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# Exploring the Strategic Use of Platform-Based Planning

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## Abstract

*Platform planning is a strategy that can be effectively used to manage today's rapidly changing environment. It is the process by which core elements are identified and used as a foundation for future growth. Although platform planning is most often associated with product design, its value is now being acknowledged along other dimensions of marketing strategy such as brands, target markets, geographical markets, and business processes. This paper summarizes literature introducing different dimensions of marketing strategy that platform planning can be applied to. Next it introduces findings from engineering literature regarding the benefits and risks associated with this type of planning. Finally, it applies engineering knowledge to strategic decision-making in marketing. For example, engineering literature suggests that platform-based planning for global markets will allow firms to better balance the adaptation versus standardization decision but could lead to suboptimal designs and the emergence of grey markets.*

**Key words:** marketing strategy, new product development, platform planning

## Relevance to Marketing Educators, Researchers and/or Practitioners:

Platform-planning can be a powerful tool and a source of competitive advantage. This paper contributes to our current understanding by giving marketers a clearer picture of how best to use it. It does so by introducing knowledge gained from engineering and applying it to strategic decision-making in marketing.

## Introduction

It has been widely observed that the marketplace is changing. The rate of technology change is increasing, the market is globalizing and product life cycles are becoming shorter. In this environment, the focus on marketing strategic decision-making is more intense than ever.

One strategy that can be effectively used to manage today's rapidly changing environment is platform-based planning. A platform is any set of core elements that are reused to achieve a competitive advantage (Kristjansson and Hildre,

2004). Platform planning is the process by which core elements of a product design, marketing strategy, or other processes along the value chain are identified and used as the foundation for future growth introducing time and cost efficiencies. The alternative to platform planning would be a one-off product or one time strategy; a design or decision made for one specific time with limited thought to possible future changes (Swan et al., 2005).

One of the most well-known examples of platform planning is the case of the Sony Walkman. Despite the fact that Sony competes in an industry where competitors copy and sell high quality imitations quickly, the Walkman was a stunning success. Sony was able to maintain market dominance for over a decade despite the fact that they held no determining patents and was unable to defend any technological barriers to entry. What Sony had was skill at managing the development of product families. When product platforms were achieved, individual topological changes were cheap to design and produce. During the 1980s, Sony launched nearly 250 new models based on only four basic product platforms (Sanderson and Uzumeri, 1995).

Platform planning is most often associated with product architectural design, such as the Sony Walkman, and a lot of research into best practices exists in the engineering literature (de Weck et al., 2003). However the value of platform planning is now being acknowledged along other dimensions of marketing strategy such as brands, target markets, geographical markets, and business processes. For instance in branding, platform planning implies managing brands not as a portfolio of individual brands but as members of a brand system. Applied to either a corporate brand or a product brand, sub-brands are created leveraging brand equity across a diverse set of offerings.

Engineering research documents both benefits of platform planning such as cost and time efficiencies and risks associated with platform planning such as slowing down the time to market for the initial product. And although platform planning is beginning to be addressed in the marketing strategy literature, this same literature does not specifically address the benefits and risks of such an approach.

The objective of this paper is to first summarize literature introducing the different dimensions of strategy that platform planning can be applied to. Next, it will bring in findings from engineering literature regarding the benefits and risks associated with this type of planning. Marketing strategists will benefit from such an exercise because it offers a better understanding of when and where platform planning can be used as well as the risks and benefits that need to be considered before doing so.

## Background

A “platform” can mean radically different things in different contexts. It can be an idea such as a political stance on a broad set of issues or a raised area as in a stage or oil platform. These references to platform are frequently used and have a relatively clear meaning. Within the context of a firm however, the term is more ambiguous often used in different contexts and scope.

In firms, the term platform is most often associated with new product development, presumably because the concept of platform planning originated in the automobile industry, and much of the current work is still found in that context. It often refers to a common architectural element that spans multiple products and is implemented with common subsystems and subsystem interfaces (Meyer and DeTore, 2001). Marketing literature however makes it apparent that a gradual increase in scope has occurred highlighting the value that implementing a platform planning strategy can have.

