'ACT LIKE A DESIGNER, THINK LIKE A STRATEGIST!' – PLATFORM MODEL CONCEPTUALIZATION AND THE ENGINEER'S APPROACH AS A PLATFORM ARCHITECT: EVIDENCE FROM TURKEY

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ABSTRACT

This study aims at explaining the concept of "platform" through the network effect of multi-sided markets. Our over-reaching goal is to explain how product and system designers, as platform architects, conceptualize the platform model in order to identify the platform model concept and platform strategies. In this context, to make understandable comments about platform strategy from engineer-manager perspective, a six component model is developed using qualitative methods and focus group technique. Further limitations and suggestions are provided.

Keywords: Platform Model, Platform Design, Multi-Sided Networks, Platform Model Components

1. INTRODUCTION

Product and system designers have the opportunities to create families of complex artifacts by developing and recombining modular components. Platforms, which are the combinations of stable components that support variety and evolution in a system, represent one of the most pronounced approaches in explaining the emergence of new strategic approaches. These platforms are observed within companies (i.e., new product development) and in higher-order inter firms relations (collaborations). The fundamental premise behind all platforms is essentially the same; the system is partitioned into a set of "core" components with low variety and a complementary set of auxiliary components with high variety (Baldwin, Woodart, 2008; Bakos, Katsamakas, 2008). As a platform, it is subject to network effects, which tend to reinforce the previously obtained advantages such as an installed base of users, or the existence of complementary products. The emerging phenomenon of platforms affects industrial dynamics, creates new forms of competition and reveals new forms of collaborative innovation across companies. These issues lead to new questions about the management and the design of platforms (Gawer, 2008).

2. PURPOSE OF THE STUDY

This study seeks to explain the concept of "platform" through the network effect of multi-sided markets. More specifically, our goal is to examine how product and system designers, as platform architects, conceptualize the platform model in order to identify the platform model concept and platform strategies.

Most markets with network externalities are multi-sided. Multi-sided platforms are characterized by interactions and interdependence between multiple sides

(companies, departments, projects etc.) and the existence of network effects. Accordingly, platforms devote much attention to their business model, to succeed in their industries. Industries such as software, media, payment systems and Internet must get all sides of the market on board. This paper emphasizes how platform models occur in different markets.

3. CONCEPT OF PLATFORM AND PLATFORM DESIGN

Scholars have not reached a consensus on the conceptual definition of platforms. The platform has been associated with different meanings in extant literature, such as new product development, design and operations or technology strategy (Eisenmann et al., 2006). Gawer (2008) created a typology of platforms in order to organize and categorize the distinct meanings of platforms. First typology is the internal platform which occurs inside the firm and second typology implies the supply chain platforms which appear within a supply chain network among several firms. Third emerges in industry ecosystems, which are called industry platforms. Fourth typology namely Multi-sided markets or platforms occur in industries within several firms or group of firms which are in a relationship with each other thorugh the multi-sided market (Gawer, 2008; Meyer, Lehnerd, 1997; Zirpoli, Becker, 2011; Gawer, Henderson, 2007; Hagiu, 2004). Platform are predominantly observed in high-tech industries. Google, Microsoft Windows, cellphone operating systems, fuel-cell automobile engines and also some generic Technologies are all examples of platforms with multi-sides involved.

The number and scope of interorganizational collaborations have grown rapidly in many industries. There are two key points for collaborations to emerge; transaction and the mutual exchange of rights. In the new business network, organizations interact more with external parties in order to access both knowledge and resources. Hence, collaboration between buyer and supplier has become a natural part of the operations of any company that develops complex products (Powell, 1998; Bogers, 2011; Lindquist et al., 2008). Collaborations have to ensure that three central processes are realized: 1)value creation, in order to identify a product platform for the industry, but also to evaluate this platform compared to alternative and to integrate all possible alternatives into strategic mapping process; 2)knowledge production and learning by involving partners, offering support for various experiments and providing specific devices for knowledge production; 3)interest generation among stakeholders of the platform. To understand the fundamentals of platform architectures, one should realize the distinction between a product platform within a single firm (e.g. Sony Walkman) and a platform whose complements are supplied by many different firms (e.g. Microsoft Windows) (Gawer, 2008; Moon, 2008; Parker and Alstyne, 2005).

Multi-sided networks can be found in many industries, sharing the space with traditional product and service offerings. In the traditional value chain, value moves from left to right: to the left of the company is cost; to the right is the revenue. In multi-sided networks, cost and revenue are both to the left and to the right not following the traditional value chain queue; because of the platform‟s distinct group of users on each side. The platform is subject to costs in serving both groups and can aggregate revenue from each; albeit one side is usually subsidized (Eisenmann, Parker, Alstyne, 2006; Chen, 2007).

