Strategies for Network Platform Evolution

by

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Abstract

Managing a network platform business can be a complex preposition for the platform owner due to various intricacies that are associated with these platforms. These platforms have distinct users each having its own exclusive needs and requirements. Also, success of one side is closely interlinked to the success of the other side. This research attempts to implode various aspects of network platforms, helps to develop the understanding of the core concepts and develops key strategies for success of such platforms. The thesis of this research is to show that strategies involved in managing successful network platforms are different from those involved in managing legacy products and only those companies that are able to understand these key differences are able to successfully create a vibrant ecosystem around the platform.

The motivation of doing this research is dynamics of this business where many companies have able to generate enormous value in a very short span of time while others have vanished in oblivion. Also, lack of comprehensive research in this area, vis-à-vis research in conventional product based business strategies also provided a big impetus to carry on this research.

The outcome of this research is a holistic framework, in the form of key questions and their answers, which companies can use to evolve an attractive network platform while fulfilling the needs and requirement of various stakeholders. This research also provides a practical implementation of the strategies developed on real companies in form of case studies and illustrates the steps they can take to be successful in network platform business.
Acknowledgments

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Despite the geographical distance of thousands of miles, my family was always nearby. I owe this accomplishment to my parents, S.K. Shrivastava and Anjana Shrivastava for their blessings, encouragement and love throughout my life. They have always been the biggest source of inspiration to me and I am here only because of them. I am also profoundly grateful to my beloved wife, Aarushi, for her love, patience and sacrifice to finish my degree. Thanks for spending hours in meticulously proofreading this document and making it better every time. I would also like to thank Suyash and Poorvi for their unconditional love and friendship.

Finally, and most importantly, a special thanks to my three-year-old son, Sahaj, your smile is my biggest source of inspiration. I owe you all those weekends and evenings when I should have been spending time with you rather than sitting in libraries and reading rooms.

I dedicate this work to my late grandparents, who I am sure are looking down on me from a much better place.

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Chapter 1

Introduction

A journey of a thousand miles begins with a single step.
- Lau-tzu

Most of the conventional products developed in the last century catered either to a single customer or to customers having similar requirements. Companies then had clear requirements and were able to satisfy the needs of the customers by transforming them into products. However, things changed completely with the advent of network platforms: suddenly there was not one discrete customer but a suite of multiple customers, all very distinct with different needs and expectations that could be satisfied in concert through the platform and interactions among products. Moreover, all these customers are invisibly linked to each other and success of one is largely dependent on the success of the other.

This new phenomenon has taken many companies by surprise and those which were able to comprehend the way to manage this complex interconnection of users, needs, demands and supplies became successful, while the rest often perished in oblivion. Even the most successful companies of last generations have struggled to understand the economics of this networked, highly dependent platform, primarily because these problems were different from what they were experienced in solving previously and different problems required different solutions.

Multi-sided businesses are the most attractive but they are also the hardest businesses to build. On one hand they can create enormous value over a short period of time while on the other hand they can also lead to enormous failures. Due to the inherent nature of business, which is based on cross platform dependencies, even the leaders are vulnerable and they need to keep innovating and reinventing themselves to maintain the leadership. With low barriers to entry in terms of investments, new companies with innovative ideas are opening their business every day and challenging the incumbents.

“A multi-sided platform does not create the value itself but enables others who create the value within it” (Hagiu & Wright, Multi-Sided Platforms, 2011). This research will look into
requirements to build a successful multi-sided platform business. Network platforms and multisided platforms are interchangeably used in this document and both refer to same thing, unless otherwise explicitly stated. Similarly, complementors, partners, external application developers as well as third party developers refer to the developers who develop their applications on the platform.

1.1. Background

Multi-sided platforms are not new; in fact we all have encountered such platforms at various phases of our lives. The farmer's market where farmers from the country side sell their fruits and vegetables to the buyers, the fairs where sellers put up their small stalls to sell goods to the kids, university career fairs where companies come to recruit students etc. are all forms of multi-sided platform. Hagiu and Wright in their research on Multi-sided platforms (Hagiu & Wright, Multi-Sided Platforms, 2011) have defined some of unique characteristics of these platforms:

- Multi-sided platform enables the direct interaction between the parties associated with the platform and does not interfere in the transaction. For example, in the above case of farmer's market, the owner of the land where market takes place does not interfere between the buyers and the sellers in their transaction.

- All the parties involved in transaction should have an association with the platform, i.e. they should have made a conscious decision to participate in the platform either through incurring an opportunity cost or paying an access fees. For example, during the university career fair, both the recruiting companies as well as students have made a conscious decision to attend the career fair.

With the advent of Internet in recent times, many companies have started their business using multi-sided platforms, connecting users across different parts of the world with a click of mouse. Many of these companies have been extremely successful and have created immense wealth for their shareholders. However, there are even more companies which have been unsuccessful in
platform business and have failed miserably; because either they did not understand platform business or it was not suitable for their offerings.

Managing multi-sided platform has now become one of the most important components of corporate strategy for many companies. It is now imperative to understand the key concepts and strategies entailed in running a successful platform as failing to do so can lead to fatal mistakes. Just creating a multi-sided platform is neither a panacea of all the problems nor is it a silver bullet for success. Such businesses should be carefully managed at various stages and critical decisions should be taken at various points. The framework described in this thesis will help companies to do so.

1.2. Problem statement

What are key strategies needed by companies for their network platform evolution?

Network platforms, as the name suggest, includes many different players: platform owner end users, complementors, sponsors etc. and it is extremely important that all these different players work in synergy towards the success of the platform. However, it is not easy and the onus lies on the platform owner. It largely depends on the strategies it adopts for the different participants on the platform. In this research, I will try to analyze these various strategies that are useful for companies working in the area of network platform for their platform evolution.

This research will also try to answer some key questions that all the platform owners should be aware of. These questions and their answers separate the winners from the innumerable players entering into platform business every day.

1.3. Motivation

Wall Street Journal recently posted the news related to the potential IPO of Facebook, a social networking website, in 2010 with stock sale as large as $10 billion, valuing the company at $100 billion or more (Rappaport & Randall, 2011). Facebook was launched in 2004, less than seven years back in the dorms of Harvard. How can such a young company with limited assets was able to build an empire of excess of $100 billion dollars? Also, the business model of Facebook is neither unique nor impossible to replicate; how then it could survive among competitors?
Facebook is not alone, Apple, which almost died in the late nineties and lost considerable market share to Microsoft, was not only able to re-invigorate itself in its core PC business but also in entirely new spaces of mobile and personal music systems. What is the reason for this sudden change in fortune?

Google is currently valued at $173 billion, compared to GE, arguably the most successful company of last century, which is valued at $566 billion and 3M, the most innovative company since 1902, is valued at $59 billion (Yahoo Finance, 2011). How come Google, an internet company, is able to match up with century old brick and mortar companies having the most innovative products and huge market share?

First movers are often assumed to have significant advantage, but none of the above were the first movers; there were already portable MP3 players before Apple came up with iPod, social networking sites already existed before Facebook and we all used emails and searched before the birth of Google. How come these companies are able to take the market share from the first movers and were able to become so successful?

The above questions are both intriguing as well as, at times, counter-intuitive and were the biggest motivation to take up this topic.

1.4. Outcome

The outcome of this project is a framework that can be used by companies, as a corporate strategy, to succeed in the business of network platforms. To a very large extent this research is restricted to digital companies, though it alludes to some example of non-digital firms as well wherever it was necessary to properly explain the concepts. However, the lessons of this research work can be applied to the full gamut of companies, even to those that do not rely on internet based technologies.

In this project I hope to come up with a holistic document that can be used both as a guidance to understand various concepts involved in network business and then, by using these concepts, to define the platform strategies. This document should serve both for the incumbent companies, that are currently the leader of platform business, as well as the new entrants, which are challenging these leaders.
Also, the last chapter of this document explains how these concepts can be practically implemented in real world companies using case studies on Microsoft and SAP. These case studies will help the reader to generate practical understanding of these strategies.

1.5. Structure of the thesis

This thesis answers the below major questions:

1. **What** are a network platforms and **why** are they so important?
2. **What** are the core concepts in network platform business?
3. **What** are the key strategies for platform evolution?
4. **How** can companies use this framework towards their platform evolution? **What** did we gain from this work and **where** do we go from here?

Based on the above, this thesis is divided into four main chapters:

1. **Introduction:** This section describes the background, problem statement and outcome of the project.
2. **Core Concepts:** This chapter gives definition of key concepts that have been used in multi-sided platforms and helps to develop user understanding using easy to relate real world examples.
3. **Key Strategies:** This chapter uses the above concepts to illustrate the key strategies in evolving network platforms.
4. **Discussion:** This section contains the application of the above strategies in two major companies, and finishes with reflection and pointers for further study.
Chapter 2

Core Concepts of Network Platforms

Everything should be as simple as it is, but not simpler.
-Albert Einstein

In order to create successful platform strategies it is important to know the key concepts of network platforms and the ecosystem in which they operate. This chapter looks at various essential characteristics of network platforms and these will then be used in the next chapter to define key platform strategies.

2.1. Multi-Sided Platforms

"Multisided platforms cater to two or more distinct groups of customers. Members of at least one customer group need members of the other group for a variety of reasons" (Evans, Hagiu, & Schmalensee, 2006)

We come across Multi-Sided Platforms (also referred as MSP in the document) almost every day. They are effectively the matchmakers that connect the needs of one user to the demand of other. Payment platforms (credit cards, debit cards), dating sites, job sites, shopping malls, search engines, smart application stores etc. are all examples of Multi-sided platforms.

There are minimum two stakeholders in a multi-sided platform: the users and the platform provider as illustrated in Figure 1.

Figure 1: Example of a Multi-sided network platform
Platforms are not necessarily created and maintained by a single firm. Hence, the platform owner can be further divided into platform provider and platform sponsor. “Platform providers mediate network user’s interactions; they serve as users’ primary point of contact with the platform. Platform sponsors on the other hand are the ones that exercise control” (Einsenmann, Parker, & Van-Alstyne, 2007). They can modify the platform technology and determine who may participate in the network (Katz & Shapiro, 1985). For example, MasterCard, which owns the technology for the payment system, is the platform sponsor while Citibank, which uses MasterCard technology to run the payment system, is the platform provider. However, both the roles can be performed by the same entity, as in the case of American Express.

In Figure 2, the elements of platform-mediated network are illustrated (Eisenmann, Parker, & Alstyne, 2008)

![Figure 2: Elements of a Platform-Mediated Network](image)

The most important characteristic of any multi-sided platform is the direct link between the users without any direct involvement by the platform provider. For example, eBay, a popular Multi-sided platform which connects the sellers to the buyers, is a pure multi-sided platform as it does not act as middleman between buyer and seller; eBay does not buy the goods and then sell to the users at higher cost; if it does so it will cease to be categorized as multi-sided platform but will rather become a mere reseller. On the contrary, Amazon is not a pure multi-sided platform,
it acts both as a platform provider as well as a reseller; on Amazon’s platform you can find products, which are directly sold by external sellers as well as those which are sold by Amazon itself (Hagiu & Wright, Multi-Sided Platforms, 2011). Thus, when developing a business in this space, it is really important that the strategist first identify the category in which the platform is actually falling: a pure multi-sided platform, a combination of multi-sided platform and reseller or a pure reseller.

Below are some of the examples of popular multi-sided platforms:

- **eBay**: eBay a leading trading platform that connects the buyers on one side and sellers on the other side.

![eBay diagram](image-url)

Figure 3: eBay online auction platform

- **MasterCard**: MasterCard, which is a platform sponsor, connects shoppers and merchants through its platform

![MasterCard diagram](image-url)

Figure 4: MasterCard payment platform
• **Xbox**: Xbox, Microsoft's leading gaming console, connects gamers and game developers together through its platform.

![Xbox Diagram](image)

Figure 5: Xbox gaming platform

• **Facebook**: Facebook, a leading social networking site with more than 700 million users, connects the users, advertisers and application developers together using its platform.

![Facebook Diagram](image)

Figure 6: Facebook platform

• **LinkedIn**: LinkedIn, a leading social networking site for professionals, connects the users, advertisers, application developers and recruiters using its platform.
By capturing indirect network externalities and identifying a mechanism to increase them, Multi-sided platform can earn profits for themselves and benefits to the users (Evans, Hagiu, & Schmalensee, 2006). The key is to identify key players in the multi-sided platform, i.e. identify the sides. For example for residential property agency, the sides are property sellers and property buyers. It is really important that these sides are identified properly as early as possible. The next steps are getting all the sides on board and incentivize them to start using the platform.