Sawhney’s (1998) seminal article presented the first real expansion of platform planning arguing that firms should manage their market offerings as families instead of portfolios and those families should be based on a common underlying shared logic or platform. Sawhney went one step further defining platform planning 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” (pg. 54). He further argued platform planning should be applied to any strategic dimension that is a vector for growth. Sawhney believed it should permeate all aspects of a firm’s strategy guiding each decision because that is the only way a firm can successfully leverage a high-variety strategy. At the same time, Robertson and Ulrich (1998) lobbied to define platform as a collection of assets including components, processes, knowledge, people and relationships.

Crawford and DiBenedetto (2008) define a platform as “*anything* that can be shared by one or more product families” (pg. 55) and Halman et al. (2003) wrote that even though the typical inclination is to think of platforms in terms of elements of the product architecture, a product family could be built on a multidimensional core of assets that includes processes along the whole value chain, customer segmentation, brand positioning and global supply and distribution.

Acknowledging that the definition of platform can be applied to multiple dimensions, a discussion of each dimension follows:

### Product Platform Planning

Product platform planning is defined as developing a set of subsystems and interfaces that form a common structure from which a stream of related products can be developed and produced efficiently (Halman et al., 2003). A recent example is the next generation Mercedes Benz B-class. Described in

*BusinessWeek* (Reiter, 2011), the new smaller B-class uses a standardized platform. The design will allow Mercedes Benz to offer a family of smaller products based on the same core. Using the platform designed by Mercedes engineers, five different small models ranging from a hatchback to a sport-utility vehicle will be developed.

Numerous other examples of product platform planning exist such as HP computers and Canon Copiers (Meyer and Utterback, 1993), Kodak's cameras (Crawford and DiBenedetto, 2008), information technology and software (Meyer and Zack, 1996), and even Steinway pianos (Wheelwright and Clark, 1992).

While most research is concentrated in the engineering design field, there is a stream of literature exploring product platform design in service processes. For example Meyer and Zack (1996) applied platform planning to information products and Meyer and DeTore (2001) applied it to the re-insurance business.

### **Process Platform Planning**

Process platform planning addresses the specific set-up of the production system to easily produce the desired variety of products. It is the use of flexible equipment, supply chains and inventory systems (Halman et al, 2003). Design for Manufacturing (DFM) is an engineering paradigm that is relatively new and is a good example of process platform planning. It dictates product and process decisions are made in parallel as much as possible and that production considerations be incorporated into product design. DFM is growing in popularity because (1) the large capital cost for setting up a new production line forces many manufactures to reuse existing production lines to reduce the cost of introducing a new product into the market (Smithson et al., 2007), (2) processes may be very difficult to change and can be considered almost as a hard constraint to a designer (Taylor et al., 1994), and (3) production lines tend to outlive individual products so it makes sense to design new products that can be manufactured quickly using existing equipment (Chincholkar et al., 2003).

### **Customer Platform Planning**

Customer platform planning is choosing a customer segment that a firm uses as its first point of entry into a new market. This segment is expected to have the most compelling need for the firm's offering (Halman et al, 2003). Sometimes it is referred to as a "beachhead" strategy, a term that comes from military strategy meaning that when invading you focus your strength and resources on winning a small area (the beachhead) and that becomes the stronghold from which you'll advance into the rest of the territory. In marketing terms, it is picking a single initial group of customers for the first marketing efforts, winning or even dominating that segment, and then moving into other segments. Customer platform planning offers a faster path to growth by leveraging current capabilities to produce new products or services for new users and uses.

Families managed by customer platforms can be extended more readily, logically and coherently to related markets and regions.

