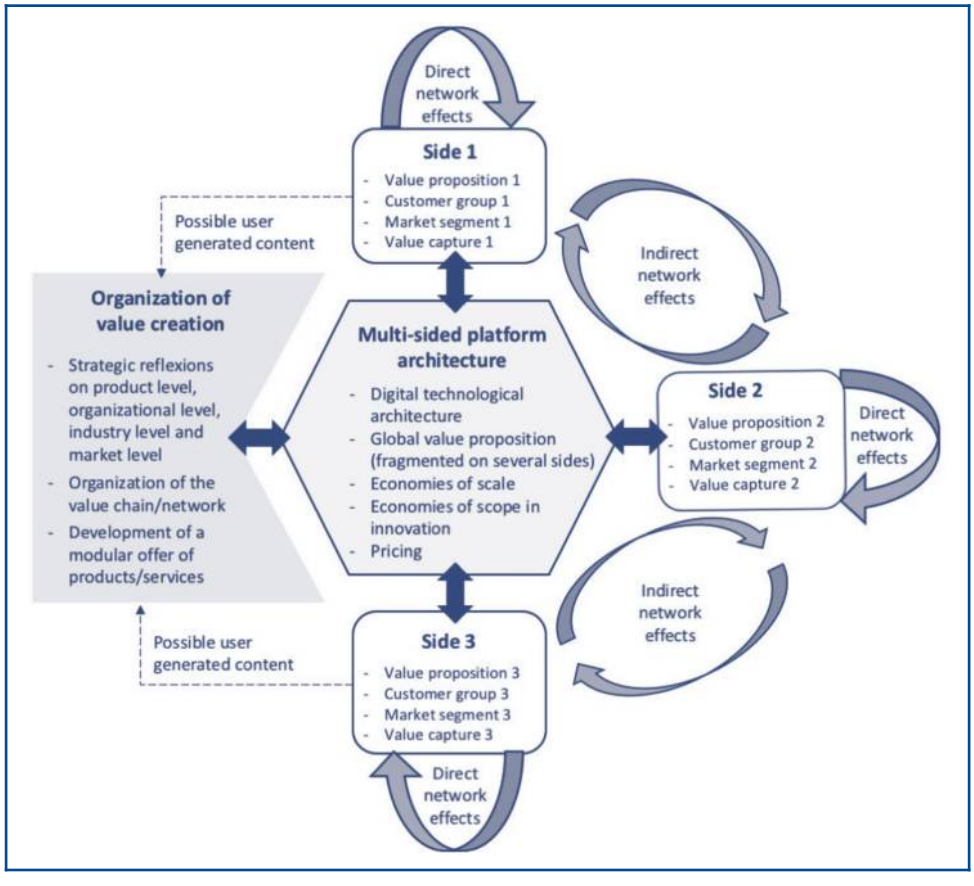
Our final objective is twofold:

1. to engage reflection with managers about the relevance of a multi-sided strategy as a strategic renewal for growth and profitability; and
2. to provide new tools enabling managers to conceptualize a multi-sided model from their existing one-sided business model.

Multi-sided business models: an architecture based on multi-sided platforms

A multi-sided platform is defined as a technological support that facilitates interactions (or transactions) between two or more distinct but interdependent customer or user groups (that represent sides) and that grows value so the presence and activities of a group increase the value of other groups and attract more customers or users through a phenomenon of network effects (Hagiu, 2014). Multi-sided platforms and multi-sided business models are linked because the model allows defining and organizing the value transactions made on the platform between the firm and the user groups. By offering a market space where several user groups can consume goods and services, the platform is a key technological, strategic and economic resource for the business model because it helps to structure the value proposition and value capture. From a technological perspective, a platform is a system of components and interfaces that form a common structure. This system often uses digital technologies (software, internet, communications networks, etc). because of their accessibility and their capacity for networking and thanks to the low-cost of content duplication (Shuen, 2008). With APIs[1], platforms favour collaboration between suppliers, partners and distributors in the offering design. A technological platform allows delivering services to fill the needs of several user groups and engages them in a value creation process. For example, with a digital platform (Web, mobile apps and database), BlaBlaCar delivers a transport service that links drivers and passengers remotely rather than in-person. Such ride-sharing services already existed in a niche market, but they have taken-off again with the advent of the internet and smartphones (Figure 1).