An important characteristic of multi-sided markets is that the demand on each side vanishes if there is no demand on the other, regardless of what the price is. “Merchants will not accept a payment card if no customer carries it because no transaction will materialize” (Evans, Hagiu, & Schmalensee, 2006). Next step is to set the optimal pricing and identify which side should be charged and which should not be; this will be discussed in the later chapters of the document.

The idiosyncrasies of multi-sided platforms can also be explained using OPM diagrams. The gives a clear description of the flow of beneficiary’s need all the way to intent, function and form and also illustrates the value related operand with solution neutral and solution specific statements.

For example, let us take a most popular use-case of multi-sided platform with three sides: users, application developers and advertisers. Figure 8, 9, 10 and 11 are the OPM diagrams of all the three sides of the platform, starting with the users:
Here the key beneficiary is the *user* of the platform (for e.g., the subscribers of Facebook) and our assumption is that their biggest need is entertainment. Below is the descriptive goal and intent identification for users:

- To (increase)
- (progressively)
- The (quality) of the (applications)
- By (attracting)
- (continuously)
- (huge number) of (application developers)
Next, we take advertising companies as the beneficiary of the platform with the goal to increase of sales of their products as their primary need. We then analyze their descriptive goal and intent for the same:

- To (increase)
- (competitively)
- The (sales) of the (product)
- By (providing)
- (active)
Thirdly we analyze the application developers with competitive return of their investment as their primary need. Their descriptive goal and intent are:

- To (increase)
- (competitively)
- The (amount) of the (revenue)
- By (attracting)
- (actively)
- (high number) of (users)
Finally and most importantly, we analyze the shareholders of the platform owner with again competitive return of their investment as the primary need. Below are the analysis of the descriptive goal and the intent of the shareholders:

- To (increase)
- (competitively)
- The (amount) of the (shareholder’s value)
- By (generating)
- (actively)
- (high) (revenue)
Managing a user need, while keeping it aligned with the overall corporate goal of the company, itself is quite complex. However, when this is compounded with multiple users each having different needs, the whole system gets quite complex and needs a clear strategy to manage it. This strategy will be developed in this document.

2.2. Network effects

A network effect (sometimes also called network externalities, positive feedback or demand economies of scale) is defined as the phenomenon in which the value of the product of services increases as more users start using them.

Network affect is not a new phenomenon; one of the old examples of network effects is the telephone system. The telephone was a useless device for the person who first adopted it but as more users starting using it, the value of the system increased which compelled even more users to adopt it. Most successful software platforms have exploited network effects between applications and users: more applications attract more users, and more users attract more applications. Thousands of applications and million of users got attracted to Microsoft’s Windows OS because of network effects (Evans, Hagiu, & Schmalensee, 2006). Also many new generation companies such as Facebook, LinkedIn, Apple etc. have been able to build huge values using network effects.

Networks effects can be broadly classified into two categories:

- **Direct network effects**: The value of the product to the users increases as more users adopt the product. Some examples of direct network effects are the telephone system, Facebook etc.

- **Indirect network effects**: The value of the product increases as more users adopt the complementary products that in turn increase the value of the original product. Some examples of indirect network effects are mobile operating system (e.g. Android, IOS etc.), matchmaking sites, daily deals sites etc.
Companies can use these network effects to generate value for themselves. These network effects influence user’s willingness to pay (WTP), user adoption, and thus a platform’s value (Shapiro & Varian, 1999). They can use the network effects effectively to *tip* the market in their favor. This is even more important in a particular kind of market, the Winner Take All (WTA) market, in which most of the new platform companies operate. There is no second place in WTA; how can we forget QWERTY keyboard, when some of the purists believe that Dvorak typewriter keyboard was better? “From a cooperative theory perspective, network effects are just economies of scale: the per-buyer surplus available to a coalition of buyers and a seller increases with the size of the coalition. It creates incentives to *herd* with others” (Farrell & Klemperer, 2007).

Strong network effects can create undisputable leadership for the companies. “When network effects are positive and strong, users will converge on fewer platforms; a subscale platform will have a little appeal unless it provides the only way to interact with certain transaction partners. Likewise, users are less likely to multi-home, i.e. present on different platforms simultaneously, when it is expensive to establish and maintain platform affiliations” (Eisenmann, Parker, & Van Alstyne, Platform Envelopment, 2010).

Strong Network effects also create barrier to entry in favor of the incumbent company. The users attached to the platform give it a significant competitive advantage that can be very difficult to duplicate. Consider LinkedIn, the biggest value proposition of any user of LinkedIn are his contacts, recommendations etc., which he has build over the years; it will be very difficult for a new company to enter this business and be successful from the day one. This gives a significant advantage to LinkedIn over new entrants, though the actual business model is easy to replicate.

Network effects is indeed the biggest *mantra* to be successful in the platform business however, it is difficult to initially build it. Solving the chicken and egg problem, i.e. users will not join the platform unless there are more users in it and there cannot be more users if the initial users are not joining it at the beginning, is the most difficult aspect in creating successful network effects. A classical example of this is the case of video game console; one side of the users (i.e. the game developers) will not like to develop games for the platform which does not

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1 However, companies should not get too complacent as there are cases of this getting reversed and the biggest example is of MySpace when its leadership status was taken over by Facebook though it had millions of users
have large user base and at the same time video game players will not like to buy a platform which does not have popular games. Hence, it is important for platform owner to ensure that platform is able to come out of this chicken and egg syndrome as quickly as possible and start propagating network effects.

Figure 12 is an example of Network Effect (Shapiro & Varian, Information Rules: A Strategic Guide to the Network Economy, 1998)

![Figure 12: Example of Network Effect](image)

2.3. Pricing

"In competitive industries, prices are largely determined by the marginal cost of producing an extra unit, and margins tend to be thin. In industries with high barriers to entry, the price ceiling is set by customers’ willingness to pay, and margins are more likely to be fat. For multi-sided networks, pricing is a more complicated affair” (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006).

Pricing in Multi-sided platforms is not quite as same as conventional pricing and a common technique used by platform providers is price discrimination between different sides of the network. "Typically multi-sided platforms have a subsidy side, i.e., a groups of users who, when attracted by volume, are highly valued by the money side, the other group of users. Because the number of subsidy-side users is important in developing networks effects, they are
charged less or sometimes are not charged anything” (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006). A well-known example of this pricing strategy is Adobe’s PDF. Since PDF readers are strong contributors in creating the network effect (PDF writers will publish document only when there are PDF readers), Adobe does not charge anything to PDF readers while it charges a premium from the PDF writers.

Similar examples are evident in gaming consoles. Gaming companies such as Sony (PSP) or Microsoft (Xbox) sell their consoles at a very nominal price to the gamers while they charge a premium from game developers. These companies know that developers will only develop their games on the consoles which has many gamers attached to and hence, to proliferate their consoles to the gamers, they subsidize it considerably.

Figure 13 is a comparison of traditional pricing and pricing for a two-sided market (Einsenmann, Parker, & Van-Alstyne, 2007)

![Diagram](image)

**Figure 13: Traditional pricing model**

In a traditional pricing model, firms price the products to get maximum value depending on the demand curve (Einsenmann, Parker, & Van-Alstyne, 2007) as illustrated in Figure 14.
However, things change when setting up pricing for multi-sided markets, where the demand curves are not fixed but instead are affected by the network effects. Efficient pricing on one side of the market can push the demand curve of the other side to the right.

In Figure 15 there are examples of some Multi-sided platform with the sides getting subsidy (Parker & Van Alstyne, 2005):

![Diagram of Two-sided Market Pricing Model]

**Figure 14: Two-sided market pricing model**

<table>
<thead>
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<th>Product category</th>
<th>Market 1</th>
<th>Intermediary</th>
<th>Market 2</th>
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<td>Document reader*</td>
<td>Adobe</td>
<td>Document writer</td>
</tr>
<tr>
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<td>Consumer credit*</td>
<td>Issuing bank</td>
<td>Merchant processing</td>
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<td>Operating systems</td>
<td>Complementary applications</td>
<td>Microsoft, Apple, Sun</td>
<td>Systems developer toolkits*</td>
</tr>
<tr>
<td>Plug-ins</td>
<td>Applications software</td>
<td>Microsoft, Adobe</td>
<td>Systems developer toolkits*</td>
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<tr>
<td>Ladies' nights</td>
<td>Men's admission</td>
<td>Bars, restaurants</td>
<td>Women's admission*</td>
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<td>Color UHF, VHF, HDTV*</td>
<td>Sony, Philips, RCA</td>
<td>Broadcast equipment</td>
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<td>Content*</td>
<td>Magazine publishers, TV,</td>
<td>Advertisements</td>
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<td>radio broadcasters</td>
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<td>Game engine/player</td>
<td>Ubisoft, ID, valve, electronic arts</td>
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<td>Buyers*</td>
<td>E-Bay, Christie'S, Sotheby's</td>
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<td>Content*</td>
<td>Real audio, Microsoft, Apple</td>
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<td>Searchers*</td>
<td>Google.com</td>
<td>Marketers</td>
</tr>
<tr>
<td>Stock exchange</td>
<td>Equity purchasers*</td>
<td>NYSE, NASDAQ</td>
<td>Listed companies</td>
</tr>
<tr>
<td>Home real estate</td>
<td>Home buyers*</td>
<td>Real estate agents</td>
<td>Home sellers</td>
</tr>
</tbody>
</table>

Notes. This table shows how one side of a two-sided network market receives a discounted, free, or even subsidized good (indicated with *). In general though not always, Market 1 can be interpreted as the user/consumer market and Market 2 can be interpreted as the producer/developer market. We provide a test for which side receives the free good below.

**Figure 15: Example of multi-sided platform, showing the subsidy side**
2.4. Intellectual Properties

Intellectual properties (IP or patents) play a critical role in multi-sided platform; on one end they can be boon by creating significant barriers to entry and hence have competitive advantage for the platform providers but at the same time this acts as a hindrance in attracting innovative complementors, if not managed properly. This is particularly important if the platform provider is also one of the supply side users of the platform and hence is one of the competitors of complementors and partners.

Success of any digital platform not only depends on the platform provider but also, more importantly, on its attractiveness to pull innovative developers; developers who can create the killer applications. To develop on the platform, at times, these developers will have to expose some of their code and patents and it is the responsibility of the platform providers to protect these IPs. The application developers need to be assured that their idea will not be stolen by anyone so they can work freely on platform while creating innovative applications. They also need be assured that the platform owner will not copy these applications in future, when these platform providers are also competitors of the application developers. Unless the platform providers are able to protect the IP of the application developers, it will not be easy to attract these developers in the platform.

Another important aspect of any platform evolution is the absorption of developer’s solution into the platform. For example, if on SAP’s ByDesign platform one of the application developers comes up with an application that can play a significant role to increase the robustness of the platform itself, SAP will be inclined to absorb this application into its platform. This enhancement of the platform can also act as a catalyst in attracting other applications developers towards its platform, which will help to enhance the complete ecosystem. However, the platform provider (SAP in this case) should need to ensure that it does not violate IP of the application developers before absorbing the application and should also incentivize the developer properly, either through up-front revenue or continuous royalty. There is also an option of buying the application developer’s company itself, which will also ensure exclusivity to the platform provider.

IP can also become the strongest and the weakest point of platform network. Having patent rights can be a key differentiating factor for platform compared to other platforms. However, at the same time, lack of key patents can create dependency on other players; either on the rival
platforms or even on the complementors. It is not a surprise that Google recently acquired Mobile phone division of Motorola just to ensure that it has control of patents that have the potential of making it competitive against the likes of Apple, Samsung, Nokia etc.

2.5. Innovation of the ecosystem

"Platform ecosystems co-create the platform's value proposition and supports its market adoption as more complementors join the ecosystem to supply complementarities, the more valuable the platform becomes to consumers due to a greater variety of choice. This poses new requirements on managing innovation in open platform environments" (Scholten & Scholten).

The main ideas for innovation often come from outside the platform, i.e. from the complementors. The role of platform owner is to encourage these complementors to innovate by providing them with a structure and mechanism where they can work on their full potential and also by providing them with the incentives to innovate (Eisenmann, Parker, & Van-Alstyne, 2007).

Innovation in a platform ecosystem comes from two sources: innovation from the application developers in developing the best applications for the platform and the innovation of the platform itself, primarily in making it more robust, easy to use and attractive to the developers and the users.

2.5.1. Innovation of the platform

"The first prerequisite for control of external innovation is the actual technical ability [of platform] to do so" (Scholten & Scholten). Unless the platform itself is stable enough it will not be able to attract the complementors to develop on it. The platform should also provide innovative features that can make the whole ecosystem more attractive and competitive. Some of the examples of platform innovation are in-memory database (HANA) in SAP ByDesign, superior user interface design in the case of Apple etc. Since platform is an integral part of every solution that the platform provider and its partners offer to the customer, it is imperative that it keep on evolving and innovating. Another aspect of platform innovation is the capability to selectively absorb critical partner solutions to ensure these solutions are also available to other partners as well.
Platform innovation plays an important role in ensuring differentiation of the platform from competitors. Since most of the application developers generally develop applications for multiple platforms, the attractiveness of the platform, both in terms of robustness as well as user interface design, is an important differentiating factor and increases the value proposition of the platform.