### **Brand Platform Planning**

Brand platform planning is the core of a specific brand system. It can be either a corporate brand such as Coke or Toyota, or a product brand such as Pampers or Dove. A brand platform is the set of any shared brand values and signatures. Sub-brands are created replicating the same platform to leverage brand equity across a diverse set of offerings (Halman et al, 2003). Building on a core brand can be accomplished in a variety of ways. The most notable difference is whether an extension is in the same or different product category making it possible to classify as either (1) a line extension (i.e., same category) such as Crest expanding into different types of toothpaste including tartar protection, whitening, sensitive teeth and baking soda or, (2) a brand extension (i.e., different category) such as Crest expanding into tooth whitening, toothbrush, mouthwash, and floss categories. A small set of brand platforms and a relatively larger set of brand sub-brands can efficiently leverage brand value.

### **Global Platform Planning**

Global platform planning is based on a core standardized offering of a globally rolled-out product. It allows for some elements of global products to be standardized and other elements to be adapted to country-specific conditions and consumer preferences (Halman et al, 2003). Firms competing in foreign markets may choose to make no changes to their product and packaging, or they may choose to adapt the physical characteristics or attributes of their product and its packaging to fit the needs and desires of consumers in different countries. Proponents of standardization see consumer needs and wants around the globe converging, allowing marketers to pursue uniform marketing approaches in global markets, but many argue that standardization is not feasible or desirable due to differences in legal, cultural, and climatic environments (Calantone et al., 2004).

In any case, neither complete standardization nor complete adaptation is really possible making a platform planning strategy appealing. Honda created a “world” car which uses a standardized platform incorporating adjustable brackets. The design allows Honda to offer a family of products based on the same core and offered in the US, Europe and Japan with different widths, heights, and lengths (Naughton et al., 1997).

### **Platform Planning: Risks and Benefits**

As marketing strategy literature demonstrated, the concept of platform planning can be used when addressing many marketing decision-making situations. However the risks and benefits of pursuing such a strategy are not considered. For that, we turn to engineering. Engineering literature offers few empirical

studies; however there are both numerous commentary pieces and case studies offering anecdotal evidence. From this anecdotal evidence, benefits and risks associated with pursuing platform planning can be derived. These same benefits and risks can be expanded to other dimensions of marketing strategy as well.

## **Benefits**

Product platform planning introduces economies of scale and economies of commonality and standardization (Meyer and Lehnerd, 1997). Some of the most often mentioned benefits of platform planning is that it drives revenue, introduces cost and time efficiencies, leads to more reliable products and offers managerial benefits.

### *Revenue Driver: More Variety*

The rationale for developing a family of products is customer demand for product variety. In today's fiercely competitive world a high-variety strategy may be required in order for a firm to succeed (Kahn, 1998). At a basic level, product variety has value in the marketplace. Companies who offer a large variety of products can compete more effectively by meeting customer's needs better than their competitors because more variety increases the probability that each consumer will find what they are looking for (Halman et al., 2003). Broader product lines were found to be more profitable despite the increase in production costs (Kekre and Srinivasan, 1990) and successful platform-planning gives companies the greater ability to tailor products to the needs of different market segments or customers (Robertson and Ulrich, 1998). Process platform planning and brand platform planning lead to greater variety. Customer platform planning specifically supports a differentiated marketing strategy.

This is also true with a global family of products. Global platform planning has advantages because it can improve product acceptance on a global base. Benefits include influencing consumer preferences, leveraging existing knowledge, and improving performance while taking advantage of cost savings associated with standardization (Swan et al 2005). This same logic can be applied to brand platform planning. Introducing new products based on a core brand platform offers numerous benefits. When consumers evaluate brand extensions, core brand associations are transferred to the extension and a core brand's associations can contribute a complex yet well-defined image to an extension. In addition, "cross fertilization" can occur when advertising the core brand (advertising can create synergy between parent and extension, ex/ diet cherry coke). It also reduces risk with new products and can enhance the core product's brand image (Pitta and Katsanis, 1995).