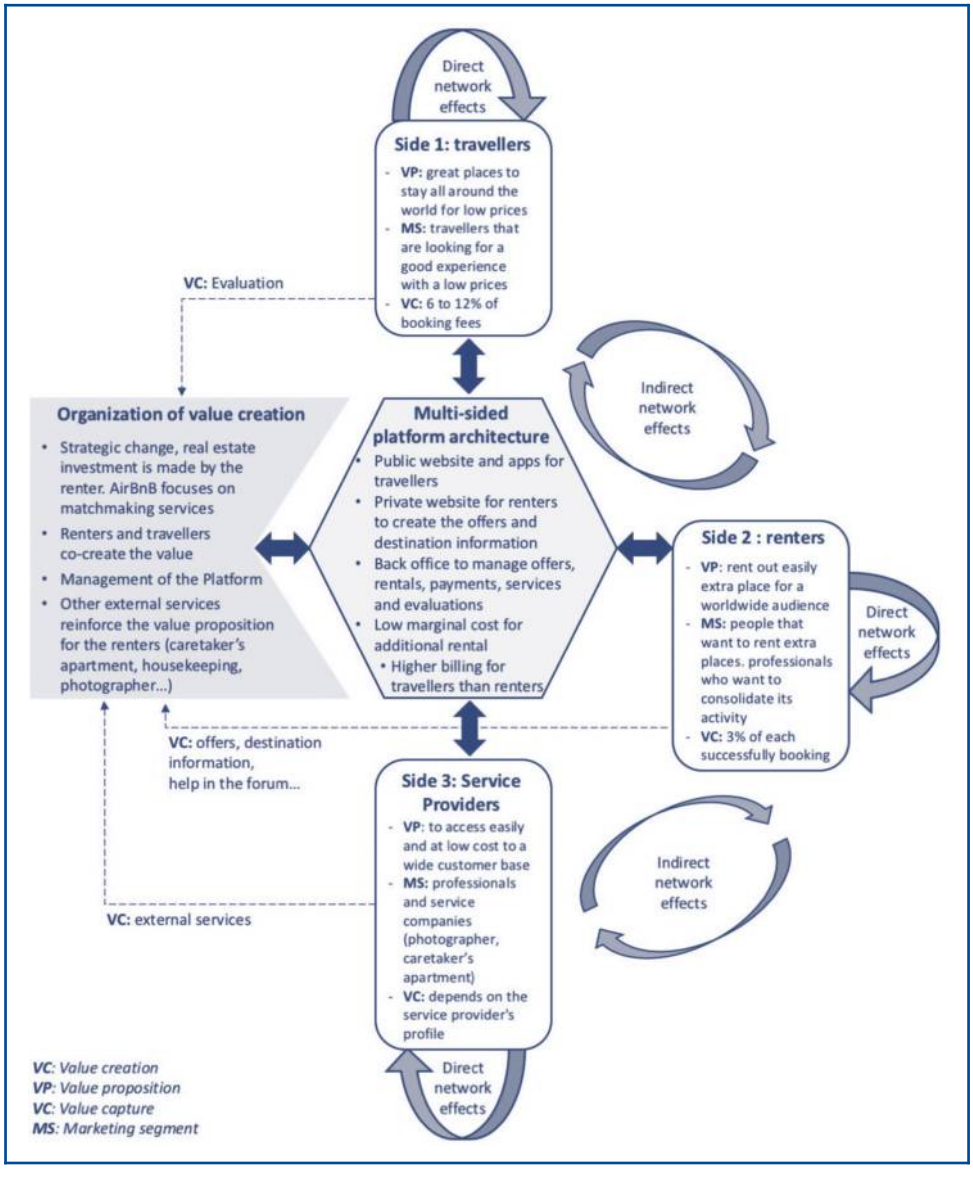
Figure 1 A multi-sided business model



From a strategic perspective, a multi-sided platform proposes a modular system for networking several technologies and agents, which allows economies of scope in supply and/or in demand (Gawer, 2014). In digital industries, the first actor that adopts the multi-sided platform strategy is often the winner (Eisenmann *et al.*, 2006) (Figure 2).