Innovation also plays a key role in driving down the cost of the platform which can help to increase the penetration and also, sometimes, the margins. By using open source, such as Linux, the platform providers can prevent themselves from using expensive technologies in their platform and hence can provide the platform to the users at significant reduced cost as compared to competitors.

2.5.2. **Innovation of the complementors**

“We find that competition among application developers reduces openness and innovation while competition among platforms has the opposite [effect]” (Van Alstyne & Parker, 2008). A platform provider needs to provide incentive to partners to innovate. Creating innovative products, at times, requires investment by the partners and platform provider should provide that cushion. The platform provider needs to ensure that it will provide sufficient time and resources to realize returns.

Platform providers should also ensure that they provide required tool kits, APIs and required insight of the underlying platform to the application developers. They should expose the platform *just enough* so they have a balance of not losing the critical platform knowledge but at the same time giving sufficient information to the application developers so they can innovate on top of the platform. Platform providers should also have proper mechanism in place to selectively incentivize developers for their innovation rather than putting them under a common umbrella.

As mentioned earlier, protecting the IP rights of the developers also plays an important role in driving innovation in the platform. These innovations help to increase the value of the platform and are most important for network platform evolution.
2.6. Cannibalization

"New or reformulated products acquire their sales revenue from three sources: (1) new consumers who were not previously [the] buyers of the product type, (2) consumers of competitive brands, and (3) consumers of an existing company brand who switch to the new or reformulated brand or product" (Kerin, Michael, & Rothe, 1978). The last point above is referred to cannibalization as it leads to loss of sale of the old product.

Cannibalization is specifically an important aspect for the incumbent companies, who are able to sell their legacy products to a large segments of customer and are now coming up with new technologies that compete against these legacy products. The biggest mistake these companies commit is that of not adopting this new technology, to ensure their existing products are not killed. One of the classic examples of such company is Kodak. Kodak's business model, which was largely dependent on film rolls as the prime revenue stream, prevented it from adopting digital photography, which lead to a significant loss of the market share. It is an irony that Kodak invented digital photography but was never able to pursue it for the fear of cannibalization of its existing roll based cameras.

Nokia faced similar situation recently when its Symbian based smart phones were not able to compete against the likes of Apple and Google, primarily due to lack of vibrant application platform. However, Nokia decided to go away with Symbian OS and went with Windows Phone platform with Microsoft. By doing so, though Nokia will be cannibalizing its OVI market place and also huge range of Symbian based phone, but will hope that it can re-invigorate itself in the business of smart phones, where it is lagging considerably.

Apple is a prime example that has gained significant advantage by fearlessly not worrying about cannibalization and always strives for the best products. Apple cannibalized its products many times in this last decade and by doing so gained tremendous market share. It first cannibalized its most successful product, iPod, by coming up with iPhone that inherently has all the features of iPod. iPhone was a huge success and helped to take the company to the next level. Then it came up with new series of ultra light laptop series, MacBook Air, which directly competed with its successful laptop range, MacBook Pro. Finally, it launched its tablet, iPad in 2010, which cannibalized its laptop business. Apple has shown that it is important for the company to reinvent itself by coming up with new innovative products and not to worry about the cannibalization of old products.
One thing that every company should remember is that the customers will always go for the best solution and it is important not to be short sighted by preserving out dated technology for the fear of cannibalization. As it is rightly said, it is better to cannibalize yourself than being cannibalized by the competitor.

2.7. Multi-homing

"Customers on at least one side of a multisided market often belong to several different networks. This is known as multi-homing” (Evans, Hagiu, & Schmalensee, 2006).

Multi-homing is directly related to the cost associated to own multiple platforms. “Homing costs comprise all the expenses network users incur – including adoption, operation, and the opportunity cost of time – in order to establish and maintain platform affiliation. When users make a home on multiple platforms, they increase their outlays accordingly” (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006).

For example, most of the PC users generally tend to use only one operating system, i.e. either Windows or Macintosh because owning multiple operating systems is expensive and also requires additional operating knowledge. Hence, the multi-homing costs are high in case of PC operating system and once user adopts a particular operating system, the likelihood of him using another operating system is very low. On the other hand, it is much easier for the shoppers to carry multiple credit cards in their wallets to do the purchasing, i.e. the multi-homing cost is low in this case. Similar is the case of shopping malls; the shoppers generally tend to visit many malls to do their shopping and the cost associated to shop from different shopping malls is very low.

“Multi-homing by one side of the market relaxes platform competition for that side and intensifies it on the other” (Evans, Hagiu, & Schmalensee, 2006). Multi-homing cost creates user stickiness and helps the platform owners to retain users in its platform. It is generally governed by the cost of acquiring the underlying platform, associated complementors to the platform and the knowledge to operate it. Since PC operating systems are expensive, are directly linked to the associated hardware and require skills and trainings to operate, the multi-homing costs are significantly higher. While in case of credit cards, since users can easily subscribe and use them, multi-homing costs are lower.
Multi-homing provides a significant competitive advantage to the incumbent players as it creates barriers to entry against the new entrants. These incumbent companies should try to increase the multi-homing costs to ensure that they can keep the customers on their platform. To the contrary, a new entrant (or a company losing market share) should try to reduce the multi-
homing costs to increase penetration. For example, Nokia and Microsoft as they are trying to jointly enter smart phone business with Windows Phone operating system, should try to incentivize the existing application developers, who are already homed to Apple iOS or Google Android, to port their applications on this new platform. On the other hand, Apple or Google will try to increase the multi-homing costs so application developers will continue to stick to their network.

There are many ways in which a new player can reduce multi-homing costs. Firstly, it needs to ensure that applications developers can easily port their applications from other platforms to the platform of the new entrant. This can be done by providing sufficient tools, usable and unambiguous APIs, trainings and appropriate exposure to the internal features of the platform. Easy adoption by minimizing transaction cost and ecosystem fairness where the platform is transparent to all the stakeholders and partners also play a key role in reducing multi-homing cost for the developers.

On the demand side user, multi-homing cost can be reduced by providing monetary incentives to the early adopters by either providing innovative business models such as “freemium” or by reducing the cost of the hardware equipment. Most of the gaming console providers sell their console below the cost price to accelerate customer adoption and then make money by selling games.

On the other hand, incumbent companies can increase the multi-homing cost by influencing standards and fixing them in their favor. For example, JVC was able to push its VHS video cassettes against Sony’s Betamax by influencing standards. Also, multi-homing can be increased by creating an integrated solution with dependencies on other players in the platform. For example, ERP companies can create modular CRM solution that can easily plug-in with HCM, Finance and SCM solution and hence can increase the multi-homing cost for its users.

2.8. Exclusivity

“Securing users’ exclusive affiliation – that is, their agreement not to affiliate with a rival platform – can accelerate a platform’s growth” (Armstrong & Wright, 2005).

Exclusivity is a double-sided coin; on one end it helps the platform providers in getting the best partners exclusive to its platform and creates significant differentiation while on the
other end it inhibits some of the partners from joining the platform as it prevents them from developing on the rival platforms. Marquee users with exclusive contracts help to increase the value of the platform (Rochet & Tirole, 2002). For example, the gaming player Zynga was able to pull in huge number of users to the Facebook social networking platform and hence was able to increase its value proposition as compared to other social networking gamers. “However, to gain exclusivity, platform intermediaries typically must offer price concessions to users. Specifically, the intermediary must compensate the user for foregone gains from trading on other platform, less multi-homing costs avoided” (Eisenmann, Parker, & Van-Alstyne, 2007).

Giving the partners rights to develop the solutions in the rival platform, hence non-exclusivity, fuels innovation in the platform. Holding these partners to one platform cannot necessarily create an innovative platform, as these people will not be exposed to developments happening in other platforms. For example, Microsoft’s policy of licensing Windows has spawned a greater diversity of PC designs than Apple has been able to achieve as proprietary provider of Macintosh computers (Eisenmann, Parker, & Van-Alstyne, 2007). Sometimes, platform owners license their innovations to other rival platforms not only to get additional income but also to propagate it and make it popular or standardized.

Platform providers can drive exclusivity by having strategic tie-ups with other companies and providing them with incentives for exclusivity. Recent decision of Nokia to create smart phones exclusively on Microsoft Windows Phone platform came after Microsoft promised to give Nokia the most favored status and exposure to its platform. Nokia can leverage the openness of the platform to get significant knowledge and gain strategic advantage of other players. “Similarly Microsoft has always given most favored status to the PC OEM who customized their hardware for Microsoft’s Windows operating system” (Evans, Hagiu, & Schmalensee, 2006)

2.9. Platform Control

Platform control refers to various regulatory and strategic rules that the platform owners put in place on their platform. These include the degree of openness (or closeness), quality control, revenue streams, business model, platform technologies, whitespaces and no development areas, APIs, rewarding the external developers, analytics etc. It is the responsibility of the platform provider to ensure that all the efforts put into platform evolution are in sync with its over-arching
corporate strategy and all the parties are working in synergy to increase the overall value of the platform. Below are the details of some of the platform control factors which platform owners should be aware of:

- **Open or Close:** Degree of openness refers to how open the platform is to the external users. Figure 17 illustrates examples of degree of openness of some of the popular platforms (West, 2003) (Eisenmann, Parker, & Van-Alstyne, 2007)

<table>
<thead>
<tr>
<th>User Side #1</th>
<th>Linux</th>
<th>Windows</th>
<th>Macintosh</th>
<th>Xbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>End User</td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>User Side #2</th>
<th>Linux</th>
<th>Windows</th>
<th>Macintosh</th>
<th>Xbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer</td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
<td>Closed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Provider (hardware/OS bundle)</th>
<th>Linux</th>
<th>Windows</th>
<th>Macintosh</th>
<th>Xbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscribed</td>
<td>Open</td>
<td>Open</td>
<td>Closed</td>
<td>Closed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Sponsor</th>
<th>Linux</th>
<th>Windows</th>
<th>Macintosh</th>
<th>Xbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>Closed</td>
<td>Closed</td>
<td>Closed</td>
<td>Closed</td>
</tr>
</tbody>
</table>

Figure 17: Examples of degree of openness

As seen from above some of the platforms are very close while others are open. There are pros and cons of both the sides and the platform owner should ensure he takes these in to account before creating a protocol for openness.

- **Quality Control:** Platform owner ensures how the quality is controlled in the platform; having too much control can distract external developers while too little can lead to lower quality applications.

- **Revenue streams and business model:** The platform owner also sets the rules revenue streams: who should be charged and how much and what are the different sources of revenue, and the business model, subscription or license, and these are made known to all the participants of the platform. These decisions have significant impact on attracting users to the platforms as well as keeping the financial accounts of the company healthy.
• **Platform technology:** Underlying platform technology plays an important role in any platform evolution and the platform owner drives it. The platform owner controls technical aspects of the platform such as programming language, database technology, development tool-kits etc. (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006). Having a proprietary technology will reduce multi-homing but will also not attract many developers (and will also require training for the new developers) while an open technology can attract many developers but can lack differentiation from other platforms.

• **Whitespaces and no development areas:** The platform owner also controls the areas that are open for development by external developers and those which are restricted. The platform owner should not lose control of its core competencies by allowing external developers to develop everywhere in the platform. For example, SAP develops all the basic modules for its ERP solution while it opens the customization part to the external developers. Defining whitespaces also gives clear direction to the developers and helps them to develop expertise in those areas. However, having too much governance can inhibit innovation in the platform and the platform owner maintains this balance.

• **Relationship among the partners:** Relationship among the partners is a key aspect of any network platform ecosystem and is driven by the platform owners. Questions such as whether one external developer can develop on top of the application developed by the other external developer, whether partners cross sell each other’s applications, how the revenue will split in such cases etc., require concrete answers right at the beginning and the platform owners set answers to these questions. Also, it is sometimes required to absorb partner’s solution into the core platform. Identifying such solutions and ensuring that the partner is properly incentivized is also the duty of platform owners.

• **Mechanisms to reward innovative developers:** Platform owners also set up mechanism to encourage innovation in the platform ecosystem by rewarding the most innovative developers, providing information of their applications’ performance and at time, taking regulative actions (Scholten & Scholten). Success of platform is directly linked to the
success of parties associated with it and platform owners ensure that all the parties associated with it work in synergy and grow together.

