

PLATFORM STRATEGY: A STUDY OF INFLUENCING FACTORS

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Platform Strategy, Asset Management, Platform Development, Platform Assessment Tools

Abstract

A platform strategy is the overall elaborate action plan a company has to managing its platforms. In general, the use of platforms – what we define as the reuse of a set of core assets to achieve a competitive advantage – has both positive and negative effects, affecting the internal efficiencies and effectiveness of a company as well as the characteristics of a product. In the paper, we find that the following factors should be considered when in the process of creating a platform strategy: the competitive advantage strategy of the company, the industrial situation, the market situation, and the internal core competencies of a company. Furthermore, we examine each of these areas and give examples of how they influence the platform strategy.

1 Introduction

Developing a single product includes numerous complex steps, among them a market analysis, a concept development, a feasibility review, a final design review, a market test review, and a manufacturing feasibility review [Wheelwright and Clark'92]. Developing a platform – upon which a company can derive a number of products over a period of years or even decades – is even more difficult for decision makers; uncertainty of the dynamics of change in markets, technology, the industry, and even the internal status of the company are significant.

A platform strategy is a company's grand plan to manage its platforms – to build a match between creating a family of attractive products for the market and the reuse of core assets within the company. A successful strategy takes into consideration a broad group of factors that either affect or are affected by the company's platforms. The ultimate goal with platforms is to create a competitive advantage, something that at best is a fleeting commodity that must be won again and again [Fine, et al.'02], and the platform strategy has to support this.

2 Theoretical background

The attention to platforms in product developing companies has grown, coinciding with an increased level of competition, more demanding customers, and a shorter lifespan of products. Research activities on platforms have also grown; some indicating that they are beneficial (e.g. [Sanderson and Uzumeri'97]), while other have found out the contrary (e.g. [Hauser'01]). The problem is that in most cases it is impossible to extrapolate such research findings to any situation, as platforms exist in different contexts and scopes.

It is difficult to characterize a platform objectively as people have different ideas of what a platform is, i.e. the platform concept is quite fuzzy. This is due to 1) the existence of a number of different types of platforms, e.g. *product-*, *technology-*, *brand-*, *global-*, *modular-*, *process-*, *customer-*, *integral-*, *scalable-*, and *high-tech* platforms, 2) ambiguous definition nuances exist within the use of each type, and 3) imprecise use of the term platform. It is not within the scope of this paper to present an extensive literature review of platform types, and we will therefore let be with defining a *product platform* as a collection of assets that are shared by a set of products [Robertson and Ulrich'98] and a *high-tech platform* as an evolving system made of interdependent pieces that can each be innovated upon [Gawer and Cusumano'02]. For a more thorough literature on the term platform in the context of product developing companies, please refer to e.g. [Kristjansson, et al.'04].

Our definition of the term platform is: *a set of core assets that a company reuses to achieve a competitive advantage*. The term *core* indicates that the asset is centre in the organizations perception of what is essential for the product to be competitive. In most cases, core assets are proprietary, engineered by the members of the organization. The expertise of use of specific material, the secret multi-step process of manufacturing a SiC semiconductor wafer, or for that matter the secret mixture of the Coca Cola syrup, are all examples of an organizations reuse of core assets. Furthermore, *assets* can be divided into components, processes, knowledge, and people & relationships [Robertson and Ulrich'98].

[Hussay'98] argues that the coming of the portfolio analysis technique in the late 1960s offered a new and superior way to look at the relative strategic importance of the various activities that made up an organization. We find that our definition of platforms in the context of product developing organizations offers a similar benefit, i.e. enables an organization to comprehend the various core assets that actually create a competitive advantage.

The basic purpose of platforms is to create a competitive advantage by reusing a set of core assets. How successful a platform is, depends not only on how well it fulfils its main objective/goal, but also on a number of other factors, e.g. how it influences the customers perception of its derived products, how the reuse of a certain technology affects the companies ability to innovate, how the reuse of a certain component affects the uniqueness of a certain product, or how the reuse of a specific material affects the chance to move into a new market segment.

In Figure 1 we can see two graphs illustrating the difference between following a single product development strategy and a platform based product development strategy. Both graphs contain the same utility curve of a particular market, while the curves for demand, price, and cost are different. The basic assumption of the *Theory of Consumer Behavior* is that the consumer maximizes utility, given a limited income [Henderson and Quandt'58].

