

Redesigning the Business Model: from one-sided to multi-sided

Guy Parmentier

Associate professor in Innovation Management
Univ. Grenoble Alpes / CERAG - France
guy.parmentier@iae-grenoble.fr

Romain Gandia

Assistant professor in Innovation Management
INSEEC Business School / INSEEC Group - France
rgandia@inseec.com

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Purpose: this study examines the way to develop a multi-sided logic for existing business models. More precisely, the objective is to find rules for designing a multi-sided business model from a one-sided business model.

Design/methodology/approach: given that BM literature and multi-sided literature do not address the complex issue of multi-sided business model design, we propose here a set of six redesign operations. These operations are built from a comprehension of the development and evolution of multi-sided platforms and their consequences for business model architecture. Several empirical cases illustrate each operation.

Findings: a process of business model redesign is proposed with three phases: (1) setting-up a technological digital platform to support the multi-sided architecture, (2) identifying and engaging several customer groups on the platform and (3) linking the customer groups and structuring the revenue model. This process details the chronological order in which the redesign operations can be implemented to build a multi-sided BM.

Practical implications: the importance of the stage of semi-finished development of the platform, the openness of digital content, reaching the critical threshold, and the combination of a dual economic model (free/paid) are highlighted. For managers, this provides better practices to successfully manage the business model redesign process.

Originality/value: helps managers in companies, especially SMEs, to profit from a multi-sided business model by proposing a way to achieve it.

Keywords: business model, multi-sided platform, redesign, practice, digital industries.

Article classification: research paper

Introduction

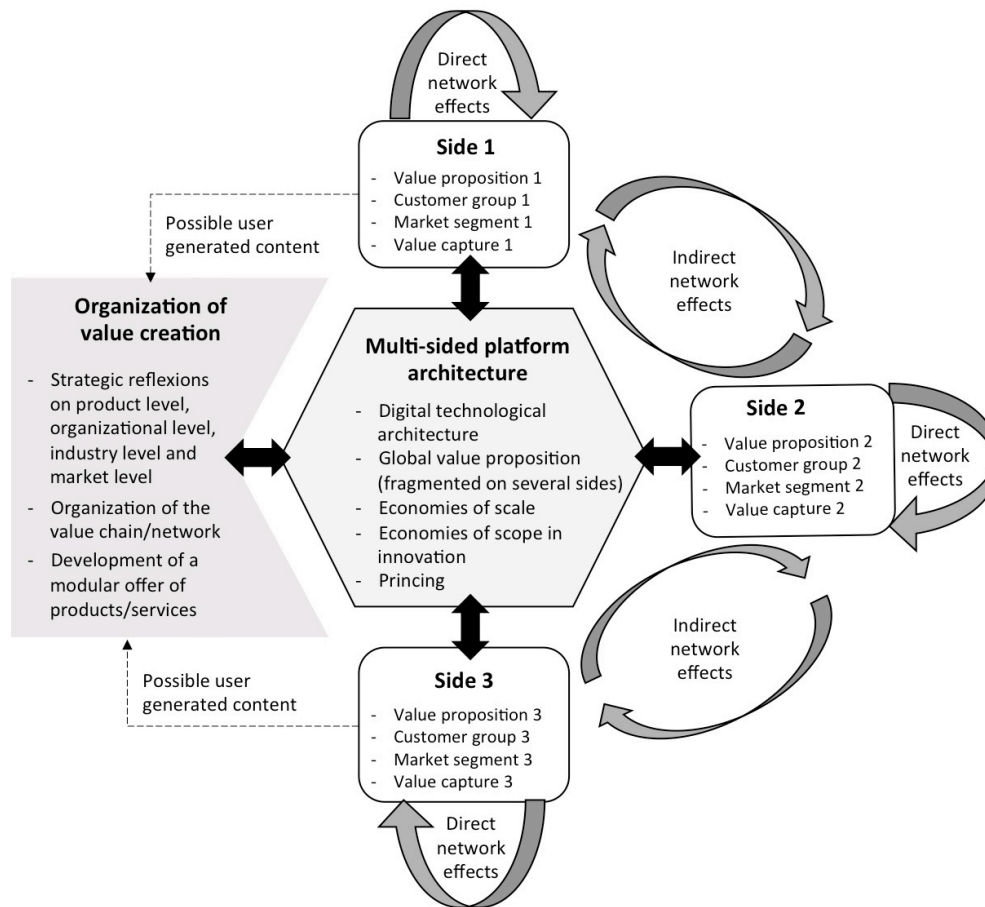
Over the last decades in digital industries, the diffusion of information and communication technologies has created new business model (BM) opportunities with multi-sided platforms. Indeed, with the declining costs of acquiring information and intermediation, many multi-sided platforms have emerged on the Internet (Ebay, Amazon, Youtube, Airbnb) by adopting a BM based on networking and intermediation of complementary and interdependent categories of users, implying indirect network effects. However, success of a multi-sided platform strategy is rare because companies must deploy many resources to overcome the chicken-and-egg problem (Hagiu, 2014). To create indirect network effects between sides, a company must rapidly and massively attract several user groups. Moreover, in digital industries, the first actor to adopt the multi-sided platform strategy is often the winner for the field (Eisenmann et al., 2006). Thus, deploying a multi-sided platform strategy and adopting a multi-sided BM are difficult for small and middle size companies (SME) that are already present on the market. Faced with this challenge, we propose considering the BM not as a single object but as a plural object with multiple sides, based on a multi-sided platform strategy. Our objective is to study the way to develop this multi-sided logic in existing BMs. A BM 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. We propose new tools enabling managers to conceptualize a multi-sided BM from their existing one-sided BM. Finally, we address the following question: What are the rules for designing a multi-sided BM from a one-sided BM? This question is interesting for managers and can provide a theoretical contribution because it seems that little research in the BM literature addresses this strategic issue.