For example, in just a few years, Airbnb has become the first world actor in the hotel industry with more than 2 million housing offers. Even among competitors that have emerged, Airbnb remains the leader due to its efficient digital platform that can be quickly enriched and its large base of travellers, renters and service providers. From an economic perspective, a multi-sided platform represents a common market space with several sides that benefit from network effects (Rochet and Tirole, 2003). A side is defined as a homogeneous group of consumers, in one or more markets, with needs, behaviours and willingness to pay similar fees. Within a multi-sided platform, the value of a product or

Figure 2 Airbnb multi-sided business model



service depends on direct network effects on the same side (the value of goods varies with the number of users) and indirect or cross-side network effects (the value of goods increases with the number of users on the other sides and vice versa) (Eisenmann *et al.*, 2006). In the PC industry, the greater the number of PC users, the larger the number of developers. The two sides are interdependent and complementary with cross-side network effects because a large number of PC users is essential to allow developers to recover their investment, and a large quantity of software provides value for users and encourages them to buy PCs. The price also has an influence on network effects in a platform. On the internet, it is very common for platform managers to subsidize a side (e.g. end-users) because the contributions of users to a product or service provide a greater overall value than just billing for this product or service (Eisenmann *et al.*, 2006). In conclusion, a multi-sided platform changes the way of doing business. It is a technological platform where each side has a specific process of value creation, value proposition and value capture. To support this platform strategically, we think that managers must address the business model issue by designing a specific multi-sided model where:

- the value proposition must be delivered to complementary and interdependent customer groups in one or more market segments; and
- the value creation and value capture must be organized with a technological platform that connects sides and produces network effects.

From one-sided to multi-sided business models

Based on the previous section, we suggest six operations for redesigning a one-sided into a multi-sided business model (Table I). Two operations effect the entire model: setting up the platform and opening the model. Three operations effect the value proposition: reformulating the value proposition, structuring and linking complementary customer

Table I Operations of business model redesign

Operations	*Principles*	*Effects*
Setting up the platform	Set up a technological architecture for a digital platform Deliver complementary products/services	Favour customization Favour modularity Create support for multi-sided structure
Reformulating the value proposition	Review the value proposition to target a new broader consumer category Create new value-added features and remove unneeded features	Create more value for more customers (blue ocean effect) Meet new or unmet expectations
Structuring and linking groups of complementary customers	Create complementary value propositions to make user groups interdependent Analyse interactions between user groups to identify which group creates value for the other(s)	Generate (positive) indirect network effects Reduce costs of search and networking
Opening the business model	Open the value creation process (co-creation, co-innovation, problem-solving, etc. Open the value capture process (create business licensing, spin-offs, valuing IP, etc.)	Multiply sources of value creation and value capture Build consumer engagement
Multiplying the niches	Target a large number of market segments to address a large range of needs Identify consumer groups with a large range of needs in the same domain	Multiply sources of value capture (long tail effect) Explore market trends Build additional sides
Structuring prices	Provide a part of the value proposition for free Transfer a part of free users to a paid offer Valuing user presence (for advertising) and user-generated contents	Attract a large number of users Encourage users to pay on other sides Generate more profits

> **"From a multi-sided perspective, business model design requires simultaneously targeting several consumer groups, developing and implementing new technologies and supporting the scalability of the platform."**

groups and multiplying the niches. One operation effects the value capture structuring prices.

