Two-Sided Market Networks: the Importance of Internet b2b Intermediaries

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Abstract

The specific literature on two-sided markets is very recent. Platform providers try to gain two (or more) market participants in order to create a market. The variable cost charged by the platform, affects the readiness for the action over the platform of the two market sides. Fixed fees or limited access towards, regarding a membership in the platform, determine whether the platform users are present on the platform at all. An example for two-sided markets is the credit card market, on one side there are the cardholders and on the other side there are the merchants who accept the credit cards, the role of the platform have the issuer of the credit card. The allocation of the variable and fixed fees, the fee structure, is therefore relevant with tow-sided markets.

Internet technology gives to the platform providers a powerful tool to develop two-sided markets on Business-to-Business marketplaces. An analysis of the b2b tourism marketplace MyOwnBooking.com shows the importance of the Internet intermediaries in the evolution of the two-sided (or multi-) markets.

Keywords: Two-Sided Markets, Business-to-Business marketplaces, Internet intermediaries

1. Introduction

In the recent literature there are several definitions for two-sided markets, all based in the same principles. According to Roson (2004) two-sided markets could be defined as markets in which special services are sold, allowing the interaction of two (or more) parties on a platform, managed by third entity. On the other side Rochet and Tirole (2004), two-sided markets (or multi-markets) are roughly defined as markets in which one or more platforms enable interactions between end-users, and try to get the two or multiple sides "on board" by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall.

This model of markets was originally developed for the credit card market, even this market has special characteristics (Katz 2001, Gans and king 2004), and its applicability is more general. Even though some literature dealt with typical two-sided markets issues, there is lack of a general theoretical framework.

The question it has to be answered, in order to identify the role of the two-sided markets is why does two-sidedness matter. The general approach of the recent literature has been mostly industry specific and the general idea is that gets the two sides (sellers and buyers) together, which is a useful characterization, but, as we argue, it is not restrictive enough. Indeed, if the analysis just stopped there, any market would be two-sided, since buyers and sellers need to be brought together for markets to exist and gains from trade to be realized. Similarly all firms can be viewed as two-sided markets in the context that they bring together input suppliers (workers) and output users (consumers).

The two-sided markets are markets with special type of network externality, which does not depend on the number of agents in the same class (e.g. consumers of the same product), but on the number of different, but "compatible", agents on an opposite market side. The example from the credit card market shows that the number of merchants accepting credit cards for payment will be considered in addition to its usage cost. Between the two elements, cost and diffusion level, there exists a clear trade-off. Indeed, the platform may charge both market sides and in some cases can charge more some agents (e.g. merchants) and less to some others (e.g. credit card owners). The consumer utility does not depend only on the price, and nobody would be interested in getting a cheap credit card with no usability. Given that the degree of the diffusion on the other market side depends on the price that is applied there, the indirect utility for an agent in a two-sided market depends on both prices.

A more useful definition requires making a distinction between the price level, defined as the total price charged by the platform to the two sides, and the price structure, referring to the decomposition or allocation of the total price between the buyer and the seller.

2. Research Methodology

In order to investigate the role of the B2B intermediaries and how they utilize or develop the two-sided markets' characteristics and usability, it is strongly recommended to analyze typical example of a B2B internet marketplace. The success of a B2B ecommerce marketplace depends on the adoption and utilization of the characteristics of a two-sided market.

The research strategy followed in order to find information needed. According to Robson (2002:178) case study is a strategy for research "which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence". The case study research strategy is suitable for this research, which generates answers to the questions "why (is a 2b2 intermediary)?", "What (characteristics)?" as well as "how (is a b2b intermediary develops)?".

3. Two-sided Markets' Characteristics

3.1 Pricing

The prices charged for the use of the network and its distribution plays an important role in the two-sided markets. One of the characteristics is the importance of the price structures with fixed components, independent from the transactions (e.g. subscription fees), or charge per transaction. Another important category includes special rules, contractually defined, devoted to limiting the possibility of discrimination among agents of the opposite market side, like no-discrimination (Chakravorti and Emmons, 2001) and honor-all-cards (Rochet and Tirole, 2003b) rules in payment systems.

For the latter, a balancing on the prices might be occur, according to agents' and service providers' type.

The nature of the two-sided network externalities is determined by the characteristics of interaction process. The following main mechanisms can be defined:

Single Interaction Markets. A single matching is realized between two entities, acting in the two market sides. Network externalities exist whenever the matching quality improves when more alternatives become available. Examples of these markets can be found in real estate, dating and employment agencies. In this case it could be easily found that, as in the most search models, the numbers of agents in the opposite market side generates decreasing returns or utility.