Platform businesses add value by facilitating interactions between customers who are attracted in part by network externalities. Multi-sided platforms on which it is easy to

reverse participation decisions have become increasingly important since the rise of the internet (Evans and Schmalansee, 2010).

There is no perfect method or strategy for succeeding in a platform; but there are some particular steps that should be taken at the beginning. To evaluate the current state of the firm‟s strategies and position, management must begin with asking relevant qualitative questions. After determining the current position, management shall focus on decribing the method of its market development strategies in a structured manner or otherwise criteria on the choice of a new market. With this knowledge about these factors or criteria for building a platform, it is possible to determine which choice is the right decision to build a platform and be successful in a platform (Davidsson, Klofsten, 2003; Sawhney, 1998). If a firm wants to succeed in a platform, it should use its innovative capabilities; some of the firms which operate in industry platforms can use their core technical competeces. In addition, platform architects need to make an ongoing assessment of these capabilities and the direction in which the industry is evolving. Platform architects need to focus on the platform to determine the strategic advantage of their firms over their rivals and the core competeces/technologies which are difficult to imitate. A firm as a whole, in order to have a sustainable competitive advantage, should have the organizational capabilities to place itself in the center of the network of innovation through its platform (Gawer, Casumano, 2008). When a firm wants to create or to shift to a new platform, it should keep the intellectual property of the technology and must have the right boundary units in order to monitor other companies in the market/platform (Gawer, 2008; Sawhney et al., 2005).

To be potential platform-leader who drives the industry; a large market share most notably in an emerging market, is a very good start. A successful and differentiated product makes it easier for the market leader to become the platform leader in terms of architecture, features, and technology. An open and communicative architecture allows external, complementary innovation and relationships with external developers to stimulate these innovations (Gawer, Casumano, 2008).

Literature on platform studies is relatively new. Many recent research has argued that a platform is not a technology, only. Platform is the outcome of a set of business behaviors and relationships between actors in business network. Platform strategy affects product development performances, cost and lead time reduction, the international opearetions and the R&D management strategies of firms. In addition, the advantages to firms pursuing a high level of platform strategy are efficiency, higher quality and faster time to markets (Muffatto, 1999a; Koufteros et al., 2005; Kenney, Pon, 2011). An early study by Muffatto (1999) reveals the benefits of adopting platform strategies through the perspective of the auomobile industry where products (cars) are far more complex than those of most industries. Indicating the fact that platforms help manufacturers with flexible production, cost reduction through using resources on a world scale and thus a valuable contribution to the new product development process, the main idea of counting on such platforms when developing strategies still remains within the industry framework. However, platform strategies today tend to bring as many industries necessary to create value as possible together and therefore not to be controlled and directed by one broker company. Platform strategy affects product development performances, such as domestic and international operations and the R&D management strategies of companies. The main reasons for platform development are cost reduction; product development and development lead time reduction. A platform

strategy affects the relationship within platforms, the relationship with the supplies base, subsidiaries and the other firms (Muffatto, 1999b; Ulrich, 1995; Clark, Fujimoto, 1991; Muffatto, Roveda, 2002). Another study which is about the software platform strategy suggests that there are two main issues that can introduce major challenges to introducing a platform strategy; the business strategy and product-driven platform development. Besides, firms can come across with several challenges while implementing platform strategies, such as, organizational challenges (communication problems, organizational structure design, agile culture and standardization), technical challenges (commonality and variability, design complexity, code contribution and technical practices), people challenges (resisting to change, technical competency and comain knowledge) (Ghanam, Maurer, Abrahamsson, 2012).

Hagiu (2011) explained the drivers of multi–sided platforms in their study. Multi-sided platforms are driven by searching new sources of value and creating new network effects with the addition of new sides to multi-sided platforms. Firms need to make sure they create all the value they can deliver to their sides and with creating new network effects they can make new transactions with these sides more efficiently and more frequently (Hagiu, Wright, 2011; Hagiu, 2007).

The start-up associated problems are difficult to handle for firms that operate in multi-sided platforms. Firm can deliver the value from one side of the platform to the other so they have to consider and therefore balance both sides of the platform. Accordingly, firms can come across with the technological, managerial and leadership problems while implementing their platform strategies (Gawer, 2008; Economides, Katsamakas, 2006).