Platform owners ensure that all the parties are abiding to these rules and also help in resolving any conflicts arising due to them.

2.10. Bundling and Envelopment

"Envelopment refers to the entry by one platform provider into another’s market by bundling it’s own platform’s functionality with that of the target’s so as to leverage shared user relationships and common components. Dominant firms that otherwise are sheltered from entry by standalone rivals due to strong network effects and high multi-homing costs can be vulnerable to envelopment attack" (Eisenmann, Parker, & Van Alstyne, Platform Envelopment, 2010). The same is also described by above authors, using examples, in Figure 18.

<table>
<thead>
<tr>
<th>Attacker</th>
<th>Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conglomeration Attack</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable TV system operators</td>
<td>Local phone companies</td>
<td>Attacks have been reciprocated.</td>
</tr>
<tr>
<td>NTT DoCoMo mobile phone service</td>
<td>Traditional credit cards</td>
<td>DoCoMo allied with Sumitomo-Mitsui (Japan’s 2nd largest credit card company) to offer mobile phone-based payment services.</td>
</tr>
<tr>
<td>Apple iPhone</td>
<td>Smart phones from Nokia, Motorola, etc.</td>
<td>iPhone bundles iPod functionality into a smart phone.</td>
</tr>
</tbody>
</table>

| Intermodal Attack | | |
| LinkedIn’s online professional network | Monster.com’s recruitment platform | LinkedIn has added job listings, and Monster has added social networking functionality. |
| Blockbuster Video | Netflix’s DVD-by-mail platform | Blockbuster added a mail-delivery option in 2004. |

| Foreclosure Attack | | |
| Microsoft’s Windows | RealNetwork’s media player | Windows Media Player displaced RealPlayer, but Microsoft paid RealNetworks $760 million to settle an antitrust lawsuit. |
| eBay’s auction marketplace | PayPal’s email payment service | eBay acquired PayPal after eBay’s in-house service, Billpoint, failed to displace PayPal. |
| Microsoft Office | Adobe Acrobat PDF writer software | Office 2007 adds a “save as PDF” option, the core function of Adobe’s $299 Acrobat writer software. |

Figure 18: Examples of envelopment attacks
Microsoft launched an envelopment attack on Real Networks streaming media platform, with 96% market share in 1998, by bundling its Windows Media Player free of cost into its Windows OS. It again did the same thing against Netscape when it bundled its Internet Explorer in its OS. Both of the above attacks led to significant loss of market share of the incumbent companies and Microsoft was able to increase its customer base (Eisenmann, Parker, & Van Alstyne, Platform Envelopment, 2010).

Combining features in a single product reduces the transaction costs for the consumers and can create additional revenue of the reseller. Car sellers also sell car tires with the car, hence bundles them together into one product (Evans, Hagiu, & Schmalensee, 2006).

Bundling also helps to sell the products that are not in big demand by putting them together with the ones that are high in demand. For example, cable providers always provide high demand channel by bundling them with those that might not be sold separately.

2.11. Summary

In this chapter we looked at concepts that are extremely important while defining the strategies of the network platform business. We summarize some of these, and their effect on the platform, using a very high-level system dynamics causal-loop diagram (Figure 19) having three sides: users, external developers and advertisers (marked in red).

In the diagram, we can see couple of same side network effects (marked in green), i.e. between the users and the external developers. Similarly, we can also see a cross sides network effect (marked in orange) between the users and the external developers. The diagram also shows various other parameters, described in this chapter, and their effects on the platform. For example, charging by the platform owner, though increases its revenue, has negative impact on on attracting the users as well as external developers. Similarly, number of users and popularity of the platform attract more advertisers towards it, which increases the revenue of the platform owner. This increase of revenue can have a positive impact on training and tools provided to the external developers, which increases the number of these developers. Similarly, increase of charging by the external developers for their applications, though increases their revenue, has negative impact on number of users adopting the platform. This can lead to downfall of the overall platform.
As most of these parameters are governed by the platform owner, it is really imperative that he takes judicious decisions in defining the roles and strategies of the platform ecosystem. These strategies will be discussed in the next chapter.
Chapter 3

Strategies for Network Platforms

A strategy delineates a territory in which a company seeks to be unique.
- Michael Porter

After understanding the key concepts of network platforms in the previous chapter, in this chapter we will develop the key strategies for the evolution of these platforms. This chapter is organized into ten strategic questions that every company working in the area of platform network business faces. These questions help us to formulate the strategies needed for a successful and vibrant platform ecosystem.

3.1. Should the platform sponsor be a true multi-sided platform or a reseller?

The first question in developing the strategy for network (or multi-sided) platforms is to ascertain that a network platform is really needed by the business. Multi-sided platforms are not always successful. In recent years there has been a trend in the industry of creating network platforms, as they are perceived to be the silver bullet for success and popularity. However, many such platforms have perished or are perishing. It is not long ago Myspace.com, now rapidly closing down, was considered to be the most popular social networking platform. A similar story is RIM’s Blackberry platform that is fast losing its customers.

Many successful companies have chosen to not to be a pure platform or a mere reseller and have been immensely successful. The biggest two examples are Apple and Amazon, which are considered as the two most innovative companies of this generation. Apple, through its iTunes platform, buys the music by paying publishers royalties and distributes this music to customer who wants to buy it. Hence, from the definition of multi-sided platforms in earlier chapter, since the user is not directly interacting with the seller (in the case the music buyers and
record companies), it is not really a multi-sided platform but instead a single-sided platform working on a seller model (Evans, Hagiu, & Schmalensee, 2006). This is also the case with Amazon; it acts both as reseller and as platform owner. It intelligently buys the commodities having a short tail (i.e. those popular items which need not be stored in inventory for long) and sells them directly to the consumer on the reseller model. On the other hand, for the commodities having a long tail (specialized goods which are not sold frequently), it connects the buyers and sellers through its online platform and gets a percentage of the transaction.

Having a pure matchmaking platform on one hand requires minimum initial cost but also generates less revenue, especially when there is not much critical mass on the platform. On the other hand, the reseller model is more risky and also requires more initial investment for inventory but is also generates more revenue by having huge economies of scale by aggregation. Hence, stores like Wal-Mart are really not platforms but are instead resellers that are selling the products bought from the manufacturers to consumers, as there is more incentive (profit) in doing business that way. Though they can become a pure platform if they just rent the space and allow the sellers to directly sell and maintain the products in the store (Evans, Hagiu, & Schmalensee, 2006), their margin will be considerably less in that case. A cinema hall, since the movie watchers are not directly paying to the producers of the movie, it is not a pure multi-sided platform, though it might create network effects\(^2\) (Hagiu & Wright, Multi-Sided Platforms, 2011). Many TV cable companies buy the content before they sell to consumers and thus the cable entertainment model is not a multi-sided platform. However, as started by HBO, if the users can directly buy the content from the content creators through the cable’s TV platform, it will be considered to be one. However, cable companies might not necessarily allow the users to do that since that will prevent them from bundling not-so-popular content along with the popular ones, and hence they prefer to be a reseller.

It is important that companies know which model works best for them and not blindly invest in multi-sided platforms.

\(^2\) Viewers are inclined to go to cinema halls that show more movies (Hagiu & Wright, Multi-Sided Platforms, 2011)
3.2. Which sides should participate in platform and what are their roles?

Next is to identify who all should participate on the platform. It is very important to identify various sides of the multi-sided platform from the beginning, so all the efforts can be developed in the right direction. Frequently, this decision will also be driven by the corporate strategy of the company and the level of vertical integration the company prefers. We have seen in the platform industry that rival companies may choose different strategies and have distinct multi-sided networks. Apple, for example, operated with a two-sided platform: the external developers and the Apple users. It adopted a vertically integrated strategy, ensuring the hardware is developed in-house. Microsoft had a three-sided platform: the external developers, the users and OEM hardware companies. It always ported its software on the hardware of the OEM and had strategic relationship with them, working on a licensing model (Evans, Hagiu, & Schmalensee, 2006). Apple’s decision of being vertically integrated has been largely driven by its corporate strategy of having tight control on its eco-system. By doing so they have ensured high quality and design aesthetics. Microsoft, on the other hand, has always been a software company and has instead concentrated its effort in building high quality software applications and leaving the hardware to OEMs.

Another recent example of companies in similar businesses adopting different multi-sided platform strategy is Google with Android versus Apple with its iOS platforms. As expected, Apple has only two participants on its platform: application developers and the mobile users, while Google also has handset makers. Apple’s stress on high quality products that can easily integrate into its software has largely dictated its strategy. However, this has also put the onus of hardware innovation on it, and it is currently facing strong competition from Samsung, HTC, etc.

Facebook has added a new partner on its network in the form of advertisers, taking advantage of its immense popularity, not previously seen in other rival social networking sites.

It is therefore really important for the managers of network platform strategies to ensure they know who comprises the various sides of the platform so they can manage them efficiently.
3.3. Are there strong network effects in the platform?

It is very important to find out whether strong network effects work on the chosen platform. There are many platforms that seem to generate network effects but in reality those network effects do not exist. For example, an online brokerage site does seem to be a network platform but does not necessarily have any network effects; more users will not join the platform if there are more brokers. Similarly, a particular mobile technology such as CDMA does not necessarily have strong network effects as a CDMA subscriber does not need another a CDMA phone to make the call as cross functional calls are possible. Similar is the case with Gmail; though email system in general is driven by network effects but a particular email system, such as Gmail, does not have strong network effects; it does not necessarily need another Gmail user to communicate on the email, unlike a social networking site such as Facebook which is driven by strong network effects as cross communication across different social networking sites is still not possible (or at least not popular anyway).

Secondly, it is also important to figure out whether network effects are sufficient to tip the market in the favor of platform and create a winner take all market. Even if there are network effects in the platform it might not be sufficient to tip the market in the favor of platform provider. For example, a Fax system has strong network effects, as more users buy the fax, the value of the platform will increase but it cannot take a single company to be WTA as there is hardly any product differentiation with rival platforms. On the other hand, Microsoft, with its strong network effects and partners almost created a winner take all platform for decades when it was the dominant platform in the PC business.

Hence it is really important to think carefully about the magnitude and significance of network effects in the industry. “Who buys a car just because other people bought it? Don’t let the idea of positive feedback carry you away” (Shapiro & Varian, Information Rules: A Strategic Guide to the Network Economy, 1998). Also, it is important to find out whether the market will tip or not, as not all markets lead to winner take all. Sometimes even though the market does tip in a particularly country, it does not necessarily tip worldwide; eBay has become the number one auction site in the US with more than 80% market share and can be classified as winner take all leader in the US but it has less than 10% market share in China where Taobao is the market leader.
3.4. How to attract partners to the platform and how to retain them?

The next step in any network platform, once the sides are identified, is to solve the chicken and egg problem, i.e. to incentivize the parties to participate in the platform. It is important to solve this catch-22 problem and platform providers can use multiple ways to get the platform up and running. First, they should identify the side that is critical to the platform to drive the network effects. This side should be attracted to participate in the platform at the highest priority, as failure to attract them will never pull other sides towards the platform. For example, if there are no women in the dating site, the likelihood of men joining the same is very small. Hence, women should be the first who should be brought on board on dating and matrimony platforms such as Match.com or eHarmony.com. Similarly, for a professional networking platform like LinkedIn, the recruiters will join the platform only when they know that there are users already associated with it. Hence, it becomes extremely important to identify the sides that are critical to the platform, even though they might not be the revenue streams of the platform.