Multiple interaction markets. Every agent gets benefit, possibly potential, from each interaction. More interactions are possible if more partners are available. Markets of this kind can be found in telephone directories, Internet search engines and payment systems. Network externalities may also be negative, like in the case of advertisers and readers of a journal (Reisinger, 2004). As a result, we could say that, returns could be constant, making it easier the

emergence of corner solutions, that is, the existence of one or a few networks in the market equilibrium.

Membership externality (Rochet and Tirole, 2004). According to Armstrong (2004) this externality is not due to the nature of interaction process but to the way platform access is priced, and it occurs when platform access requires the payment of a fixed fee, so that per-interaction cost declines with the number of the interacting agents on the other market side.

3.2 The competition in Two-Sided Networks

Competition in two-sided markets occurs within the same interaction platform, whereas outside competition occurs between two or more different platforms.

In the case of inside competition an interesting question is how platform access can occur and how access price are set (Nocke, Peitz e Stahl, 2004). Belonging to acommon platform does not rule the emergence of internal competition. An example is the shoping mall, which is a two-sided market, attracting both customers and shops, but shops may compete among themselves, though.

On the other side, the outside competition is more challenging and more complex. The competition can be between different platforms, such as: alternative payment systems, intermediation channels or shopping malls.

According to Chakravorti and Ronson (2004), despite the existence of multiple instruments, competition has a non-ambiguous effect on prices, which end up to be lower in both sub-markets, thereby increasing consumer welfare. This is because indirect network externalities are positive: if buyer fee is lowered, the buyer welfare will increase, but also the seller utility will increase, as more buyers will be active on the market. Because of pecuniary externalities between competing platforms, a competitive equilibrium will be characterized by lower aggregate prices.

The competition can bring about lower prices, but not necessarily improves the balance in the price structure. In other words, at constant profit levels for platforms, it would be possible to get higher (aggregate) consumer surplus. Indeed, the level and structure of prices in a competitive equilibrium depend in the relative intensity of competition on the two markets sides.

3.3 Platform Differentiation

Two-sided platforms in the context of competition may provide services, which are perceived as different by customers. Taken in to account the credit card literature (Gurthie and Wright, 2003), where it is often assumed that a consumer could select for payment, one credit card or another, provided that they are both accepted by the merchants. Another example is a TV channel deciding about its type of programs, such as general entertainment, all sport, all news, not to mention the political orientation of its journalists.

3.4 Agent Differentiation

The intensity of competition between two market sides affects the price equilibrium, and this can be related to the degree of agent differentiation on the two sides. Because sellers can be indifferent between services provided by two alternative intermediaries, they can adopt more than one platform. In that case, intermediaries will fight to attract more sellers.

There are two general ways to convince a seller: a) a lower commission fee (even nil or negative), and b) a larger base of potential buyers. If there is competition between the agents, there will be reduction of prices. In this case the side that will gain more is determined by two factors: the relative degree of agent differentiation and according to Chakravorti and Roson (2004) the relative importance of network externalities. There are two types of differentiation, the horizontal differentiation, which exists when agents regard the competing platforms as offering different services, and the vertical differentiation (Gabszewitz and Wauthy, 2004), which takes in to consideration the agents utility.

3.5 Multihoming

According to multihoming, some agents in one or both sides of the two-sided market, adopt more than one platform, so that the interactions may occur through a series of alternative channels. The term multihoming comes from the technical jargon of the Internet. A very easy example to understand is from the seller's side, the acceptance of several credit cards for payment. In this case the seller multihomes. From the consumer's side, someone multihomes when holds several credit cards and choose each time one of them to make a payment.

Multihoming can be more easily when the cost of joining a platform is low or even nil. For instance, if for the merchants, per-transaction fee is the more significant element, they will likely to accept more than one credit card for payment by the same business. Contrarily, if the consumers pay only a fixed subscription fee, they will tend to use a single card, especially if credit cards offer comparable services and have similar degrees of acceptance among merchants.

The presence of multihoming on one market side influences the degree of competition. The competitive pressure will be stronger wherever a platform can get rid of its competitors, which occurs more easily where singlehoming prevails.

The choice for multihoming should be endogenously determined within a model of platform competition. The recent research focuses on two main cases of endogenous joining. According to Hermalin and Katz (2004) the model which is presented, there are no network externalities, platform services are horizontally differentiated for heterogeneous agents and there are variable usage fees without any membership fees.On the other hand Gabszewitcz and Wauthy (2004) assume that network externalities, operating in a way made equivalent to quality in models with vertical differentiation, membership fees without variable usage fees. According to Hermalin and Katz (2004) multihoming is a possible equilibrium

outcome, because agents are heterogeneous in terms of transaction benefits, which are platform specific.

4. Two-sided Market Development

According to Caillaud and Jullien (2003), in order to develop a two-sided market, the main consideration is to solve the "chicken or egg" problem. To convince some buyers to adopt a certain intermediation platform, it is necessary to convince first some sellers, but to convince the sellers, there must be a base of potential buyers. In most of cases the problem is avoided by assuming the simultaneous arrival of agents on the two market sides, in rational expectation equilibrium. But in some cases there are circumstances in which one market side has to intervene before the other one.