Multi-sided BMs: an architecture based on multi-sided platforms

Multi-sided platforms are both a technological platform and the sides of one or more markets. A technological platform is a system of components and interfaces that forms a common structure shared by a set of products. The architecture of a technological platform is modular because it can be divided into interconnected subparts (Simon, 1965). This modularity allows addressing strategic reflections in order to optimize performance at the product level (product architecture), organization level (processes), industry level (value chain architecture and value network architecture), and market level (customization of product/service offerings) (Fixson, 2005). From a strategic perspective, a multi-sided platform thus facilitates innovation because

it proposes a modular system for networking several technologies and agents, which allows economies of scope in supply and/or in demand (Gawer, 2014). This system is often based on digital technologies (software, Internet, communications networks, etc.) because of their accessibility, their capacity for networking, and thanks to the low-cost of content duplication (Shuen, 2008). From an economic perspective, a multi-sided platform represents a common market space with several sides that benefit from network effects by interacting with complementary customer groups (Rochet and Tirole, 2003; Evans, 2012). In this way, a side is defined as a homogeneous group of consumers, in one or more markets, with needs, behaviors and willingness to pay similar fees (Evans and Schmalensee, 2007). Within a multi-sided platform, the value of a product or 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 a multi-sided platform, direct network effects provide economies of scale whereas indirect network effects provide economies of scope in innovation (Gawer, 2014). For example, in the PC industry, the greater the number of PC users, the larger the number of developers. The two sides are interdependent and complementary 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). Finally, a multi-sided platform can be defined as a technological platform in which each side can be characterized by a specific process of value creation, value proposition and value capture - and based on a specific BM architecture that we propose calling a multi-sided BM. Thus, a multi-sided BM can be defined as a strategic design model in which: (1) the value proposition is delivered to complementary and interdependent customer groups in one or more market segments and (2) value creation and value capture are organized with a technological platform that connects the sides and produces network effects.

Figure 1: a multi-sided BM



From one-sided BM to multi-sided BM

Based on the previous section, we suggest six operations for redesigning a one-sided BM into a multi-sided BM (cf. Table 1): two operations that affect the entire BM (*setting up the platform* and *opening the BM*), three operations that affect the value proposition (*reformulating the value proposition*, *structuring and linking complementary customer groups* and *multiplying the niches*) and one operation that affects the value capture (*structuring prices*).