Once the sides are on board, managing their interests effectively so that they stick to the platform becomes equally important. Network effects have cross dependency and if any of these sides are ignored, the demand of the platform will totally vanish. Who would like to develop applications on the mobile platform that does not have many users? Hence, it is important that the managers of network platform are able to figure out both, how to get all the parties on board and also how to keep them attached to the platform. It is imperative that the interests of various parties attached to the platform are identified and fulfilled. If application developers on a mobile platform are not getting proper revenue share of their applications or if they feel that their applications are not properly advertised on the platform, they might not want to participate in the platform. Similarly, if the mobile users find that the applications on the application store are too expensive or too low in terms of quality, they might exit the platform as well. For example, Amazon has been able to build the trust by displaying all the products, irrespective of whether they are sold by them (remember they also are a reseller) or by their partners on the same page and unedited customer reviews without any discrimination and hence are able to come up with the trust of both sellers and buyers. The same is illustrated in Figure 20.
<table>
<thead>
<tr>
<th>Price + Shipping</th>
<th>Condition</th>
<th>Seller Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25.99 + $26.23</td>
<td>New</td>
<td>Christie's O Toy Outlet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fulfillment by Amazon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seller Rating: 93% positive over the past 12 months. (2,218 total ratings)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Stock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- $3.99 Overnight Shipping: Get it Wednesday, December 28 (order within 3hr 20min)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Free Two-day Shipping: Get it Thursday, December 29 (order within 7hr 50min)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic shipping rates and return policy.</td>
</tr>
<tr>
<td>$26.23 + $26.38</td>
<td>New</td>
<td>Amazon.com</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CheaperThan Catalogs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fulfillment by Amazon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seller Rating: 100% positive over the past 12 months. (92,960 total ratings)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Stock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- $3.99 Overnight Shipping: Get it Wednesday, December 28 (order within 1hr 50min)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Free Two-day Shipping: Get it Thursday, December 29 (order within 2hr 20min)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic shipping rates and return policy.</td>
</tr>
<tr>
<td>$26.38 + $5.00</td>
<td>New</td>
<td>BestService</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seller Rating: 95% positive over the past 12 months. (58,265 total ratings)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Stock. Ships from MO, United States.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic shipping rates and return policy.</td>
</tr>
</tbody>
</table>

Figure 20: Amazon payment platform

Similarly, Google clearly demarcates the paid advertisers on its search engine without discriminating on the search results, as seen in Figure 21, and hence is able to develop the trust of the users searching on its platform.
For the companies that are both platform providers as well as application developers, i.e. are competing against the other players on the platform, it is even more important to ensure that their interests are served properly. For example, Salesforce.com sells both its own ERP applications as well as the applications of other external developers on its Force.com platform, it is important for Salesforce.com to ensure that it is playing a fair game with the external developers. In some cases when one of the external developers wants to invest a considerable amount of money on innovating its application, Salesforce.com might also want to assure him that it will not develop competing applications in immediate future. Some platform providers also share their own applications roadmap with the external developers so latter can get aware of which applications are bring developed by the platform provider and can selectively refrain themselves from those areas.
Not forcing exclusivity contracts on external developers might also be a useful strategy to attract innovative external developers to the platform. If the developer knows that he can port his application on multiple platforms and hence can multiply his revenue stream, he might be more inclined in joining the platform. Sharing R&D costs with the developers, providing appropriate price to them if their application needs to be absorbed in the core platform, providing them access to the platform provider's sales channel etc. are some of other ways in which platform provider can retain the partners on its platform.

3.5. Governance, who should rule and how much?

The platform owners set the rules of the platform; some of the important questions that need to be answered by the platform owners before launching their platform in the market are:

- How open or closed should the platform be?
- How much should it be vertically integrated?
- What quality mechanisms need to be in place to ensure quality of the applications sold through it?
- Who will control the IP and patent rights of the applications sold through the platform?
- What will be the business model, what are the possible revenue streams and how much revenue will be shared among different stakeholders?
- Will the platform force exclusivity on the developers?

Some of the answers of the above questions are also decided by the corporate strategy of the company. Apple keeps its platform closed and very controlled and has ensured quality of products by doing that. However, at the same time, it lost most of its competitive advantage to Windows when Microsoft decided to open its PC platform and build application market places. On the other extreme, Linux has been too open as a platform and was not able to generate too much revenue from it\(^3\). The Linux platform is available for any one to change and there is no control on its quality.

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\(^3\) Though some of the companies such as RedHat are still making revenue from Linux systems
Samsung has a very vertically integrated platform, right from the semiconductor chips all the way to the OS\textsuperscript{4}, while Google just concentrates on its Android platform and allows other to integrate their products on it. “Key advantage of vertical integration is that it ensures key sources of consumer value are available on the sponsor’s platform, it helps to create in-house expertise and deny them to competing platforms” (Einsenmann, Parker, & Van-Alstyne, 2007). On the other hand, allowing strategic partners and complementors innovating in the area of their respective core competencies leads to fast innovation and quick delivery of products in the market. There is no surprise that Apple, a highly vertically integrated company, is still not able to get its 4G-LTE phone in the market while rival competitors have launched it a while ago.

Platform owners also need to ensure how much quality control mechanism they will put in place in their ecosystem. Apple has taken a walled garden approach; it puts a stringent quality control mechanism on all the applications sold through its application store. On the other hand, Android lets developers put their application without much inspection. To increase the overall value proposition of the platform, it is important that the platform providers place some sort of quality control. The fall of video game industry in 1982 when the leading console provider Atari lost the control on the independent game developers for its VCS 2600 console, is a classic example of not putting quality control over the applications sold on the platform and paying heavily for it (Hagiu, Wii Encore, 2011). Nintendo on the other hand decided to put a tight control over the games sold on its platform and hence was able to regain the confidence of the customers.

Some of the platform providers charge the application developers to ensure the quality of the applications sold through it; this is generally the part of the overall fees that application developers pay to the platform providers. No matter how they do it, it is important to have a quality control mechanism on the applications, else users might exit the platform.

Another important aspect of regulation of the platform is the control of IP and patents of the applications that are sold through it. Conventional wisdom says that platform owners should not control the IP right of the applications as this might inhibit the developers from investing money and resources to create innovative applications. However, sometimes it also becomes imperative for the platform providers to absorb some of the applications into the core platform to increase its own value proposition. In such cases, the platform providers should come up with

\textsuperscript{4} though Samsung develops majority of its phone on Android and Windows based OS, it also has its OS called Bada
up-front and transparent arrangements and compensate the developers appropriately either through payment or license mechanism instead of breaching the IP contract by developing duplicate applications themselves; this not only will lead to financial implications and litigations but will also hamper the image of the platform itself.

Coming up with appropriate business model and revenue streams are also important aspects of any network platform. Groupon, a group based discount platform that connects consumers to the merchants, takes a percentage from the transaction. Two similar online shopping platforms Amazon and eBay also have slightly different revenue streams. Though both Amazon and eBay control the payment on its platform and takes a percentage of the sale from the seller, eBay also charges seller for putting their products on the platform while Amazon does not. Video platforms operate on different business model; YouTube’s major source of revenue are banner ads and licensing deal with media players while the content is primarily free to the users, Metacafe, though also relies on banner ads for the revenue, it also pays the producers who license their video to attract them towards its platform (Hagiu & Yoffie, Brightcove, Inc. in 2007, 2011). There is no “perfect” business model of the network platform but there is one commonality; it should be able to incentivize all the parties associated with it and platform owners should ensure this. Also, a business model need not be static and can be changed at various phases of platform’s lifecycle. At the beginning, to attract the parties to the platform, platform provider can come up with different subsidies, which can be changed at the later stage.

The last topic on regulation is the contentious topic of exclusivity. “The impact of an exclusive contract between the upstream firm and one of the downstream firms on market performance depends on the strength of consumer preferences for the products of the two downstream firms and the relative size of the market segment for which the complementary consumption good is essential” (Chowdhury & Stephen, 2010). Having a “marquee” product exclusive to platform can lead to a significant growth of the platform; Apple came up exclusive contract for its iPhone with AT&T in 2007, which led to big churn of subscribers from other networks towards AT&T (Hagiu & Wright, Multi-Sided Platforms, 2011). Similarly, many cable satellite TV companies have tried to come up with exclusive contracts for TV shows, which have led to increase subscriber growth. On the other hand, exclusivity comes at the price for the platform providers as they play premium to the platform partner. Also, sometimes it can lead to a back-clash from the consumers and they can easily embrace a substitute, which can lead to
substitutes popularity. Some of the experts gives the exclusive contract of iPhone with AT&T the reason for the growth of Android, when mobile subscribers, especially those living in the areas of poor AT&T coverage or were price conscious, went for the substitute of iPhone and adopted Android. Hence, the platform providers should ensure a decent balance between exclusivity and non-exclusivity by considering the pros and cons.

“Although high quality content may allow a platform to extract greater rents in the event of exclusivity since it results in a greater competitive advantage vis-a-vis its competitor, it now also means that the cost of being exclusive relative to multi-homing may increase for the developer as it can no longer access and sell to a portion of the market. This latter effect turns out to dominate in many instances” (Hagiu & Lee, Exclusivity and Control, 2008)

3.6. How will the innovation be driven in the platform?

“The role of platform provider is not only to create innovation in the ecosystem but also to enable innovation through various associated parties. At root, platform owner needs to ensure that the consumer-perceived value of the composite solution is greater than the sum of its parts” (Davies, Brady, & Hobday, 2006).

Platform owners have applied several distinct types of control mechanism along with their external innovation process, including market regulative control, co-regulative control, restrictive control, sanctioned control, motivational control and informative control at different phases in order to steer external complementary innovation. Also, having a loose coupling with the core platform gives enough flexibility and cushion to the partners and drives them towards innovative applications (Scholten & Scholten).

Sometimes platform innovation becomes a mandatory pre-requisite for complementors’ innovation to have an effect to the end user. The technological evolution of video games is futile if the platform itself is not competent enough to support the high-end graphics. Similarly, if the mobile platform is not robust enough, even the best applications will not be able to pull in the subscribers. Platform owners should also look for complementing applications that can be absorbed into the platform to increase its overall value proposition for the users. For example, eBay decided to absorb the most popular online payment platform, PayPal, which tremendously increased the overall value of the eBay’s online market platform. Due to this vertical integration,
more sellers and users joined the platform and interacted through it. A similar example is of Microsoft’s high profile acquisition of Skype, which, though it was immensely popular, was not generating much revenue. Microsoft intends to incorporate Skype into its Windows Phone platform to provide Voice over IP based services to the end consumers along with the traditional voice services. SAP’s acquisition of Sybase and also development of its in-memory storage solution, HANA, are all examples of core platform evolution.

There are different ways in which platform owners drive innovation in their ecosystem. Google relies heavily on beta releases to test the acceptance of its innovative applications by the consumers before launching it in the open market. One such example is Labs feature of Gmail that has many small innovative features that consumers can turn-on depending on their needs and in turn Google gets direct customer feedback. Apple on the other hand follows entirely opposite strategy and ensures that the product is fully verified and tested before it is released to the customers; its strategy says that anything released with Apple’s logo should ensure highest possible quality and hence it does not rely on beta releases.

Platform owners should also come up with mechanism to acknowledge highly innovative partners. SAP did that by awarding the most innovative partners on its Netweaver platform and also coming up with SAP Developer Network (SDN) where these partners can interact with one another. Amazon and eBay tag their most performing sellers with star ratings, which help these sellers (and also the buyers) to differentiate themselves from the rest. “Netsuite offers technical and marketing support to its Select and Premier development partners while Facebook offers seed funding for any approved ideas” (Scholten & Scholten).

Finally, platform owners should also ensure that the partner’s vision and goals align with the overall strategy of the platform. Any incongruence in this can be detrimental in the over all strategy of the platform. If the platform favors a particular technology (Scholten & Scholten) or a business model as an over-arching rule, then complementors should be chosen accordingly. Also, platform owners should ensure that they drive complementors to the whitespaces that are not served by them and which can help platform owners to come up with high value integrated solutions. For example, Google, which is very strong in maps, can encourage its external developers to come up with innovative applications that can run on top of the maps. Having a minimum application overlap both between the platform owner and partners and also between the partners themselves, can help to provide a horizontal breadth of applications which will make
the platform even more lucrative to the user. ERP companies, for example, can generate
generalized applications into different segments (such as HCM, SCM, CRM etc.) and then can
persuade the external developers to develop specialized innovative applications on top it.

To summarize, it is really the imperative of the platform owners to drive both the
innovation in its core platform and also to provide conducive environment and guidance so that
the partners can also innovate on the platform in the right direction.

3.7. Pricing, who should be charged?
As discussed earlier, pricing is one of the key strategies of any network platform. “The goal is to
generate “cross-side” network effects: If the platform provider can attract enough subsidy-side
users, money side users will pay handsomely to reach them. Also, the presence of money side
users makes the platform more attractive to subsidy side user, so they will sign up in greater
numbers” (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006).

Before looking at the strategies on pricing, it is important to find the main revenue
streams of platforms. Below are some of the prominent revenue models used by multi-sided
platforms (Perset, 2010):

- **Advertising model:** The advertising model works best when the user traffic is
  significantly large or very specialized. This model involves search advertising, display
  ads, banner ads, email ads or selling user data. Google has mastered this model of
  revenue generation where it does not charge anything from user (hence creates a user
  mass) and gets most of its revenue from the advertisers.

- **Fee based model:** Some of the platforms charge users fees: either subscription fees or
  license fees. Microsoft charges the buyers license fees to use its products and applications
  while an on-demand ERP company such as Salesforce.com takes monthly (or sometimes
  yearly) subscription fees for its products. The latter model is gaining momentum with the
  advent of cloud computing and SaaS based services.
• **Brokerage model:** Many B2B, B2C or C2C platforms generate most of their revenues from either taking a portion of money from the transaction (i.e. commission) or charging the membership fees from the users. Payment systems such as credit cards also take money from the merchants on the transaction and from the buyers in the form of annual membership fees.