A company, which develops a single product, decides a target level of features and quality for a specific market. We illustrate this in Figure 1a. The increased amount of features/quality (bells and whistles) increases the utility for the customer, although the differential decreases as features/quality increases. As an example, most car owners primarily want to get safely between A and B, after which extended features – e.g. air conditioning and a radio – increases the utility. After certain amounts of extra features/quality, the gained utility wanes, and fewer people are willing to pay for the extra features/ quality. This is illustrated in the demand curve

in Figure 1a, where the company develops a single product with the level of features/ quality that satisfies most buyers in a segment (one-size-fits all method). In Figure 1b, we can see a scenario where a company uses a platform upon which it develops a group of products. In this case, the demand curve is increased as different market segments can choose between numbers of products that specifically fit the need (mass customization method). Furthermore, the cost for extra features decreases as a large *chunk* of the development cost is distributed over a number of products. Again, the utility curve is the same in the two graphs as we look at the same specific market segment.

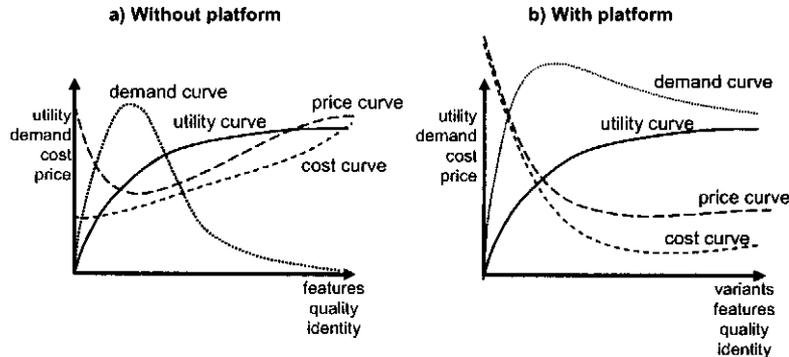


Figure 1. Hypothetical correlation between utility/ demand/ cost/ price and (variants)/ features/ quality. In a) we see a single product offering, while in b) a platform is used for a variety of products.

As with the term *platform*, the term *platform strategy* means different things to different people. [McGrath'01] finds that a *product platform strategy* is the basis for product strategies. He defines a product platform as a *collection of common elements, particularly the underlying technology elements, implemented across a range of products*. At the same time he emphasizes that a product platform is *primarily a definition for planning, decision making, and strategic thinking*; it is the set of *architectural rules and technology elements* that enable multiple product offerings and defines the *basic value proposition, competitive differentiation, capabilities, cost structure, and life cycle of these offerings*. Here it is clear that the platform encloses the core competency of the company; that *certain something* that gives the company a competitive advantage.

[Muffatto'99] argues that a platform can be seen from a *strategic, an organizational, and a technical* perspective and that the introduction of a *platform strategy* affects product development performances, in particular, cost and lead-time reduction, the international operations and the R&D management strategies of companies. He finds that a platform strategy is strongly linked to the way platform development is organized in relation to the other parts of the whole product and that every company recognizes the platform strategy as a *key issue in their future domestic and international strategy*. Furthermore, he states that a platform strategy affects a number of issues, in particular the relationship between platforms and models and between platforms themselves, the relationship with the supplier base, and the relationship with subsidiaries in other countries and with other companies.

[Meyer and Lehnerd'97] describe different platform strategies in terms of utilizing platforms over different market segments. They identify three strategies in the context of a market segmentation grid (Figure 2). The first strategy is *niche-specific platforms with little sharing of subsystems and manufacturing processes* (Figure 2a).

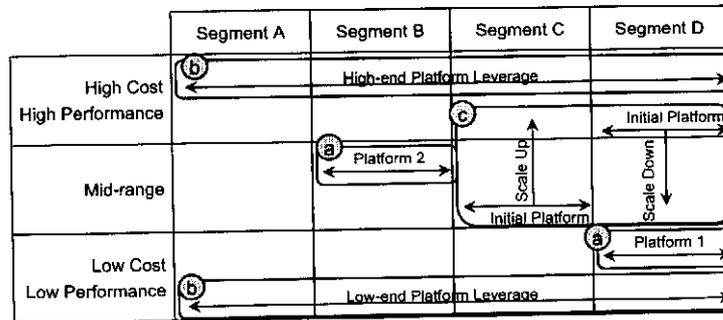


Figure 2. A Market Segmentation Grid with Three Platform Strategies (adapted from [Meyer and Lehnerd'97])