Setting up the platform. A multi-sided platform is a market place that provides products and/or services to complementary user groups (end-users, suppliers, advertisers, etc.). This requires the integration of specific information system capabilities (Tan et al., 2015) and more often, bringing together three value creation logics: product innovation, customer relationship management or infrastructure management, to build the offer (Hagel Iii and Singer, 1999). Setting up a multi-sided platform allows: (1) innovation to fill new needs or

unserved needs, (2) deployment of new relationships with consumers in order to customize the product/service offerings and (3) providing technological components in a network to achieve the offered service. In this case, economies of scale and economies of scope can optimize costs and revenues. Moreover the platform enables automating customer relationships and facilitating scalability. For example, Uber offers new taxi services with localisation, clearly defined fares, trip-time estimation and can be deployed in cities throughout the world. After the development of the technological platform, the next step is to deliver an offer of complementary products and services to several user groups to favour customization - then to bring these groups together in the same place to facilitate their relationship and the development of indirect network effects.

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). This includes the creation of a new, less competitive strategic space and the design of offers based on new key success factors to meet new or unmet expectations. Application of blue ocean principles to BM design creates interesting tools to revise the value proposition and explore its impact on costs and customers (Osterwalder and Pigneur, 2010). Thus, by exploring new market possibilities and targeting new customer groups, it is possible to create a new side in the multi-sided platform. This is the example of Nespresso and its dual-side model in which the basic coffee value proposition was revised to create a new value proposition focused on the quick and easy preparation of quality coffee. The result is an offer of coffee machines and capsules that are sold to millions of user groups (Matzler et al., 2013).

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 indirect network effects. This is possible by analysing the most frequent interactions between the core user group (the initial group in the one-sided BM) 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. Thenceforth, 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. This

the example of TripAdvisor that links Internet users with travellers and travel providers. Travellers, by their comments and votes, create value for a massive number of Internet users who want to find the best travel offer according their needs. The massive use of the TripAdvisor platform by Internet users creates value for travel providers because they become more visible and they can increase their profits. In turn, the large number of travel providers is attractive for users.

Opening the BM. This relates to opening 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.). Faced with the multi-sided challenge, openness is a way to circumvent the chicken-and-egg problem. 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, but it remains closed on the supply-side and in regard to platform providers because software is only available via the iTunes stores and only Apple manufactures and distributes this smartphone. Demand-side can be open to user contributions by providing tools to create content, social events and/or innovation, as is the case with the online racing game platform Trackmania (Ubisoft, see: trackmaniaforever.com) in which gamers create new circuits and organise online car races (Parmentier and Gandia, 2013). Opening the demand-side more rapidly attracts consumers because they can customize the platform depending on their needs. 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. 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. This 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 reduce 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

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, 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 freely deliver a part of the value proposition to attract a large number of users who, by their number, constitutes 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.) and (2) on a complementary side, with valuing the user presence (well adapted for advertising) and/or the information generated by users that is useful for other purposes (votes, opinions, etc.). This requires finding the appropriate pricing structure to activate indirect network effects (Rochet and Tirole, 2003). For example, the online racing game platform Trackmania offers two game accesses: (1) a limited free version, that attracts a large number of gamers and (2) a full paid version with all features. Additional features encourage free gamers to buy the full version and the large volume of gamers provides business opportunities with 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 than the loss of revenue due to lower prices (Parker and Van Alstyne, 2005). Competitive prices on one market depend on: the competition between platforms, the cross-price elasticities (Parker and Van Alstyne, 2005), the user-generated content, the change costs on sides (Rochet and Tirole, 2003), and the consumer demand for product variety (Hagiu, 2009). A good pricing structure enables rapidly reaching the profit threshold to avoid the chicken-and-egg problem.

Table 1: Operations of BM redesign

Operations	Principles	Effects
Setting up the platform	<ul style="list-style-type: none"> - Set-up a technological architecture for a digital platform - Deliver complementary products/services 	<ul style="list-style-type: none"> - Favour customization - Favour modularity - Create support for multi-sided structure
Reformulating the value proposition	<ul style="list-style-type: none"> - Review the value proposition to target a new broader consumer category - Create new value-added features and remove unneeded features 	<ul style="list-style-type: none"> - Create more value for more customers (blue ocean effect) - Meet new or unmet expectations
Structuring and linking groups of complementary customers	<ul style="list-style-type: none"> - Create complementary value propositions to make user groups interdependent - Analyse interactions between user groups to identify which group creates value for the other(s) 	<ul style="list-style-type: none"> - Generate (positive) indirect network effects - Reduce costs of search and networking
Opening the BM	<ul style="list-style-type: none"> - 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.) 	<ul style="list-style-type: none"> - Multiply sources of value creation and value capture - Build consumer engagement
Multiplying the niches	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Multiply sources of value capture (long tail effect) - Explore market trends - Build additional sides
Structuring prices	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Attract a large number of users - Encourage users to pay on other sides - Generate more profits