• **Voluntary donations:** Some of the platform such as Wikipedia, the online encyclopedia based on crowdsourcing, relies heavily on voluntary donations for its revenues. Open source platforms such as Linux or Mozilla do not have any fixed revenue stream—most of the revenue is generated from ancillary products.

We have highlighted that price discrimination among different sides is an important strategy for network platforms. However, the bigger question for platform owners is to figure out which sides should be charged and which should be subsidized. Below are some key recommendations for making these choices:

• **Subsidize the side that helps to generate revenue from the other sides:** If subsidizing one side will facilitate bringing substantial revenue from the other side, it should be subsidized. For example, Google does not charge users to search on its platform but generates substantial revenue from the advertisers.

• **Subsidize the side with high price elasticity:** If by increasing the price, users will leave the platform, it is worth to subsidize it. For example, Sony sells its video gaming console PlayStation at subsidized rates. Increasing its price will lead to gamers to move to rival platform. Yahoo historically did not charge any fees for its online auction site until 2001 and was second only to eBay. However, it lost 90% of sellers when it started charging them for listing their products on its platform (Evans, Hagiu, & Schmalensee, 2006).

• **Subsidize the side which demands high quality:** “It might sound counter intuitive but platform owners should charge the side which supplies quality to the platform and subsidize the one which demands quality” (Eisenmann, Parker, & Alstyne, Strategies for
Two-Sided Market, 2006). For example, most of the video gaming platforms charge high prices from the game developers while they charge less from the game users who buy them (Eisenmann, Parker, & Van-Alstyne, 2007). Similarly, many dating sites charge less from the women members but charge high prices from the male members.

- **Subsidize the side when it does not cost platform anything in giving it away:** For example, many software programs have zero per unit production costs and these can be subsidized to the users (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006).

- **Finally, platform users should decided whether they should charge both the sides of the platform or only one side:** Credit cards companies, for example, charge both the merchants (through transaction fees) as well as users (in the form of membership fees) while an online e-commerce site such as Amazon.com does not charge anything from the buyers.

As we saw above, pricing is arguably the most important strategy in any multi-sided platform business and should be explored carefully. Charging high process from the price sensitive side can lead to the downfall of the platform, while charging less from the money side can lead to significant revenue loss. The important thing is to charge the maximum from all the sides according to their Willingness to Pay (WTP) (Evans, Hagiu, & Schmalensee, 2006)

### 3.8. How to attack or defend your platform?

Depending on the life cycle the platform is in, it might need to either attack an incumbent platform to gain market share or defend its market share from new entrants. Hence it is really important for the platform provider to be dynamic on these strategies and ready to implement them as needed. For example, five years ago, Nokia was defending its Symbian platform from new entrants in smart phone space. However, now with its deal with Microsoft, it is planning to attack the established players such as Android and IOS.

Following are some penetration strategies that new entrants can use to gain market share:
• **Reduce multi-homing costs:** The first thing which any new entrant should do to attack existing platform rivals is to reduce multi-homing cost so users can join multiple platforms. Amazon has recently launched Kindle Fire at a considerable discount to not only attract new buyers but also to get existing tablet holders interested in it. Similarly, providing free tool kits and training can persuade application developers to develop applications on multiple platforms.

• **Develop converters:** "Converters modify one platform’s functionality to allow its users to interact with those of another platform. It can be costly as the expense is often borne by weaker platform’s user” (Einsenmann, Parker, & Van-Alstyne, 2007). Using these converters, new entrants can encourage users to use the other platform’s functionality on it and can be a useful strategy to boost initial attraction. For example, if some one is coming up with a new social networking platform, if they are able to figure out a way in which its member can directly interact with other members registered on Facebook platform, it might be able to pull in more users.

• **Develop on whitespaces:** New entrant should also look for the whitespaces and attack incumbents through them. Sometimes these solutions can be really niche and can be handy in getting the network effects going. For example, Doximity is a professional networking site only for doctors. If it is able to create a huge network of physician around the world who can interact with each other and share information freely, it might be able to challenge the likes of big player such as LinkedIn.

• **Leverage on core competency:** The new entrant, who wants to start a network platform but also have considerable experience in other industries, should also try to leverage their previous experience and use it in platform. For example, Barnes & Noble has significant experience in the books industry, and came up with Nook as a platform to sell e-books directly to the readers. Since they had a considerable knowledge of the industry, they were able to use it and create a successful platform. However, at the same time, companies should not be too focused in specific areas and should look for other possibilities as well.
• **Look out for weak points of rival platforms**: New entrants should also look for weak areas of their rival platforms and try to come up with solutions in those areas. Most of the time incumbents are cognizant of their weak areas but are forced not to address them due to various reasons such as high-level corporate strategy or business model. For example, Android being an open platform has caused security concerns for many business users and if Microsoft is able to leverage this weak area and comes up with highly secure easy to use applications on its Windows Phone, it might be able to attract those Android users.

• **Get marquee users**: Having a big user attached to your platform can help to create confidence in market about the credibility of the platform and also to drive it forward. For example, having an expensive clothing store in a new shopping mall can increase its value and can attract more shoppers towards it. “A platform provider can accelerate its growth if it can secure the exclusive participation of marquee users in the form of commitment from them to not join the rival platforms” (Eisenmann, Parker, & Alstyne, Strategies for Two-Sided Market, 2006). This marquee user can at times be a loss leader but can help to increase the overall value of the platform and can help to pull in more consumers.

• **Open platform and subsidize developers**: To get the critical mass attracted to a platform, it might be useful to open up the platform for the developers and also give them a subsidy to develop applications on it. Some of the platform providers also provide initial R&D cost and resources to provide incentive to the application developers for joining the platform. Some platform providers also give free subscription for months to attract users to the platform, which in turn kick-starts the network effects.

• **Advertise heavily and spread the word**: Ever wonder why Bill Gates and Steve Jobs talk about their products one year in advance and promote them? This is the way to ensure that consumers are confused about the market leader and hence prevents the market from tipping towards rival platform. Advertising online on websites, blogs, putting up road shows, demos etc. are effective ways to spread the word of the new
technology, ensuring that users are aware of all the options in the market (Eisenmann, Parker, & Van-Alstyne, 2007).

- **Platform Envelopment**: Platform envelopment provides a mechanism through which a new entrant can penetrate into existing market by bundling or combining various functionalities and increasing the overall value proposition of the product. As mentioned earlier in this document, Microsoft was able to penetrate the business of web browsers and media players by wrapping them into its windows operating system. Similarly, many mobile phone companies are slowly enveloping the market of digital camera manufacturers by integrating high-end cameras on their phones, enveloping the market of portable music players by providing this functionality on smart phones and even in the business of handheld gaming devices by providing these features on the mobile phone (Eisenmann, Parker, & Van Alstyne, Platform Envelopment, 2010). Envelopment provides a strategic way for companies to make its ways in to the market of incumbent leaders.

In the dynamic industry of network platforms, even the leaders cannot get complacent as they continuously defend themselves from the new breed of companies attacking them. Below are some of the defensive strategies that platform providers can use to defend their fort:

- **Increase multi-homing and switching costs**: As reducing multi homing costs are necessary to attack an incumbent platform, increasing it can help the leaders to defend it. Increasing multi homing cost will ensure that users are not able to use the rival platforms and are stuck to the platform of incumbent. Facebook is able to increase multi homing cost by persuading the users to put as much information as they can on its platform. Once the users have huge amount of information, in the form of contacts, photographs, recommendations etc. stored in the platform, the users will be less inclined to move to other rival platform.

- **Innovate the core platform**: One way platform providers can create differentiation is by continuously innovating their platforms. Incumbent players comes with huge experience
and if by using this experience they are able to create an innovative platform, they may be able to defend themselves.

- **Create stickiness through bundling and dependency:** Once the platform is able to attract users towards it, it should ensure that there is sufficient stickiness or dependency so that these users will not leave it. If SAP sells developers’ on-demand CRM application through its platform, it will just be selling one application that can be easily substituted. However, if it is able to integrate all the other ERP applications developed by different developers, it can create a dependency on the user and it will be difficult for the user to switch to other on demand ERP provider. A similar effect can also be accomplished by bundling, if the platform provider is able to bundle multiple applications that are interdependent to each other, users will not be able to switch (or even multi-home) to other rival platforms. Apple is trying to do this by using iCloud, which can connect its multiple devices together and hence can induce diffusion of its platform.

- **Change business models:** “Ceding the targeted platform and redeploying it into new markets may be an attractive option for incumbents. Real Networks did this when it ceded its online streaming business and launched Rhapsody” (Eisenmann, Parker, & Van-Alstyne, 2007). Changing business model according to circumstances can help incumbent companies to survive attacks from new entrants.

- **Acquisitions:** Acquiring competing small firms is also one of the important strategies which incumbent companies can use to protect its platform. Sometimes, bigger companies also acquire smaller companies to add different features to their platform offerings and hence increase the overall value proposition. Amazon acquired Audible.com to add audiobooks in its portfolio, which can play a significant role in differentiating itself from rival players in e-book business. Similarly, Google acquired YouTube to ensure it does not compete against Google videos and eBay acquired PayPal to add a payment platform on its online site.
• **Users as barriers to entry:** Since most of the multi-sided platforms operate on network effects, their biggest assets are their users. Any other social networking platform will not be able to replace Facebook over night because of Facebook’s strong 700 million customer base. Incumbent companies should ensure they don’t lose this big competitive advantage and one way this can be done is by providing innovative features on the platform. Facebook has recently launched timeline features through which the life of the user can be captured on its platform. Similarly LinkedIn allows peers to recommend the users on its platform. Such features keeps the users attached to the platform, as these are the things that users have developed over a period of time and cannot be changed overnight. This acts as a huge barrier to entry.

### 3.9. Which applications should be absorbed into the core platform?

One of the key ways in which platform owners can drive platform innovation is by absorbing critical applications, developed by the complementors, into the core platform. It is very important that platform owners are able to differentiate their platform from rival platforms and also ensure that they are not getting overly dependent on some of the applications developed by the complementors. The latter is particularly important as too much dependency can lead to loss of control over the platform, which is not desirable for the platform owners.

However, absorbing applications comes with a cost; platform owners need to pay a significant amount of money and, sometimes, also have to sort the IP issues while absorbing applications. Hence, they need to judiciously decide which applications should be absorbed into the platform and which should not. There are two main rules that platform owners can follow in deciding which applications they should absorb in their platform (Einsenmann, Parker, & Van-Alstyne, 2007):

• **Absorb the applications that are of high value to platform owners:** Platform owners should try to absorb the application that are of high value to them and can help to increase the overall value of the platform. For example, the Windows OS has absorbed
many functions that were standalone applications from third party, such as web browsing, disk management, media streaming etc. (Eisenmann, Parker, & Alstyne, 2008). Similarly, recently Facebook absorbed the HTML5 application created by Strobe Corp. to leverage the HTML5 capability on its mobile platform (Fulton, 2011).

- **Absorb the applications that are involved at multiple places in the platform:** If the third party’s application is being used at multiple places within the ecosystem, it might be useful for the platform owner to absorb it in its platform to limit the dependency on the third party developer (Eisenmann, Parker, & Alstyne, 2008). For example, eBay absorbed PayPal into its platform as it was being used during all the transactions of the platform and hence was critical to the business of eBay’s platform.

![Figure 22: Platform absorption example](image)

In the Figure 22 above, it makes sense for the platform owner to absorb application A into the platform, as it will help to increase the overall value of the platform itself.

### 3.10. How to develop a different but successful strategy?

*As you don’t drive just looking at the rear view mirror,* doing the same things that you did in the past will not necessarily make you successful. Platform business brings with itself new threats and new opportunities, which need to be tackled differently. Many a times companies, especially those that have been successful in the past, are tempted to take the same route that they have taken before, assuming that they can be successful again. However, little do they realize that a
network platform business requires different skills and strategies for success. Below are some of the suggestions mentioned in research papers on different approaches that incumbent companies should take which tackling an entirely new business model (Cooper & Smith, 1992):

- **Degree of organization separation** – It is really important for the incumbent companies that they don’t get too influenced by the existing business. Keeping an arm’s length distance will help them to work on different strategies with more independence and compete with new entrants. This strategy in particularly important for incumbents companies such as Nokia, SAP, Oracle etc., who after having spent a considerably amount of time in product business are now entering the network platform business.

- **Different business strategy** - The existing business approach, through which the incumbent company achieved success in the past, before might not work. The company should deliberately de-couple itself from the existing business methodology and look for ‘out of the box’ options. New business strategy should be adopted to be successful in the network platform business.