The second strategy is *horizontal leverage of key platform subsystems and manufacturing processes* (Figure 2b). Finally, the third strategy is *vertical scaling of key platform subsystems* (Figure 2c). In addition, they define a *Beachhead Strategy* as being a mix of horizontal leverage and vertical scaling. They suggest a five-step process for companies to define their platform strategy: 1) segment markets, 2) identify growth areas, 3) define current platforms, 4) analyze competing products, and 5) consider future platform initiatives. As we see, their view of a *platform strategy* has to do with leveraging platforms to different market segments. [Gawer and Cusumano'02] refer to *Platform Leadership* as the objective to drive innovation in the industry. In their opinion, a platform is a standard, e.g. the Microsoft's Windows operating system, or the VHS standard. They look at *platform strategy* as an action plan to become the dominant platform on the market. They suggest a framework – the *Four Levers of Platform Leadership* framework – that managers can use to design a strategy for platform leadership or make their existing strategy more effective. The framework has the following four levers: 1) scope of the firm, 2) product technology (architecture, interfaces, intellectual property), 3) Relationships with external complementors, and 4) internal organization. We can see that these four views of *platform strategy* differ a great deal, depending on – among other things – what the authors puts into the term *platform*.

As we stated earlier, our definition of the term platform is a set core assets that are reused to achieve a competitive advantage. Our definition of the term platform strategy refers then to a company's elaborate and systematic plan of action to manage a group of platforms, both individually as well as in regards to how they work together as a group. A platform strategy includes decisions on how long a platform should exist and the choice of products that are based on each platform.

3 Research aim and methodology

The primary research aim of this paper is to identify general areas/factors which a company must consider before creating a platform strategy. The main contribution is first of all to identify these areas/factors along with appropriate frameworks/tools to analyze platforms in the context, and second of all expand on how these areas/factors potentially affect – or are affected by – the platforms. The findings in this paper will partially be used for a future evaluation method for platforms.

To perform this study, we will look at a sample of how the literature defines *platform strategy*, we examine a body of literature within management and strategy, and furthermore use our own insight.

4 Influencing factors for a platform strategy

A platform strategy has to support the basic purpose of platforms, namely to create a competitive advantage for the company [Kristjansson, et al.'04]. Competitive advantage can be created in various locations within the value chain, by following one of the general competitive advantage strategies: cost leadership, differentiation, or by focusing on a specific segment [Porter'85]. The context in which a company exists can be divided into being external and internal; the internal context encloses the company's intrinsic functions/departments, while the external context encloses factors that lie outside the company's control. The external context can furthermore be divided into industry and market, where *industry* describes the competitive landscape, and *market* the customers' profiles. Using this context for devising a strategy is in line with the findings of many researchers; e.g. [Gluck, et al.'80] argue that attention has to be given not only to internal aspects but also to what they refer to as *externally oriented planning*, with much more concentration being given to the external environment and to customers and markets.

We propose that in the process of creating a platform strategy, a company should consider the market-, and industry situation, as well as the company's general strategy to create a competitive advantage. Here the *market delivery plan* is included in *market*. The competitive advantage strategy again derives from the industry- and market situation, and the internal core competencies of the company.

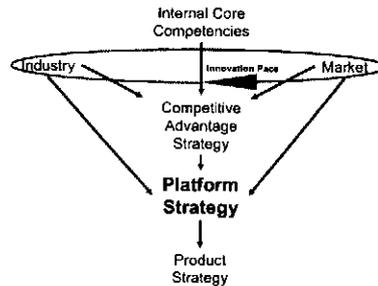


Figure 3. A company derives its platform strategy from the competitive advantage strategy, the industry-, and market situation.

Furthermore, the innovation pace/clockspeed is driven by a complex interaction of industry and market. Finally, the company's product strategy derives from the platform strategy. In this chapter, we discuss each of these areas and relate them to the platform strategy.

4.1 Internal core competencies

Companies seldom have the opportunity to make decisions based only on the industry- and market situation; in most cases they are bound to use a number of inherent assets, i.e. legacy systems, machinery, housing, staff, technologies, alliances, work processes, and component designs. The core competency of the company is found within these inherent assets and should be exploited when creating a platform strategy.