Setting up the platform

A multi-sided platform requires the integration of technical capabilities to develop the information system infrastructure, including software, hardware and networking technologies (Tan *et al.*, 2015), and connect the platform to the existing technological ecosystem (the internet, iOS, Android [. . .]). At the business model level, the multi-sided platform allows integrating different value creation logics, usually separate, to build the offer, namely, product innovation, customer relationship management and infrastructure management (Hagel and Singer, 1999). Thus, with a multi-sided platform, it becomes possible to add a new value creation logic to an existing one-sided business model to realize economies of scale and/or economies of scope that will optimize costs and revenues. To be successful, the platform must:

- propose functionalities that fill unserved needs;
- provide value creation tools to engage users and suppliers;
- computerize the customer relationships to ensure service reliability; and
- collect data to better understand customers and continuously improve the offer.

Uber, for example, offers taxi services that are missing in traditional taxi services, including localization, clearly defined prices and trip-time estimation, and can be deployed in cities worldwide with the help of a user-friendly process that engages the taxi driver.

Reformulating the value proposition

The objective is to revise the value proposition in order to target a new and wider customer group. This operation is based on the blue ocean strategy that describes how to create more value for customers by strengthening or developing new features for the value proposition while eliminating other features to reduce production costs (Kim and Mauborgne, 2004). In an existing business model, implementing a digital platform allows adding new features to meet new or unmet expectations and reduces removal costs and automation costs of other features. Application of blue ocean principles to business model design creates interesting tools to revise the value proposition and explore its impact on costs and customers (Osterwalder and Pigneur, 2010). This is the example of the video game developer Nadeo and its car racing game TrackMania that has features for new circuit creation and online race management. This new value proposition attracted a new type of gamer: creators and race managers quickly increased the success of the game by creating value for other gamers (Parmentier and Gandia, 2013). Another example, Nespresso, revised the basic coffee value proposition with a new platform (coffee machine and online shopping) to create a new value proposition focused on the quick and easy preparation of quality coffee (Matzler *et al.*, 2013). The result is an offer of coffee machines and capsules sold to millions of user groups.

Structuring and linking complementary customer groups

This consists of creating several complementary value propositions for interdependent user groups. The groups interact with the platform by using digital and information technologies as an interface. Here, the challenge is to identify complementarities between groups to promote direct and cross-side network effects, made possible by analysing the most frequent interactions between the core user group (the initial group in the one-sided business model) and another user group in another market. If these interactions create value for the two groups, the platform can more easily attract this new group because it reduces the search and networking costs. Thus, a user can create value for others by activities of creation/innovation (Albuquerque *et al.*, 2012). In this case, indirect network effects are produced by a strong user commitment in valuable activities. Amazon links internet users (buyers or sellers) with suppliers (stores on Amazon) and advertising partners (internet stores that promote Amazon products). Users, by their evaluations of products and suppliers, create value for a massive number of internet users and help them find the best product sold by a trusted supplier. The massive use of the Amazon platform by internet users creates value for suppliers that become more visible and can increase their profits. This also creates value for internet stores that can capture a commission on the Amazon products sold that they promote. In turn, the large volume of suppliers and internet stores that promote Amazon products is attractive for users.

Opening the business model relates to the process of value creation and value capture to external actors. Openness relies on examining the elements of the value creation chain and determining those elements that would most benefit from external collaboration with a public or private research laboratory, technology partnership, experts, etc. A multi-sided platform can be open on several sides concerning supply, demand and platform providers (Eisenmann *et al.*, 2009). For example, the iPhone is open on the demand side, because users can configure it by adding or removing applications. Opening the demand side more rapidly attracts consumers because they can customize the platform depending on their needs. The supply side can be open to user contributions by providing tools to create content, social events and/or innovation. It is the case of Nadeo with the game platform TrackMania; it provides toolkits for circuit creation, car customization and online race organization. Facebook opened its platform to professional developers that rapidly proposed innovative content and functionalities, such as FarmVille, that attracted millions of gamers to Facebook. Opening the supply side more rapidly attracts innovators who will enrich the offer for end-users. Thus, openness facilitates the ramp-up of the platform and allows reaching the threshold at which one side creates value for another side (and produces network effects). Identifying openness possibilities requires analysis of competences and motivations of the core user group to understand their value creation potential for others.