- **Timing of entry** – The Company should decide whether it should take the first mover approach or a more cautious strategy. Each has its own advantages and disadvantages and should be pursued on case by case basis. In this business first mover can be advantageous only if is able to attract users and hence create a barrier to entry for other players. However, most of the successful platform companies were not first movers and took some time to come up with an attractive platform.

- **Substantial commitment** - It is important to have substantial commitments even when visibility is not very clear. The initial slow rate of success and small size of the market should not discourage investing significant amounts of money and resources. The companies should not take this as a side business but instead as a full commitment; commitment both in terms of financial support as well as dedicated resources. The platform should be the common point of different products and should be in the center of business decisions. For example, Apple’s App store is where the company’s center of
gravity resides and most of the products are very closely linked to it. If Apple decides to just concentrate on developing superior products while neglecting the application store, the whole strategy would backfire.

3.11. Summary

In Chapter 2, we tried to understand the core concepts involved in the network platform while in this chapter we tried to use these core concepts to develop a strategic framework that can be used by platform owners to managing the network platform. Figure 23 is an illustration of the same:

- Ascertain that a pure network platform is needed
- Identify the sides that should participate on the network platform
- Look for the areas where strong network effects could be generated
- Develop strategies to attract the partners to the platform and strategies to retain them
- Define protocols of governance and control
- Define mechanisms for driving innovation in the platform
- Identify revenue streams and pricing
- Define strategies to attack rival platform and defend own platforms
- Develop strategies for absorption of key applications in the platform
- Take a step back and analyze what is needed to be successful in a new business

Figure 23: Summary of key strategies

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We start by analyzing whether the network platform is really needed or not, then we identify key stakeholders (or participants of the platform). We then evaluate whether the platform owner needs to have a pure multi-sided platform or can just develop a reseller platform. We next evaluate ways to increase network effects and attract partner to the platform. We tried to develop a strategy for governance and control, as we also weighed key drivers of innovation and revenue for the platform. We explored the ways to attack and defend platform and, finally, we took a step back and analyzed a very high-level corporate strategy for developing the new business model.

In the next chapter we will see how these strategies can be used on some real companies using couple of interesting cases.
Chapter 4

Discussion

A good idea on paper is of no value unless it is actually executed
- Anonymous

The next step after developing the strategies for a network platform business is to see how we can implement these strategies on real companies. This chapter covers two case studies: Microsoft (with Nokia) and SAP, both of which are releasing a new network platform and striving to succeed in this business. We will examine how we can apply our learning on these companies and how these companies can succeed in their new business. Finally, we conclude this thesis by reflecting on how far we were able to go in solving the problem statement defined in the first chapter and how can this research be taken further.

4.1. Application

It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change. - Charles Darwin

This section is dedicated to practical application of these strategies on two real emerging (and struggling) network platforms. Two companies that are chosen to illustrate how the strategies developed in previous chapters can be applied are Microsoft (and Nokia, as part of the joint venture) for its new smart phone platform, Windows Phone, and SAP, for its new on-demand solution based on cloud computing. Both these companies have been immensely successful in the past but are currently at a cross roads and struggling to compete in a new landscape of companies who have successfully built their businesses using multi-sided network platforms. Hence, this presents an interesting opportunity to analyze what these big players can do to re-invigorate themselves.
4.1.1. **Microsoft: How can Microsoft, along with Nokia, gain market share in smart phone market with the Windows Phone platform?**

With the advent of new innovative business models based on platforms, many incumbent companies are facing extreme challenges in competing with the new players. One such example is Microsoft, which has dominated PC software business for decades and has managed to attract thousands of customers but has never been able to successful enter smart phone platform business. In the recent years, new (or innovative) companies such as Google, RIM, Apple etc. have been able to provide effective competition to Microsoft by coming up with new high value products complemented by an ecosystem around them.

Similar is the story of another leading struggling company, Nokia. Nokia has never been able to complement its high-end phone hardware with an innovative platform. In the past, it tried to come up with its own platform (Symbian), which, it hoped, would compete with Apple and Google. Unfortunately, it didn’t work the way Nokia thought it would. In the third quarter of this year, Nokia’s worldwide smartphone sales fell 37 percent to 16.8 million phones from 26.5 million a year ago. Worse, Nokia’s poor results come in a booming market where smartphone shipments grew 43 percent in the third quarter.

For both these companies, the time to take bold decisions has come. Early this year, Nokia took a big step and divested its existing Symbian OS and partnering with Microsoft to manufacture its mobile phones with the Windows operating system. The objective is clear: to use the complementary strengths and expertise of Microsoft and Nokia to create a new global mobile ecosystem. Whether this strategic move will succeed remains to be seen.

Microsoft’s Windows phone platform is a new entrant in the smart phone market that is currently dominated by two very strong players: Apple’s iOS and Google’s Android. However, the good news for it is that, because of the vagaries of platform economics, things can change very fast in this dynamic market. A market leader today can be a loser tomorrow; who can forget RIM, which has declined from 21% market share in 2009 to 11% in 2011 and is still falling. Since smart phones are not a capital intensive industry, the barriers to entry are low and if Nokia and Microsoft can kick start the ecosystem they can attract both developers and customers to the
new platform. Below are some of the strategies they can adopt to develop an attractive platform ecosystem:

1. **Platform Innovation, ensure that the platform is robust and technically superior:** The platform itself is the most important component of any solution offered to the customer, and if the platform is not technically competent to support innovative applications, the system will lose the trust both of applications developers as well as end customers. Technical differentiation of the platform can be achieved by platform innovation at various levels, both at the core as well as through its user interface design, and this innovation should be afforded the highest priority by Nokia and Microsoft on the new Windows Phone platform.

2. **Control of platform ecosystem:** It is the duty of the platform owner to create the rules of the platform and control them. With regard to a two-sided platform businesses, the platform owner is particularly challenged to continuously evolve the platform’s overall value proposition to the customer (Scholten & Scholten). Microsoft, in this case, should define the rules of the platform. It should dictate how much it should open the platform to various users of the platform, how much quality control it should put in place and how it will regulate that control. Opening the platform too much and not emphasizing the quality of applications can lead to losing the trust of the quality-conscious users (such as enterprise customers), while too much control can create a closed platform and inhibit innovation.

3. **Lead the way by creating innovative applications in-house:** One of the best ways to start the ecosystem is by developing killer applications in-house, either using the company’s own developers or by contracting external developers. If the company is able to create an innovative platform with a small number of impactful applications, the applications developers and the users will be encouraged to join the platform. This leverages the network effect and increases the overall value of the platform ecosystem. Garageband is still one of the best known applications that were developed in-house by Apple.
4. **Subsidize applications development:** Typically, applications developers do not develop applications for more than three platforms and they are judicious in choosing these platforms, looking for maximum return. They are attracted to platforms that have a huge number of users so they can sell their application to a mass market and, more often than not, are not inclined to waste their efforts on platforms with lean user base. Recently, in the smart phone space, most of the application developers were developing their applications on Android, iOS and RIM platforms that had captured the majority of the smart phone subscriber base. However, with the downfall of RIM, Microsoft has a good opportunity to grab this whitespace and attract the developers toward its new platform. But doing this will not be easy, and Microsoft should ensure that it provides lucrative subsidies or even registers these developers for free and provides required toolkits and training so they can port their applications to the Windows Phone platform with the least resource investment.

5. **Encourage developers who have previously developed applications on either Nokia’s Symbian platform or the Windows Mobile platform:** Microsoft has been in the mobile platform business for almost a decade now and already has an application market place. They are not purely a new entrant but an incumbent company trying to find its place in smart phone market. Hence, they should not overlook the existing or past developers while looking for complementors. These developers are particularly important, as they have knowledge of Microsoft development platform and should be used efficiently in future.

6. **Leverage the internal strengths:** Nokia has been a mobile phone leader for decades now and still has huge subscriber base in many countries. It also has a long history of strategic tie-ups with mobile operators and has a sister company, Nokia Siemens Networks, which specializes in network equipment. On the other hand, Microsoft is an experienced software company specialized in putting its software on OEM equipment. It also has a rich suite of enterprise applications that can be particularly useful in attracting niche customers and applications developers. Nokia and Microsoft should leverage these internal strengths to create differentiation with other players and can give them strong competitive advantage.
7. **Fair play and develop trust:** It is important for Microsoft to be fair and transparent to various users of its Windows Phone platform. The partners and developers of the platform should not feel unsupported by Microsoft, and the users should get what they were promised. Because Microsoft has a suite of applications that can be in direct competition with the applications of external developers, Microsoft needs to ensure that trust between the two is not broken. Developers should also be assured of the IP ownership of their applications and should be incentivize appropriately.

8. **Geographical arbitrage:** The fact that Microsoft is strong in the US, where Nokia has almost negligible presence, while Nokia still has a huge subscriber base elsewhere in the world can be taken as an opportunity to complement each other. The two could develop mutual synergies to explore new market opportunities in a short time; Microsoft can help Nokia in the US and Nokia can help Microsoft elsewhere, at least in terms of distribution and go-to-market strategy.

9. **Create open community for feedback from the users:** Innovation is not always done by the company but also is driven by the lead users (Hippel, 2005) of the platform and having an open forum where these two communities can openly communicate with each other can be a major benefit. It is the duty of Platform provider, i.e. Microsoft, to set-up such mechanism, where an open communication among various users of the platform is possible. This can also help as a forum to promote cross learning on the development tool kit where the experienced developers can share knowledge with new entrants.

10. **Don’t depend on attracting Apple (or even Android) customers; try to look for the untapped smart user market:** A recent survey by UBS (Research, 2011) has revealed that 89% of customers don’t buy any other company’s product after buying their first Apple product. This is a huge number (consider that second was HTC at a low 33%) and it will be very difficult for Nokia to target these already migrated smart phone users. But there is good news; there are many customers who have yet to adopt smart phones and are also loyal to Nokia, and these customers should be the prime targets for the platform.
As reflected in Figure 24, it will be difficult to capture *already converted* smart phone subscribers, but Nokia should try to tap potential customers who are already loyal to Nokia with limited but higher quality phones.

11. **Non-exclusivity with existing partners while exclusivity with new ones**: Since Apple and Google already have a strong head start in smart phone market, going with exclusivity with developers will not work for Microsoft. It will be difficult getting the developers of popular applications to only develop on Windows Phone platform. Hence, Microsoft should instead look to provide easy to use tools and strong incentives to these developers to port their applications on its new platform as well. However, at the same time, they should also be looking for new application developers with innovative ideas for applications who can do exclusive development on its new platform. If any of these applications get popular, it will give a significant boost in increasing the popularity of Windows Phone platform.
4.1.2. SAP: How can SAP re-invigorate itself in On-demand ERP business based on SaaS model?

SAP, a $62 billion company and leader in ERP solutions, is facing competition from new generation of on-demand SaaS based companies that are slowly eating away its loyal customers, starting with SMBs. This new generation of competitors, led by Salesforce.com, Intuit, Netsuite etc., have come up with a unique business model, a subscription based model in which businesses don’t have to pay any cost upfront for setting up ERP systems and managing them. Instead, they can just signup for a subscription and get ERP applications based on their demand for as little as $50 per month using Software as a Service model (SaaS). Since the software is actually running in the cloud, these companies don’t even have to invest anything to maintain them. As their number of users grows, they can update their subscription accordingly. This model, though primarily targeted for small and medium size customers, is also generating a tremendous amount of interest in large enterprises that have started evaluating and adopting it slowly.

In response, SAP has come up with its own SaaS based on-demand platform called Business ByDesign. Since SAP has not been the first mover in this area, other players have managed to gain a significant lead and SAP is currently trying to catch up with them. Based on the knowledge we have gathered in this document, we will look at some of the strategies that SAP can adopt in building this ecosystem.

In an on demand service model the role of the platform provider becomes very important and it is typically the controller of the complete ecosystem. It not only has to control the pricing, quality, absorption, and sale of the applications but also has to create network externalities to make the ecosystem attractive to all the parties and the stakeholders.

Firstly, it is important to understand the focal platform before analyzing it. SAP Business ByDesign platform is a cloud computing based platform working on the model of Software as a Service and Platform as a Service (SaaS and PaaS) and has application developers on one side and the application users on the other, with SAP acting as both platform provider as well as platform sponsor. Application developers will develop solutions on the ByDesign platform using a Microsoft Visual Studio-like SDK kit, which is provided by SAP, and the solutions developed
are sold through SAP application store, controlled by SAP.

Figure 25 is the graphical description of the platform:

![Diagram of SAP Business ByDesign platform](Image)

One thing unique about this platform is that SAP is both the platform owner (provider and sponsor) and application developer, which also makes it competitors to other external developers participating on the platform.