Variety however, can be costly to deliver. Higher forecast errors, excessive inventory for some products and shortage for others, higher overhead and administrative costs, higher manufacturing costs, operational problems, high labor costs, multiple production and distribution points, and large inventories all

diminish manufacturing and logistics performance (Kim and Chhajed, 2000). This leads to the next benefit of platform-based design.

### *Cost Efficiencies*

Product variety is associated with increased costs and complexity leading to a loss of scale economies. Organizing around platforms can reduce development costs (Muffatto and Roveda, 2000) by promoting standardization of the core within a family and across time thereby lowering the variable costs of adapting and extending the periphery in the future. In short, platform planning captures both the revenue benefits of variety and the cost benefits of standardization. Sawhney (1998) wrote that it is the *redundancy* in platform planning that allows firms to save significantly. This is true regardless of the dimension platform planning is applied to. One example is Microsoft Windows NT. Of the 4 million lines of code in Microsoft's Windows NT, 35% of the code was reused from earlier versions of the platform significantly reducing the development cost (Sawhney, 1998).

For product platforms, development costs are reduced because parts and assembly processes developed for one model do not have to be developed and tested for the others. Manufacturing costs are reduced because producing larger volumes of common parts achieves economies of scale. Production investment is reduced because machinery, equipment, tooling and engineering time can be shared across higher production volumes. Finally, simplified system complexity reduces the number of parts and processes needed lowering the cost of materials management, logistics, distribution, inventory management, sales and service and purchasing (Robertson and Ulrich, 1998).

### *Time Efficiencies*

Organizing planning around product platforms can “speed derivative products to market” (Moore et al., 1999, pg 29). In his opinion piece, Sawhney (1998) wrote that by reusing platforms, firms can dramatically reduce the development time for products developed from a common platform. The perfect example of this was Black and Decker's consumer power tool division which was able to launch a new product *every week* for several years after developing a platform-based strategy (Meyer and Lehnerd, 1997). When applied to other dimensions of strategy, platform planning can also expedite the time it takes to enter new consumer markets, develop new brand extensions and develop products for new global markets.

### *Product Reliability*

Engineering literature suggests that by using common underlying technology, components and design, firms can improve the reliability of new products because the underlying platform has been thoroughly debugged and tested (Muffatto and Roveda, 2000). Furthermore, a performance improvement in the underlying

platform automatically upgrades all derivative products. For example, Motorola introduced “intelligent lens” technology in its SLR camera platform and was able to upgrade its entire SLR line (Sawhney, 1998). Similarly, multiple brand extensions or global rollouts can increase the complexity of a strategy leading to a drop in quality. Standardized platforms will reduce the complexity thereby improving overall consistency.

### *Managerial Benefits*

Families managed as platforms can be extended more readily, logically and coherently to related products, markets, and geographical regions. HP’s success in laser printers and Inkjet printers can be traced to excellent platform strategy (Sawhney, 1998). In the mid-1980s, HP simultaneously developed multiple product enhancements based on their original 500 series DeskJet printer including single pen, dual pen and Japanese models. They subsequently developed their new 600 and 800 platforms offering color enhancement and upscale printing targeting the small businesses (Meyer and Lehnerd, 1997).

What's more, all platform planning is based on core capabilities (Meyer and DeTore, 2001). Deliberately building families rather than a single product or strategy requires management of a firm’s core capabilities. Strong capabilities lead to strong families (Meyer and Utterback, 1993) and organizing planning around platforms can increase the odds of investing a sufficient amount of resources in core capabilities (Moore et al., 1999).

### **Risks**

Despite the advantages to platform-based planning, engineering literature warns that there are times when it is not always beneficial. The most often cited risks are increased costs and time to market for the initial product, product cannibalization, sub-optimal design, and increased management complexity during the development process.

#### *Increased Costs and Time to Market for the First Product*

In most cases, developing the initial platform requires more of a financial commitment and more development time than developing a single product or strategy. This can result in delaying the time to market for the first product affecting the return on investment time (Halman et al., 2003). It also implies platform-based design may not be appropriate for all products and market conditions.