Multiplying the niches requires the creation of several value propositions that target a large number of market segments, which are profitable together. This operation is based on the long tail principle: a large number of niche products with small dissemination generate more value than a small number of flagship products with wide dissemination (Anderson, 2006). On the supply side, this concerns the centralization of e-trader warehouses, which reduces storage and distribution costs. On the demand side, this concerns the search engines, recommendation tools and access to samples, which limit research costs and facilitate the discovery of a wide offer (Brynjolfsson *et al.*, 2006). As a multi-sided platform

"The objective is to revise the value proposition in order to target a new and wider customer group."

> **"Another example, Nespresso, revised the basic coffee value proposition with a new platform (coffee machine and online shopping) to create a new value proposition focused on the quick and easy preparation of quality coffee."**

downplays search costs and transaction costs (Hagiu, 2014), it becomes possible to extend the scope of services to satisfy multiple needs and limit production costs. For example, Airbnb targets professionals, consumers, couples and families for short or long stays, thanks to the large offer provided by supply-side renters. The main challenge is to identify activities that target consumer groups with a large range of needs in the same domain. This operation multiplies the sources of value and explores the market to identify potential additional sides.

Structuring prices

The principle is to deliver free a part of the value proposition to attract a large number of users who by their number constitute a source of value. This value can then be monetized in two ways:

1. on the same side, with the transfer of a portion of the free users to a pay offer (premium) that sells additional services and/or products essential to a good user experience (additional features, bait and hook, etc.). In the video game industry, the company Ankama offers a first free level of the massive online game Dofus that attracts 2.5 million active accounts each month, deriving its revenue from the small portion of gamers who buy a subscription to access other levels. Previously, Ankama had tried to place a time limit on access to the first game level, but the conversion rate was low.
2. Another way of monetization is to charge the clients of a complementary side by valuing the user presence (well-adapted for advertising) and/or the information generated by users that are useful for other purposes (votes, opinions, etc.).

Google provides many free services to attract users, making it an essential platform for the internet ecosystem. Google charges another side of its platform by selling ads to millions of advertisers. Decreasing the price on one side can increase the number of consumers and change the elasticity curve of complementary sides, encouraging consumers to pay more. This generates more profits, thus compensating for the loss of revenue due to lower prices (Parker and Van Alstyne, 2005). A good pricing structure enables rapidly reaching the profit threshold.

Managing the process of business model redesign

Based on several empirical case studies with multi-sided business models, we applied our grid of operations to characterize the steps of constructing multi-sided business models and identify how a company moves from a one-sided to a multi-sided business model. The source of these cases is two fold:

1. some cases (Airbnb, Amazon, Apple, BlaBlaCar, eBay, Facebook, Google and Nespresso) come from academic articles, already cited in the previous sections; and
2. some cases (Nadeo, Ankama and Vidcoin) come from our own empirical investigations and for which we have conducted several interviews on the business model.

We analysed the differences and similarities of multi-sided implementation to deduce a chronological order with three main phases in which business model redesign can be implemented to build a multi-sided model.

Phase 1

The first phase is to set up technological architecture to support the online platform used to deliver the product/service offerings. The objective is to create the multi-sided architecture with a "semi-finished" state of development to easily integrate future development opportunities, depending on market trends and user behaviours (Airbnb, Google, eBay, BlaBlaCar and Amazon have done so). The idea is not to lock-in or finalize the platform as a traditional closed model but rather to create an unfinished technological support that will enable testing the relation between the platform and user groups. Firms must implement an agile methodology using user feedback to rapidly develop, test and learn. The online video game sector frequently uses this method by delivering a "beta-test" of the game to test the reactions of gamers and identify malfunctions. Thus, the platform becomes a market exploration tool to identify latent needs with a double-loop design process, useful for rapid knowledge transfer and rapid problem-solving. In addition, the platform favours the implementation of additional services for the initial customer group, the development of customization tools and openness with partners and suppliers (as with Amazon, for example).