5.1 B2B Intermediation

Internet platforms and special software, act as intermediaries in the two-sided markets. The most common of the Business-to-Business intermediaries are the electronic marketplaces which can be defines as virtual marketplaces where several buyers meet several sellers in order to conduct transactions. As Wichmann (2003) predicates that B2B marketplaces clearly differ from classical e-commerce sites (where a single seller transacts with many buyers), from procurement networks (where a single buyer trades with many sellers) and from simple information directories and industry networks (which do not leads to actual transactions).

B2B marketplaces can be classified according to their industry focus and their ownership structure (Popovic, 2002). In terms of industry focus, B2B marketplaces can be either "vertical" or "horizontal". Vertical marketplaces are established along traditional industry segments and Horizontal Marketplaces offer services across multiple industries.

Another terminology proposed by Kaplan and Sawhney (2000) and Yoo et al. (2003), which are "neutral marketplaces" owned by independent third parties and "biased" the marketplaces owned by either suppliers or buyers. In terms of ownership structure, can be distinguished between "third-party" and "consortia. Third-party marketplaces are neutral communities of many sellers and many buyers with open criteria for entry, while consortia marketplaces are built by small umber of industry leaders that dominate their respective industries.

Business-to-Business marketplaces, especially vertical and third party ones, appear thus as typical examples of Two-Sided markets. According to Jullien's (2004) definition, "the concept of two-sided markets refer to situations where one or several competing platforms provide services that are used by two types of trading partners to interact and operate an exchange. More precisely, Evans (2003) defines two-sided markets by the combination of three main features: first, the presence of two distinct categories of agents; second, the existence of indirect network effects (i.e., the benefits acquiring to an agent of one category increase as the pool of members from the other category

enlarges); third, the agents' inability to internalize these indirect benefits efficiently and, thereby, the scope for intermediation.

5. The analysis of the case study "myownbooking.com"

The approach of a two-sided market could be from the side of the participated agents (companies) and the provider of the platform (intermediary). For the analysis, a representative b2b marketplace called "myownbooking.com" is selected. It is a typical example of the new form of the tourism electronic markets. The analysis of this tourism b2b marketplace is based on a number of criteria a two-sided market should cover, such as the selection criteria, the pricing policy, the advantages gained from the participation in a two-sided market, etc.

MyOwnBooking.com is a B2B marketplace in the field of tourism, which provides a platform to travel agents and tour operators, to those having inventory (hotel-, yachting-, cruise-, flight-availabilities or other services) in order to interchange their availabilities and on the other side to sell it to the individual travel agents, those they want to buy inventory for their customers. The platform used from myownbooking.com characterized as a multi-market, at least three different sides of agents participate on the platform and they are the tour operators, individual travel agents and the public-travelers.

The need: In order to make the right decision for the development of a new b2b intermediary, especially in the tourism sector, the following questions should be mentioned: Absent "efficiency benefits", is there scope for profitable intermediation in B2B e-commerce? And how does a third-party intermediary could maximize its profits? On the other hand, which side of the market should be targeted first? Which pricing policy should be followed? Should one or the other side of the market be subsidized? Is it realistic for the intermediary to attract all firms on both sides of the market?

The selection criteria: MyOwnBooking.com is a third party with minimum entry criteria. Business analysts report that the main motivation for individual firms to join a b2b marketplace is to enlarge their portfolio of potential trading partners. It appears that the "liquidity benefits" (induced by bringing together a large number of buyers and sellers) prevail over the "efficiency benefits" (stemming from the automation and streamlining of transactions). An important factor that reflects the firm to join or not a marketplace is the cost of participating and the cost of changing trade model in combination with the benefits could have.

Vertical or Horizontal: According to Popovic (2002) the criteria characterize an intermediary vertical or horizontal are the industry and the ownership structure. In terms of industry focus, myoenbooking.com and other marketplaces in the tourism sector can be mentioned as "vertical", because vertical marketplaces are established along traditional industry segments. In terms of ownership structure, it can be described as "third-party" because is a neutral community of many sellers and many buyers, with open criteria for entry.

Targeting the agents: Launching a new 2b2 marketplace on the specific industry, the group of firms to target first is thus of primary importance. The first is the need from the side of the tour operator for a cheaper way to find buyers for their inventory. Because the services in the tourism industry exist in an inelastic market, the need for a nil surplus is prerequisite for grater profit.

It is very important for the intermediary to show the potential of the platform and the market, which is created on that. Either the intermediary attracts all firms from the group targeted first or it attracts more firms in the first group than in the second group. The policy of myownbooking.com, in order to attract the first group is to give bonus for participation, such as zero entry cost in order to create a potential mass from one side to attract the other side in order to find a certain number of partners in the new marketplace. The result is that the attractiveness of the marketplace increases for the other type of firms. From the perspective of the firms targeted second, the new marketplace offers also the opportunity to reduce competition.