A company already has a number of platforms. Identifying these platforms is important and here the concept of *platform thinking* is relevant; it is defined by [Sawhney'98] as the process of *identifying and exploiting the shared logic and structure in a firm's activities and offerings* to achieve leveraged growth and variety.

4.2 The industry

The industry situation in which a company competes is important to understand, as it affects the company's competitive advantage strategy as well as its platform strategy. To do this, a company can use Porter's Five Competitive Forces Model (Figure 4), with the forces *threat of new entrants*, *bargaining power of suppliers*, *bargaining power of buyers*, *threat of substitute products or services*, and *rivalry among existing firms*. The five forces determine industry profitability as they influence prices, costs, and a company's required investments.

A company should furthermore assess the *innovation pace* of the industry that it is in and use it as an indicator of what clockspeed the platforms should have. If, e.g., a company in a high innovation pace industry wishes to create a competitive advantage by focusing on differentiation, it should emphasize a high clockspeed amongst the platforms that influence differentiation (for more information on the term *clockspeed* see [Fine'98]). The bottom line is that the platforms of a company have different clockspeeds/ lifecycles, which should be aligned to create competitive advantage – though always keeping in mind that this is a temporary advantage that changes with time. The clockspeed has to be in line with the *innovation pace* of the industry; the pace is derived from a complex interaction of industry and market.

Companies can make their own *proprietary technology / standards*, *license out*, or *use open source systems* to quicken development. In high-clockspeed industries, companies might take advantage of open source platforms to quicken the development of e.g. software.

Depending on the industry, the level of competition varies, and so does customer expectation. Typically, as competition levels increase, companies have to find ways to give the market more for less; this is where platforms have been successful, matching more precisely what the customer wants (mass customization) and at the same time reusing internal core assets to create efficiencies. An industry goes through different *maturity levels*: embryonic, growth, maturity, or aging. The maturity level is a good indicator of whether the industry focus is on innovation and technology or on cost reduction. As the industry/technology becomes mature and the demand for greater utility wanes, the innovation pace falls.

Disruptive technologies [Christensen'97] can be thought of as potential substitutes. Presently they might not match the company's technology performance, but have a strong potential to provide similar or greater performance for a lower price.

4.3 The market

With the term *market*, we refer to the buyers of the product. As with the industry situation, the market situation affects both the company's competitive advantage strategy, as well as its platform strategy.

The Kano Model of Customer Satisfaction (Figure 5) divides product attributes into three categories: threshold, performance, and excitement. A competitive product meets basic attributes, maximizes performance attributes, and includes as many "excitement" attributes as possible at a cost the market can bear [Ullman'97]. *Threshold* (or basic) attributes are the expected attributes – or *musts* – of a product, and do not offer an opportunity for product differentiation. *Performance* attributes are those for which more is generally better, and will

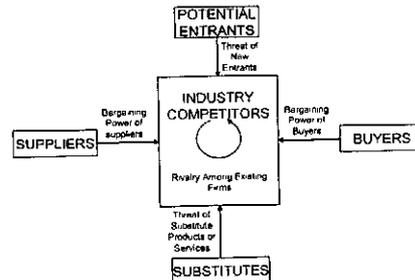


Figure 4. Porter's Five Competitive Forces that determine Industry Profitability [Porter'85]

improve customer satisfaction. On the other hand, an absent or weak performance attribute reduces customer satisfaction. *Excitement* attributes are tacit and unexpected by customers but can contribute to high levels of customer satisfaction. Their absence however does not lead to dissatisfaction. Excitement attributes often satisfy latent needs, i.e. real needs that customers are currently unaware. We adapt the model to platforms instead of functions.

Products can be divided into being *high-or low involvement*. If the customer feels a high level of *risk* in buying a product, then it is considered a *high-involvement* product [Assael'92].

Clothing, stereo-systems, and cars are examples of high-involvement products, while detergent, screws, and recordable DVD disks are examples of low-involvement products.

Finally, *volatility* is an important characteristic of a market. Volatility worsens a company's ability to forecast demand.

Depending on what general competitive strategy is attempted, what the market situation is, and what the industry situation is, a company devises its *market plan*. The market plan encompasses decisions regarding what products, in what quality/price/function, should be launched into which markets.