Phase 2

The second phase involves identification and engagement of new user groups to promote platform adoption and reach a critical size. For this, two stages are required. First, reformulating the basic value proposition and multiplying the niche market segments to expand the target user groups that will be interested by the offer, as with Airbnb. The main objective is to attract the maximum volume of new users with a more interesting value proposition. In most cases, a lengthy period is necessary to reach critical user mass on a side and then generate positive network effects. For example, Apple originally commercialized the iPhone for one year without the App Store. The intrinsic qualities of this innovative smartphone were sufficiently interesting to seduce millions of users who then attracted external developers to the App Store to generate positive network effects. Second, opening product/service offerings is crucial to building user engagement in value-added activities. Partially opening the offer is key to accelerating the rise in volume. In the online video game sector, the graphic and narrative content is often open with several toolkits that allow users to create new content, like TrackMania (Nadeo). Thus, the creation of a new value proposition and opening to user-generated content or to innovative partners (with toolkits and API) are the keys to designing a multi-sided business model.

Phase 3

The third phase involves linking user groups and structuring the revenue model. The objective is to capitalize on the complementarities between user groups to create connections between the business model sides and thus promote network effects (as with Google, Apple, eBay, Amazon). This requires developing interdependent user groups and creating a dynamic of exchange that will bring added value to each group, thus strengthening their engagement. For

"The massive use of the Amazon platform by internet users creates value for suppliers that become more visible and can increase their profits."

> **"Opening product/service offerings is crucial to building user engagement in value-added activities."**

example, the advertising platform Vidcoin proposes inserting ad videos in social games to improve publisher revenues. To encourage gamers to watch ad videos, Vidcoin offers virtual currency. In turn, this provides qualified audiences to advertisers. With its multi-sided platform, Vidcoin brings together the expectations of these three groups of users in a common service and fills their needs. In addition, the adoption of a dual-revenue model (free/paid) is a good way to massively attract user groups and generate network effects. The pricing structure must promote both direct and cross-side network effects to increase the number of users on a side and attract users on other sides. The Google search engine is free for internet users to attract them in large numbers and then increase the number of advertisers. Nadeo and Ankama published free games to attract more gamers and thus increased the numbers of paid gamers. Network effects depend on a pricing structure adapted to the users' willingness to pay and their contributions to other sides. This explains why Vidcoin does not demand that gamers pay (their willingness to pay is very low) but valorizes their time to watch ad videos by giving them a virtual currency required to progress in their game. These elements offered to gamers (ad videos and virtual currency) are subsidized by advertisers and publishers.

Conclusion

Our research provides a first response concerning redesign operations that enable transitioning from a one-sided to a multi-sided business model. We show that:

- the redesign of a business model by implementing a digital multi-sided platform is a good way to find new sources and processes of value creation;
- the reformulation, extension and/or creation of new complementary value propositions in a multi-sided perspective is a good way to access new users and consumer groups; and
- the connection of user groups to fill complementary expectations and definition of an appropriate price structure is a good way to profit from direct and cross-side network effects.

The six redesign operations and the three steps of the process can also be a source of strategic reflection and action for managers who want to expand and consolidate their business by profiting from a multi-sided strategy. However, designing a multi-sided business model also implies two new capabilities: agility and speed, to continuously develop and test the platform, the model and the market. Managers must apply the agile method to the whole of the organization and use the cognitive power of the model to consider different scenarios of change from one-sided to multi-sided. The redesign process provided is a cognitive and practical framework in which managers can test, combine and recombine several redesign operations to find the best way to develop a multi-sided strategy. Of course, developing a multi-sided business model is thus a process of change management, and further research will be necessary to identify and analyse the process of change, especially in the firm, or the resources and competences needed to support this change. Finally, the development of a multi-sided business model is not restricted to only rich start-ups or large companies. This strategy, with the help of redesign operations, seems possible for SMEs which have already built a solid one-sided model with a platform for products and/or services.