As seen in most of the multi-sided platforms, there are significant network effects in this platform as well. As more end users start using the applications, more independent application developers will be attracted to the platform, which in turn will bring more end users. This will also help to increase the overall value proposition of the platform. There are many ways in which SAP can build a vibrant platform ecosystem:

1. **Provide exceptionally good solution to the initial users:** Since SAP is already competing against players who have significant market share in On-demand ERP market, it has to ensure that the first applications sold through its platform are innovative and of high quality. To ensure this SAP needs to selectively choose limited application developers with due diligence (this will also solve the chicken and egg problem), provide
them with in depth training, ensure proper quality control mechanisms and then sell these applications in the application store. Also, SAP should try to come up with some initial high quality applications, based on its huge experience in the ERP business, to kick-start the ecosystem. This will help to develop confidence in the mind of end users, which can play a significant role in creating network effects.

2. **Subsidize developers and users:** As a next step, SAP will like to have many users and applications developers affiliated to its platform. To do so, SAP should try to incentivize developers to develop applications on its platform by providing subsidized rates and also appropriate tool kits. Remember, Sony and Xbox sell their consoles at a loss to ensure penetration; similarly, SAP can provide tool-kit, training and even quality control at a very subsidized rate and then aim to generate bulk of its revenue from the percentage of sales in the application store.

    Also, SAP should try to offer a subsidized royalty model at the beginning, so application developers can earn more from its platform. Generally, most of the platform owners take either 20% or 30% of the total transaction cost, SAP can try to reduce this initially to attract more application developers.

3. **Support developers not only in development but also in marketing and reaching out to the huge SAP customer base:** One of the biggest assets of SAP, which is also the differentiating factor from other ERP on demand players is its huge customer base developed through legacy software sales. SAP should help the application developers to reach out to these customers so these developers can create customized solutions for customers. Also, this will attract innovative developers to its platform, which in turn will help to bring more end-users and help to develop strong network effects.

4. **Encourage companies that have already developed on SAP’s legacy Netweaver platform to develop applications:** This is not the first time SAP is working on multi-sided platform; SAP has in the past created the Netweaver platform, where it has successfully worked with both the application developers as well as implementers. SAP should try to leverage this relationship and try to attract developers for its on demand platform using its existing connections. There is a strong possibility that some of these
developers will themselves migrate to this platform and start developing applications.

5. **Diffusion of applications:** SAP is not ‘only’ a CRM ERP module provider or ‘only’ a finance ERP module provider, but is instead a leading player with expertise in the complete breadth of integrated ERP applications. SAP should try to integrate these applications on its on-demand business platform as well, which can help in creating diffusion and stickiness, i.e. once a customer has bought a CRM application from the SAP ByDesign platform, he will be compelled to buy other modules as well and will always be associated with the platform.

6. **Innovative business model:** SAP should come up with innovative business model to make the platform lucrative not only to the application developers but also to the end users. Many companies such as LinkedIn have developed the “Freemium” model where limited functionality is available to the end users and they are persuaded to buy a full subscription as they get used to it and need other advanced functionality or more customer access. A similar approach has been taken by Amazon, where they have Amazon Prime, a high-end subscription status with many facilities, free of cost to the students for a year and most of the students end up extending it after that as they get hooked on its premium features.

   Instead of offering a flat rate to all subscribers for a certain application, SAP may want to modify its pricing structure to charge customers only for functionality that they are actually using (billing à la carte). The main advantage of this approach is to lower the entry barrier for customers, but it presents the disadvantage of making customer billing more complex to handle.

   SAP could encourage upselling or bundling of solution by using active data mining techniques to recommend solutions to customers. Also it might want to incentivize customers that actively recommend to other customers that they adopt SAP solutions by providing reduced service charges, additional service for free, gifts, etc.

7. **Innovation in platform:** Platform innovation plays a very critical role in multi-sided platform business and SAP should never ignore it. SAP has already come up with innovative features such as HANA, a high-end in-memory database, to strengthen its
platform. SAP should continue not only to innovate by developing applications in house but should also look for opportunities to absorb critical solutions developed by the partners to increase the value proposition of the platform.

8. **Cannibalization and transition:** Cannibalization will play a key role in the context of SAP and many of its customers are still on its legacy software and will be transitioning to On-demand applications in near future. SAP, rather than being worried about the cannibalization, should try to take advantage of this situation and leverage this opportunity by providing these customers with a clear defined transition path from its legacy software to the new On-demand software. Also, interoperability between the two can be particularly attractive to the customers who wants to transition to in small steps. This way SAP can also create significant differentiation from the competitors.

9. **Develop on whitespaces:** SAP should not let go of its core competency and should encourage the application developers to develop their solutions in the white spaces. Obviously, it will not be possible for SAP to develop and customize solutions for every customer and these responsibilities should be given to external developers. However, it is the responsibility of SAP to guide them to these white spaces and also to make them aware of overlapping solutions, both between them and SAP and also amongst them. One way SAP can do this is by exposing them to its near term road maps and identifying white spaces together with them. It can also prioritize the areas where the platform lacks solution and also where there is a potential customer demand and provide incentives to the application developers to develop in those areas.

10. **Manage IP and patent rights:** Managing IP rights and patents will be a key aspect of SAP's platform strategy; both in the short term as well as in the long term. It is particularly important in SAP's ByDesign platform because, as mentioned earlier, SAP is not only a platform owner but is also a competitor to the application developers and would ideally like the customers to buy its solution (in case of overlapping solutions) so it can keep the 100% of the transaction revenue. Also, SAP would like to absorb some critical solutions developed by the external developers onto its core platform so it can make the platform more robust and attractive to other application developers.
On one hand, controlling the IP rights of the developers will help SAP to have strong control over the platform and will also give it the ability to easily absorb solutions, it can also have a detrimental effect on attracting innovative partners to its platform and will inhibit partner innovation. External developers will either avoid SAP’s platform so they keep the IP rights so they can also develop on other platforms, and those who will join will never like to invest money in innovation if they cannot keep the IP rights.

Hence, SAP should ensure that their developers keep the IP of their solutions but it should control the IP which is important for its platform; either by incentivizing the developers appropriately or by even buying their companies. It should be transparent to its developers in the areas of IP and patents and help them to protect their IP, even from its own internal developers. At the same time, it should protect its core platform from becoming “too open”, as it might risk losing control over its core advantage.

The move towards PaaS and hosted services brings with it a lot of challenges that, the incumbent companies have to face. Also, these companies need to ensure the evolution of the ecosystem along with attracting innovative partners and large pool of customers. SAP is not very different and is facing numerous challenges in competing with new players who are agile and have first mover advantages. However, if SAP is able to understand the platform business and leverage its core competencies, it should be able to develop a vibrant ecosystem. SAP should take a leadership approach in controlling the platform ecosystem and develop a solid platform strategy using which all the partners of the platform can work together in symbiosis for the common good.

4.2. Reflection
This research work was started with the key question about the strategy required to be successful in the business of network platforms. At this stage we look back to see how we far we have gone in answering that key question in our research.

The most important aspect that has come out of this research is that multi-sided platform business demands new strategies; relying on existing strategies will not work. Many incumbent companies, including the two that are analyzed in the previous chapter, have been extremely
successful in past. These companies can very easily be tempted to continue with the strategies which they have used in past, but these are not sufficient in this new era of network platform businesses. These companies need to adapt to the idiosyncrasies of multi-sided platforms, which are unique and different.

“Every network has a fundamental economic characteristic: the value of connecting to a network depends on the number of other people already connected to it” (Shapiro & Varian, Information Rules: A Strategic Guide to the Network Economy, 1998). Multi-sided platforms have multiple users with complex requirements, each very different from other. Also, each of these user communities is needed for the success of platform. Network effects bring these users to the platform and are also responsible for them leaving the platform. “It makes the strong grow strong and the weak grow weaker, leading to extreme outcomes” (Shapiro & Varian, Information Rules: A Strategic Guide to the Network Economy, 1998). Platform owners should ensure that strong network effects are always maintained in the platform. From various examples, we have seen that a small mistake can lead users away from platform, which can be fatal for the complete platform ecosystem. We have seen this in past with Myspace.com and are also seeing it presently with RIM. Only couple of years back, both of these companies were boasting of their success but now are struggling to retain their customers. This clearly suggests that the market leaders such as Facebook, Google, Apple etc., cannot sleep in complacency. This is a Winner Take All business and has no second place prize.

Network effects are driven by many factors and the most of important of them is pricing. It is not too difficult to imagine what will happen if Facebook suddenly starts charging its users every time they login to the website or Google puts up a subscription fees for its search engine; most of the users will migrate to other platforms. Google and Facebook, each having close to billion users, might be tempted to go for this business model of charging from the users, as even by charging $1 per user per year, they will be able to earn an additional billion dollar in a year. Also, it could be argued that most of these users will most likely be able to pay this small amount to get these services; after all it is just a single dollar. Howsoever counterintuitive it may sound; this single dollar has the capacity to tumble these platforms in a single day. The question is not about how much these platforms are charging from one side of user, it is about how many of these users are willing to pay and the answer in this case is almost none. Also, it should be kept in mind that all the other revenue which these platforms are generating is only because of these
users who are sitting on the other side of network, silently consuming the services offered by the alternate sides, i.e. the advertisers. Success of these platforms depends on this set of users, which generates the network effects. Often it is difficult to ascertain who should be charged and who should not be. Sometimes even the same company takes a different approach for different businesses; for example, Microsoft, for its gaming platform Xbox, charges a premium from game developers while it subsidizes the console for the end users. However, for its PC application business, it subsidizes to the application developers and charges a premium from the end users through licensing. Hence, there is no single answer for pricing but, at the same time, it can be the deciding factor between success and failure of the platforms.

Innovation is a key differentiating factor in driving network effects. Innovation attracts innovation; if the platform is innovative for the developers, they will be attracted to innovate on top of it by developing applications. Innovation also helps to keep the platform ahead of its competitors. Innovation does not only mean making a platform more robust or stable, it also refers to the good user interface, ease of use and ease of developing application on top of it. If it takes ages for an application developer to develop its application on top of a platform, he would be inclined to move to other platforms where he can develop applications in the least possible time.

Multi-homing and exclusivity also play a critical role in defining platform strategy. Both of these have got significantly different impact at different phases of platform evolution; at the initial stages companies want to ensure multi-homing and non-exclusivity when they are penetrating the market while, as they get mature, they want to inhibit multi-homing and encourage exclusivity to keep control. However, is it not easy to do so and platform owners should be wary of the consequences. After all, everyone loves to play Angrybirds, and they don’t care whether they are using Apple or Android or even Google Chrome.

Other factors such as IP, cannibalization, control, etc., also play a significant role in driving strong network effects. Infringement of IP and patent can lead to long lasting legal battles and also tarnishes the image of the platform. It also repels developers from its platform, which can have long lasting repercussions. Openness and closeness also dictate how different users perceive the platform. All these factors are discussed in depth in this research work and should be taken into account while defining high-level corporate strategy.
It can be reasonably claimed that this research has exposed some of the very important aspects of platform evolution and helped to create a framework that can be used to define key strategies. With many real world examples, the readers will be able to appreciate how different companies have evolved their platform strategies differently. Also, the application section gives a practical example on how two different companies can implement platform strategies to re-ignite their business. All the companies mentioned in this research are connected by a common string; the string of network platforms.

4.3. Further study

There are clearly many areas in which this work can be taken further. Each of the concepts discussed in Chapter 3 has a potential to be a separate topic for individual research work. However, the economics of pricing is something which can be taken as high priority for doing an in-depth analysis on how platform companies can generate revenue while still driving network effects and providing subsidies. Many platform companies in recent time have been extremely successful in creating network effects and attracting many users but have not been able to generate revenue; either these companies were acquired by other companies (which admittedly is also a source of revenue) or have perished. Using the conventional theory of economics based on demand and supply in conjunction with the idiosyncrasies of the network platform model can be a good area for further research.

Also, IP as well as the role of patent trolls can be analyzed further as they are not covered in this work. The work of IP can be further expanded on to illustrate how it can be used to create significant competitive advantage. Question like how much IP should allowed to be controlled by the companies by regulatory authorities are also an interesting area of further research. For example, Amazon has got a patent for one-click buying and it prohibits other companies from implementing this feature on their websites; Barnes & Noble lost a law suit against Amazon and had to implement a work around by adding another click on its shopping website. Should such patents be stopped or is it fair for Amazon to control such things? What if ten more companies patent one to ten click buying; the new entrant will be then forced to put at least 11 clicks before user can purchase merchandise? Does this inhibit platform innovation that is needed for general
consumer convenience? Such questions needing definitive answers are potential for further research.

Finally, it is also possible to quantify many of the hypotheses developed in this research using models or general economic theory. Such mathematical theorems can be further used to check the correctness of hypothesis and this can be a good addendum to this research.
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