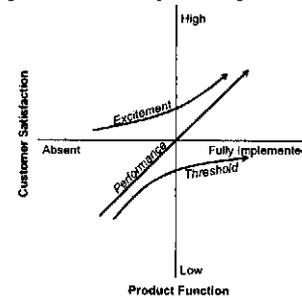


Figure 5. Kano Model

4.4 Competitive strategy

One of the main factors a company should base its platform strategy on is its *competitive strategy*. The competitive strategy includes the company's *market plan*, i.e. into which markets, with what frequency, and which products, the company plans to deliver. According [Porter'85], a competitive advantage is at the heart of any strategy, and achieving it requires a firm to make a choice about the type of competitive advantage it seeks to attain, and the scope within which it will attain it. He finds that a company can follow three generic strategies to attain its desired competitive advantage, Differentiation, Cost Leadership, or Focus (Figure 6).

A company should only focus on one of the competitive advantages: being "all things to all people" is a recipe for strategic mediocrity and below-average performance, because it often means that a firm has no competitive advantage at all [Porter'85].

If a company wants to have a competitive advantage for a number of segments (broad target), it can either aim to achieve *cost leadership* (at the same time achieving proximity or parity in the bases of differentiation relative to its competitors) or *differentiation* (at the same time achieving cost proximity or parity relative to its competitors by reducing cost in all areas that do not affect differentiation). By focusing on cost, a firm seeks a cost advantage in its target segment, while by focusing on differentiation a company seeks differentiation in its target segment. After a company has chosen one of the three generic strategies to create a competitive advantage, it has to align its platform strategy in accordance.

As the competitive strategy plays a crucial role in the platform strategy, we will describe more thoroughly the three general strategies.

		COMPETITIVE ADVANTAGE	
		Lower Cost	Differentiation
Broad Target		1. Cost Leadership	2. Differentiation
	Narrow Target	3A. Cost Focus	3B. Differentiation Focus

Figure 6. Porter's three generic strategies: lower cost, differentiation, and focus.

4.4.1 Cost leadership strategy

With this strategy, a company aims to being the low cost provider (for a given level of quality) in the industry. In this case, a company can either sell its products at the same price of the competition – and so gain higher profit, or sell under price to increase market share. In a price-war scenario, the company can still be profitable, while the competition suffers losses. In the long run, the cost leader can better survive price decrease in a maturing industry, remaining profitable over a longer period of time. Usually the cost leadership strategy is used over a broad scope.

Process efficiency improvement, economics of scale, vertical integration, outsourcing, and cutting on unnecessary costs are some of the ways a company can create cost advantages.

A company that wishes to become a cost leader should:

- Have a skilled manufacturing process workforce (incl. engineers)
- Be able to invest in production assets to improve the production process.
- Have efficient distribution channels
- Have a skilled design team to enhance design for manufacturing

Risks following the strategy include technology improvement, disruptive technologies (where other companies may be able to invest in cheaper production technology and still provide the same utility [Christensen'97]), or general improvement of production processes in the industry. Furthermore, focused low cost providers may be able to provide even lower cost alternatives.

4.4.2 Differentiation strategy

In this strategy, a company must create a value proposition for the customer that the competition is unable to meet, either due to a unique offering of products or services that are considered better, or different in a positive way. Due to the differentiation, the company can request a price premium, which should cover extra costs due to the uniqueness of the design. In a scenario where the supplier increases its prices, the company can pass the extra cost over to the customer, as the uniqueness of the product diminishes substitutes.

A company that wishes to become a leader in differentiation should:

- Have a skilled research force or/and have access to leading scientific research
- Have a highly creative and skilled product development team
- Have a high image for innovation and quality
- Have a skilled sales force to communicate the value adding of the products

Risks following the strategy include changing tastes of the market, imitation by competitors, as well as well as focused strategy competitors that even further differentiate for a specific segment.

4.4.3 Focus strategy

The focus strategy attempts to achieve either cost leadership or differentiation in a narrow scope. The idea is that by focusing entirely on a specific segment, a company can better fulfill its needs. A focus strategy company often has a high customer loyalty, and so discourages other companies to compete directly.

A drawback for the focused cost leader is his inability to achieve economies of scale due to lower volumes. On the other hand, the focused differentiator can further increase his uniqueness, and so pass higher costs over to the customer, as substitutes are none.