Managing the process of BM redesign

Based on several empirical cases from the previous literature (Apple, Innocentive, Airbnb, Wikipedia, TripAdvisor, Trackmania, etc.), we offer a chronological order with three main phases in which BM redesign can be implemented to build a multi-sided BM.

Phase 1: set-up the 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 in order to easily integrate future development opportunities, depending on market trends and user behaviors (like Trackmania, Wikipedia, Airbnb, etc.). 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. 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 facilitates the implementation of customization tools to allow users to combine and recombine the products/services (like Apple). In turn, the complementarity of these products and services and the way to design these complementarities, especially through the value proposition, facilitates the creation of additional sides in the BM.

Phase 2: identification and engagement of different user groups to promote platform adoption and reach 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. The main objective is to create the foundations of a brand community. In most cases, this is a lengthy period that is necessary to allow the number of users on a side to reach critical mass and generate positive network effects. For example, it has taken many years for Apple to sell sufficient iPhones and generate positive network effects with its iTunes platform. On the Internet, reaching the critical volume is crucial for massive platform adoption, its sustainability and valuing the intrinsic qualities of services and free portions of the offer. Second, opening product/service offerings is crucial to building user engagement in contributive activities. Partially opening the offer is key to accelerating the rise in volume. On the TripAdvisor platform, users can comment on their travels and provide much useful information that is attractive to many Internet users. The openness is often based on user toolkits for innovation (Von Hippel, 2001) and online discussion forums. 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, where users can create news circuits/cars and organize competitions. These toolkits are used to customize the offer and to involve users more easily in the innovation process (Parmentier and Mangematin, 2014). Thus, the creation of a specific side, open to user-generated content (with toolkits) is key to developing a multi-sided BM.

Phase 3: linking user groups and structuring the revenue model. The objective is to capitalize on the complementarities between user groups to create connections between the BM sides and thus promote network effects. This requires developing interdependent user groups and creating a dynamic of exchange that will bring added value to each group, thus strengthening their engagement. On the Innocentive platform, firms provide problems and innovative projects that may be solved by other groups (experts, designers, start-ups, etc.). In turn, several user groups offer their problem-solving capacities in a specific domain and thus attract more firms. For Trackmania, the game provides interdependent roles and

responsibilities for three user groups: (1) the creators, who create content (circuits and cars) that will be shared with (2) the competitors, who utilise the servers and energize the game by their presence, especially during big competitions organised by (3) the managers, who manage teams of competitors and use circuits made by creators (Parmentier and Gandia, 2013). In addition, the adoption of a dual revenue model (free/paid) is a good way to massively attract user groups and generate network effects. Network effects depend on a pricing structure adapted to the users' willingness to pay and their contributions for other sides; one side can be subsidized to attract users on another side (Evans and Schmalensee, 2007). The price structuring must be established to promote both direct and indirect network effects, to increase the volume of users on a side and attract users on other sides. By capitalizing on the free part of the offer (on one side of the BM), it is possible to attract new users who will eventually become paying users. The objective is to create a virtuous circle to continuously supply the user community and to ensure sustainable economic returns. Once engaged in the offer, a consumer group can more easily switch to a pay offer.

Conclusion

Our research provides a first response concerning redesign operations that enable transitioning from a one-sided BM to a multi-sided BM. From a business perspective, the use of a technology platform to build a multi-sided architecture and gradually add sides to the BM seems to be a good strategy in digital industries. These operations can also be a source of reflection and action for managers who want to expand and consolidate their business by activating direct and indirect network effects within a multi-sided platform. The development of a multi-sided BM is not just the privilege of rich start-ups or large companies. This strategy seems possible for a small or medium enterprise which has already built a solid one-sided model with a platform for products and/or services.

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