4. RESEARCH METHODOLOGY

The framework presented above provides a starting point for this research. This framework is examined by the help of a case study themed "implementation of building a successful platform model in multi-sided markets", within a focus group.
As indicated earlier, the primary purpose of this study is to explain how product and system designers, as platform architects, conceptualize the platform model in order to identify the platform agents/sides and platform strategies. To obtain information concerning "platform model design" and "how product and system designers can achieve to be a platform architect in order to build a successful platform business model"; engineers as platform architects from different hierarchical levels of companies were interviewed. In this focus group case study, sixteen engineers (in two separate groups eight each) who were, at time being, taking graduate degree "management and organization" course were interviewed. People who were included in the interview graduated from machinery, metallurgy, chemistry, industrial, food and forestry engineering faculties. They were working in different sectors and different departments such as marketing, business development and quality management. Since, mentioned above, the constitution of platforms aims provide value creation, knowledge production and creating value at the industry level, this various engineering background combined with the education of management and organization field gave us the very best subjects as platform architects.

Questions were asked to get interviewees" ideas and thoughts about the platform model. These people were chosen because they are working as a product and system designers and because of their role as a platform architect at their job.

Interviewees‟ various backgrounds led us to obtain information from different perspectives. These groups‟ interview averaged about 75 minutes. To improve the internal validity of the data, interview questions were constructed from a variety of information sources. During the interview period, for the quality and understandability of the interview; we (also the moderator of the focus group) supplied interviewees with mini cases about the subject and showed pictures, diagrams about multi-sided market examples. Interviews with the managers of the future of platform businesses also expand the scope of the research, and give an opportunity to examine the impact of the academic background (maturity) of engineers on this framework. By this way, the in-depth investigation of this business model not only will help us to evaluate the framework, but also help to collect the participants‟ opinions on multi-sided markets and platform business model implementation process.

Interview questions were designed based on previous studies and questionnaires from the literature. Interview questions were designed to provide guidance, to encourage consistency, and to allow respondents more freedom of expression to learn more about platform model implementation in business environment. Interviews also consist of open-ended question to extract more data. To learn the most important perspective about implementation of platform model, all interviews started with these questions:

- Under which conditions can we expect industry platforms to emerge?
- What forms do they take? In what context?
- How can firms succeed in the new platform game?
- Which capabilities are needed?
- When should firms open up their technologies and processes?
- Which strategies can a firm implement to adopt their firm a platform model?
- How to manage the exploratory processes to create a platform?
- How to manage platform development projects?
- What drives multi-sided platforms?
- Which problems will ocur while implementing platform strategy?

5. FINDINGS

Insights from our interviews were digital-recorded. The following step was the verbatim-translation and examination of interview findings. Afterwards, these listed but untouched answers were grouped; the answers which were considered to have the same/close meaning were either omitted or converged. However while purifying the answers, the count of mentions were crucial. Since the main purpose was to categorize the concept, most mentioned and therefore most valued answers were in our main concern. Whilst counting the mentions of any idea or opinion, taking into account that one could have mentioned his/her idea more than once and/or implied the same meaning without using the exact word, convergion and yet unification into solitary meaning was the foremost important and delicate stage of this process.

Following the purification and deduction process, going through the results of the interviews and classifying them, we constituted out 5 factors; which are later called “Platform model design factors”. These factors are; stimulating (technological development, new requirements in the sector etc.), structural (making useful strategic plans, acquire innovative people etc.), design-related (platform based product design, developing a multi agent system etc.), sustainability-related (searching the right people

to emerge platform strategies, difficulty in determining the target audience etc.) and managerial (using social media, accurate market research through the right and well informed people, creating a team to implement platform strategy etc.) factors. Further and yet separate step for this research is planned to categorize these extracted concept into variables, and test them with quantitative analyses. This later step was only possible with categorizing the platform concept; therefore this research is the most crucial step for a quantitative model formation.
Some characteristics are mandatory for a market or network to qualify as a multi-sided platform. This paper attempts to contribute towards building, maintaining and developing platform model. One of the main conclusions emerging from our analysis is identifying a platform‟s new "side" (or new "sides") could create strong network effect within an existing firm. Also, firm‟s relationship with customers and suppliers is very important for designing platform concept. In order to achieve platform strategy, first there shall be a manager called "platform leader/architect" and second should there be his/her project team. This team can face various problems while composing and implementing platform design applications. Main characteristics about the platform model and its features are given above.