A company that wishes to become a leader with a focused strategy should:

- Have a highly skilled product development team that understands its customers well
- Be able to tailor a broad variety of products

Risks following the strategy include changes in the target segment, imitation, direct competition from a broad cost-leader that modifies his product, and even more focused companies. In Table 1 we sum up the required internal qualities and risks inherited for the generic strategies.

Table 1. Porter's generic strategies require different company intrinsic qualities and bestow different risks (adapted from [Porter'85]).

	Internal Qualities	Risks
Cost Leadership Strategy	<ul style="list-style-type: none"> • Have a skilled manufacturing process work force (incl. engineers) • Be able to invest in production assets to improve the production process • Have efficient distribution channels • Have a skilled design team to improve design for manufacturing (DFM) 	<ul style="list-style-type: none"> • Technology improvement • Disruptive technologies • General manufacturing process improvement in the industry • Threat from a focused strategy company
Differentiation Strategy	<ul style="list-style-type: none"> • Have a skilled research force or have access to leading scientific research • Have a highly creative and skilled product development team • Have a high image for innovation and quality • Have a skilled sales force to communicate the value adding of the products 	<ul style="list-style-type: none"> • Changing tastes of the market • Imitation by competitors • Focused strategy competitor
Focus Strategy	<ul style="list-style-type: none"> • Have a highly skilled product development team that understands its customers well • Be able to tailor a broad variety of products 	<ul style="list-style-type: none"> • Changes in target segment • Imitation • Direct competition from a broad cost-leader • More focused competitors

4.5 Summary of the influencing factors

Summing up, we find that a platform strategy derives from the core competencies of a company, the industry- and market situation, and the company's chosen competitive advantage strategy. In Table 2 we show this, along with hypothetical examples of how a company might use the status of the factors to reason in regards to a platform strategy.

Table 2. A summarization of the factors that a platform strategy must consider

Areas	Factors	Suggestions regarding the Platform Strategy (Examples)
Core Competencies	Identifying present core competency platforms	Core competencies must be used; the competencies of a company should be platformed
Industry Situation	Threat of new entrants	A company should strive to use platforms in a way that increase barriers to entry
	Bargaining power of suppliers	Suppliers should not have too much bargaining power in reference to platforms
	Bargaining power of buyers	Bargaining power affects the decision of what to include in platform. If bargaining power is high, platform threshold and performance and focus on increment add-ons to differentiate
	Threat of substitute products or services	Substitutes are bought either due to cost or differentiation. Platform to minimize threat.
	Rivalry among existing firms	If rivalry high, platform the commodity part
	Clackpaced / Innovation Pace	Platform low paced assets. Platform mid- and high paced depending on volume and volatility.
	Proprietary vs. Open Source	Open source SW platforms might be useful where the need to establish a standard is large
Market Situation	Maturity Level	Usually a high maturity level indicates a focus on cost rather than innovation and technology. Platform commodity and differentiate
	Disruptive Technologies	If threat of disruptive technologies high, the platform should not contain the as-is technology
	Kano's Model of Customer Satisfaction	Depending on volatility, platform threshold and possibly performance
Competitive Strategy	High- or Low Involvement Products	Buyers find high involvement products risky. Platforms in high involvement products should decrease the feeling of risk
	Volatility	High volatility indicates a need for flexibility. Platform accordingly.
Competitive Strategy	Differentiation	Platform threshold assets
	Cost Leadership	Platform threshold and performance assets
	Focus	Knowledge Platforms of importance
	Market Plan	Does company have products in different price segments, industry segments, or family segments. Do not platform differentiation assets

5 Conclusions and further research

Based on our definition of the term platform in a product developing company, we find that a platform strategy is a company's elaborate and systematic plan of action to manage a group of platforms, both individually as well as group-wise. The areas/factors that should be assessed to facilitate a company's platform strategy creation have been identified as deriving from a company's core competencies and chosen competitive advantage strategy, the market

situation, and the industry situation. A number of frameworks/tools have furthermore been identified that we propose using for analyzing the platforms in the context of the areas/factors. We argue that by focusing on these areas/factors, stakeholders can make better decisions and create better platform strategies; including decisions on platform market plan, platform life time, and platform usage. The factors were chosen by examining a body of literature as well as from our own insight.

Future research includes creating a method to facilitate a decision making on strategic action plans for each individual platform an organization possesses. For more information please refer to [Kristjansson and Hildre'04].

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