According to various researchers and literature the liquidity" in a B2B marketplace is essential. Kaplan and Sawhney (2000) believe that "To succeed, [neutral] e-hubs must attract both buyers and sellers quickly, creating liquidity at both ends"; and Brunn et al. (2002) that "the first pillar of e-marketplace success is building liquidity". As shown, this view is putting too much emphasis on (vertical, two-sided) network effects such as myownbooking.com, while neglecting (horizontal) competition effects.

Pricing policy: The pricing policy differentiates for each part of its market on the platform. For the first group of firms, the sellers, the platform offers access to the system without subscription fees. That means that the Tour sellers acquire a contract management system and at the same time they take part in a pool of potential buyers, and the possibility to sell online from their own website. They have only to pay a low fixed fee per transaction stated in a contract, which lowers as the transactions increase.

The second group of the market, the individual travel agents, named buyers, should pay a very low annual membership fee, just to have an additional motivation to use the platform. The buyers can have a great pool of inventory and the possibility to sort the search results according to the highest commission or the best price for their customers. They are charged with a very low subscription fee, symbolic, just to give them another motive to use the platform.

The third part of the market, the individual internet users and travelers can use the platform without any fee.

Advantages gained from the participation: Efficiencies of the automation of transactions, economic advantages of the participation in a big market and the collaboration and cost-free inventory promotion are some of the advantages gained from the participation on such a platform. According to Lucking-Reiley and Spulber (2001), "expectations about productivity gains from B2B e-commerce can be usefully divided into four areas: possible efficiencies from automation of transactions,

potential economic advantages of new market intermediaries, consolidation of demand and supply through organized exchanges, and changes in the extent of vertical integration of companies." In the case of B2B marketplaces, the third area appears to be dominant.

Payoffs: Analyzing the model used by myownbooking.com allows us to derive, endogenously, the payoffs of both types of agents, and find out the exact structure to the various externalities that exist between the different sides of the firms. In particular, it is seen that the "liquidity" of the marketplace has two contrasting effects on both types of firms: a) a positive indirect network effect, which means that the firm's profit increases as the number of firms of the other type increases, and b) a negative competition effect, which means that the firm's profit decreases as the number of firms of its own type increases. In that case the firms that enter the market first become the competition leaders and have better payoffs.

Externalities (usage and membership): According to Rochet and Tirole (2004), in their overview of two-sided platforms, they make a key distinction between usage externalities and membership externalities. The benefits for the firms from trade almost always arise from usage of the platform, and the usage of the network depend on how much the intermediary charges, on the one hand. A priori membership decisions that depend on the fixed fees independent from the volume of the transactions that platforms charge, on the other hand. Membership decisions generate membership externalities in case of presence of indirect network effects. Regarding usage externalities, Rochet and Tirole (2004) consider that when the volume of transactions realized on the platform depends only on the aggregate price level the market is one-sided and is two-sided otherwise. In the tourism sector, b2b intermediaries use different charge models such as fixed fee, percentage on transaction or fixed commission per transaction. That affects the usage of the platforms and its effectiveness as a two- or multi-sided market.

Switching a marketplace: A very important factor affecting the success of a b2b e-marketplace is the easiness to switch from one marketplace to the other. MyOwnBooking.com allows firms to enter the platform with low entry criteria, which makes very easy to attract firms from other 2b2 intermediaries. For the sellers seems to be very easy to enter the platform. Once they set up their inventory in the system it is quite difficult to change to some other marketplace.

From the buyers side it is easy to switch to myownbooking.com marketplace but it is very easy to switch to one other if they are not satisfied. This is a weakness for the b2b marketplace.

Conclusions

Because every economic transaction involves two or more parties, a market can be defined as two-sided when the two parties are members of the same network or platform and the transaction is doing with mutual benefit, irrelevant of the price structure for the use of the network.

In the analysis we focus on third party (neutral) marketplaces, where MyOwnBooking.com belongs. It is important to understand the value of Internet intermediaries. Another important issue, which is analyzed, is the pricing strategy and its importance to the network value.

The electronic b2b marketplaces can easy grow to multi-sided markets and multiply the benefits for all the sides of the market. The internet intermediaries can be easy adjusted to every change in the world markets.

The dilemma: who pays for the service?

A serious problem which comes out and is not yet answered is the estimation of the innate and the endogenous network effects in various Internet Intermediary settings and the evaluation of the network asymmetry, such as pricing, revenue, investment, allocation and surplus.

A future research should be including the estimation of the benefit of the utility of a network, and the cost or benefit comes from multihoming in the tourism industry.

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