Platform design factors, issues and characteristics aforementioned are limited to this study‟s sample and cannot be generalized without further research. But this paper gives researchers and academicians a general idea about implementing and developing a platform model and multi-sided networks. Moreover, this paper contributes literature as a starting point for further research.
In order to make understandable comments about platform strategy from engineer-manager perspective, the components of platform model is analyzed and constituted as such;

1. **Stimulating characteristics:** Developing technology, emerging „new sides‟ and „new requirements‟ in the market, foreseeing the future, making a difference in product.
2. **Structural characteristics:** Flexible, acquiring innovative people, understanding the customers‟ requests, making good strategic plans and having a responsive structure that able to respond to customers‟ needs quickly, giving importance to suppliers and agents which form the platform.
3. **Design characteristics:** Extending and extracting concepts from platform based product design, developing a multi-agent system to support platform design, applying agent based decision making to generate and determine platform design strategies.
4. **Difficulties:** "Platform agents are the basis"; Need for constantly developing the system, need for removing deficiencies, difficulty in determining and reaching the target market segments, difficulty in following rivals‟ strategies, problems in finding right people to emerge and diffuse platform strategies towards the customers and the market.
5. **Behavioral characteristics of the platform manager/leader:** "There is a need for managers who manage the knowledge". Providing the right feedback to/from all agents of platform, making network analysis of the platform and resolving the network, using social media efficiently and effectively, and accurate market research through the correctly and well informed people.
6. **Management characteristics of the platform strategy projects: "**Design of the product is not solely sufficient". Making preliminary study or pilot research

about implementing the platform strategy (first he/she can begin with a department of an agent or specific products), creating a team of "right" members to work with, using technical knowledge of engineers, being open to new ideas, developing good relationships with suppliers as an agents of platform, maintaining the highest level of quality standards and identifying a platform along with variant and unique modules using data mining techniques.

6. DISCUSSION

According to the literature, some main characteristics are necessary for a market or network to qualify as multi-sided platforms. First, two or more categories of agents must exist; second, an agent of one category should benefit in a way from the presence of members from other categories. Third, agents shall not internalize these benefits, which can make positive profits by connecting the two types of agents in a more efficient way than what they could achieve in their own (Hagiu, 2004). In our research we found that, developing technology, foreseeing the future and considering new sides in the market are stimulating characteristics of a platform model. In relation to this, if a firm wants to develop a platform model it should have good strategic plan, innovative people and flexible organization culture.
If a firm wants to succeed in a platform, it should use its innovative capabilities; so it should have more innovative people because these people are going to be platform architects in the future. In our research, we figure out that design is not sufficient only, so platform architects need to focus on the platform to determine the strategic advantage of their firms over their rivals and the core competences which are difficult to imitate, it is parallel with the literature.

A platform strategy affects the relationship within platforms, the relationship with the supplies base, subsidiaries and the other firms, hence platform leaders or managers of a firm come across with several difficulties while implementing a platform strategy. Such as, difficulty in determining and reaching the target market segments, difficulty in following rivals‟ strategies and so on.

Most of our conclusions are parallel with the literature but we figure out some other key points like, there are too many different characteristics of a platform and we classify them into three main components; stimulating, structural and design characteristics. There is no other study in the literature that have classification like these, also we classify management team‟s and platform leaders characteristics so we found that there should be different behavioral styles between them.

7. CONCLUSION

The two distinct user groups interact with each other through a common network platform; these network platforms coordinate the demands of the two sides of the market that need each other and help them to make money by linking different sides of their customer networks. They provide infrastructure and transaction rules that facilitate different sides‟ interaction and transaction. As an example, computer operating system vendors such as Microsoft provide software on which computer users and application developers can be linked together; credit card companies provide plastic cards and authorization terminals through which merchants and consumers can make transactions. Platforms can be physical or virtual places providing services, such as real estate brokerage, shopping malls, web sites like Monster and eBay (Chen, 2007).

The driving force behind multi-sided markets is the need to induce coordination among two or more groups of agents, and what they "coordinate on" is precisely a fixed point in the architecture of transactions in which they collectively participate. That fixed architectural point may be a particular component of system; such as Visa payment-processing system which both issues cards to consumers and approves transactions on behalf of merchants; or a physical location, as in the case of a shopping market which provides meeting point for both merchants and consumers. Moreover, it may also be a convention, such as the use of curency as a medium of exchange, or compatibilaty between systems.

One of the main conclusions emerging from our analysis is that, identifying a new side (or new sides) that could create strong network effect with the existing firm. Also firm‟s relationship with customers and supplies is very important for designing platform concept.

In order to achieve platform strategy, there should be a manager called „platform leader/archtiect‟ and there should also be a project team with suitable members to platform design. This team can face many difficulties while composing and implementing strategy related applications. Outlining characteristics about the platform model and its features are discussed in findings section of this research. These characteristics must be considered while building and sustaining so called platforms which are in essence multi-sided networks.

The platform model design issues on which we have focused in this paper is constituted from only "ideas of engineers" about being a platform model business concept. This paper doesn‟t give insight about pricing and distribution of industrial problems of a specific sector or a firm. It was aimed to draw general ideas about implementing and developing a platform model and multi-sided networks, according to these ideas more specific researchs can be made for a further study.

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