Keywords:
Practice,
Business model,
Digital industries,
Multi-sided platform,
Network effects,
Redesign

Note

1. Application Programming Interface.

References

Albuquerque, P., Pavlidis, P., Chatow, U., Chen, K.-Y. and Jamal, Z. (2012), "Evaluating promotional activities in an online two-sided market of user-generated conten", *Marketing Science*, Vol. 31 No. 3, pp. 406-432.

Anderson, C. (2006), *The Long Tail: Why the Future of Business Is Selling Less of More*, Hyperion, New York.

Brynjolfsson, E., Yu, H. and Smith, M.D. (2006), "From niches to riches: anatomy of the long tail", *MIT Sloan Management Review*, Vol. 47 No. 4, pp. 67-71.

Eisenmann, T., Parker, G. and Alstyne, M.W.V. (2006), "Strategies for two- sided markets", *Harvard Business Review*, Vol. 84 No. 10, pp. 92-101.

Eisenmann, T., Parker, G. and Van Alstyne, M. (2009), "Opening platforms: how, when, and why?", in Annabelle, G. (Ed.), *Platforms, Markets and Innovation*, Edward Elgar Publishing, Northampton, MA, pp. 131-1162.

Gawer, A. (2014), "Bridging differing perspectives on technological platforms: toward an integrative framework", *Research Policy*, Vol. 43 No. 7, pp. 1239-1149.

Hagel, J., III. and Singer, M. (1999), "Unbundling the corporation", *Harvard Business Review*, Vol. 77 No. 2, pp. 133-141.

Hagiu, A. (2014), "Strategic decisions for multisided platform", *MIT Sloan Management Review*, Vol. 55 No. 2, pp. 71-80.

Kim, W.C. and Mauborgne, R. (2004), "Blue ocean strategy", *Harvard Business Review*, Vol. 82 No. 10, pp. 76-84.

Matzler, K., Bailom, F., Von den Eichen, F.S. and Kohler, T. (2013), "Business model innovation: coffee triumphs for Nespresso", *Journal of Business Strategy*, Vol. 34 No. 2, pp. 30-37.

Osterwalder, A. and Pigneur, Y. (2010), *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, John Wiley & Sons, New York.

Parker, G.G. and Van Alstyne, M.W. (2005), "Two-sided network effects: a theory of information product design", *Management Science*, Vol. 51 No. 10, pp. 1494-1504.

Parmentier, G. and Gandia, R. (2013), "Managing sustainable innovation with a user community toolkit: the case of the video game trackmania", *Creativity and Innovation Management*, Vol. 22 No. 2, pp. 195-208.

Rochet, J.-C. and Tirole, J. (2003), "Platform competition in two-sided markets", *Journal of the European Economic Association*, Vol. 1 No. 4, pp. 990-1029.

Rumble, R. and Mangematin, V. (2015), "Business model implementation: the antecedents of multi-sidedness", *Advances in Strategic Management*, Vol. 33, pp. 97-131.

Shuen, A. (2008), *Web 2.0: A Strategy Guide*, O'Reilly Media, Sebastopol, CA.

Tan, B., Pan, S.L., Xianghua, L. and Lihua, H. (2015), "The role of is capabilities in the development of multi-sided platforms: the digital ecosystem strategy of Alibaba.Com", *Journal of the Association for Information Systems*, Vol. 16 No. 4, pp. 248-280.

Further reading

Fixson, S.K. (2005), "Product architecture assessment: a tool to link product, process, and supply chain design decisions", *Journal of Operations Management*, Vol. 23 Nos 3/4, pp. 345-369.

Corresponding author

Guy Parmentier can be contacted at: guy@theinnovation.eu