#### *Product Cannibalization*

The trade-off between saving money through commonality and increasing sales through tailored products or brands is complex. The conflicting forces of commonality and distinction introduce the challenge of cannibalization between products. For example, although research cites platform based product

development as a significant success factor in the automobile industry (Robertson and Ulrich, 1998), not all platforms have had a positive effect. In the mid-80s GM went too far sharing common platforms. There was a similarity about the vehicles and they earned a reputation for producing “cookie-cutter” cars (Kristjansson, 2005). In the mid-90s VW reduced their number of platforms from 16 to 4. The company’s Platform-A supported the Golf, Jetta/Passat, New Beetle, Audi TT, Skoda Octavia, Seat Toledo, Seat Leon, and more. Unwanted cannibalization soon occurred when buyers started trading-down (Kristjansson, 2005). When planning global platforms, similarity can feed gray markets.

With brand platform planning, brand extensions may suffer if the core and extension are perceived to be too distant from each other. Also, a risk is the partial failure of the extension due to brand cannibalism. Additionally, brand dilution is the result of negative effects of an unsuccessful extension. And brand wear-out is the risks of building on a brand platform to the extent the core elements are exhausted and brand equity is diminished (Pitta and Katsanis, 1995).

### *Sub-optimal Design*

Although some engineering research finds that platform product design can increase product reliability, it may result in a less than optimal design. A platform-based design optimizes flexibility but it also gives engineers fewer degrees of freedom. A one-off product architecture will often maximize performance by minimizing conflicting design priorities and not putting interface constraints on engineers (de Weck et al., 2003) meaning a platform design may not be the optimal design. Finally, implementing a platform design may introduce undesirable functions to the system causing technical difficulties. Audi was forced to retrofit a tail spoiler to its TT sports roadster to fix a rear wheel pressure problem caused by unexpected side effects of a common platform (de Weck et al., 2003). Platform based planning can introduce similar risks when applied to other dimensions.

### *Increased Management Complexity*

Engineering literature acknowledges the inherent complexity of managing what different market segments to enter and what these segments want combined with what product architecture should be used and what platforms should be shared is. It requires coordination among the firm’s marketing, design and manufacturing functions. This same complexity is introduced when managing multiple brands. In all cases, conflicts can arise or the process could just get bogged down in the details resulting in the organization giving up or turning out work that lacks character and integrity (Kristjansson and Hildre, 2004).

With regards to process platform planning, as powerful as the idea of DFM is relatively little is known about how to actually coordinate process decisions across domain). In some industries, at some times, it could be that trying to

build on common processes may result in too many people and too many concerns being involved in product development. Process platforms may also introduce interacting and often competing objectives stemming from marketing, design and manufacturing perspectives (Michalek et al., 2006). Finally, process platforms could result in an undesired compromise in product functions due to the utilization of existing resources and would result in lost quality and/or a longer design cycle due to unnecessary redesign at a later stage (Smithson et al., 2007).

With customer platform, increased complexity can lead to a beachhead strategy that is never fully realized leaving a firm that is too narrowly focused. And the problem of management complexity can increase exponentially when managing global platforms, balancing international market segments, what these segments want combined with what platforms should be standardized and what should be adapted.

## **Conclusions**

Although platform planning is most often associated with product design, its value is now being acknowledged along other dimensions of marketing strategy such as brands, target markets, geographical markets, and processes. Engineering literature has been exploring platform planning for some time and offers valuable guidelines when considering platform planning in other areas of marketing strategy. One of the most important considerations is the issue of balancing standardization and customization. Standardization is the basis of platform planning and introduces many benefits such as cost and time efficiencies. However, platform planning also moves products and strategies away from customization introducing significant risks such as increased development time, product cannibalization, sub-optimal outcomes, and increased complexity.

Ultimately, marketing strategists need to consider not only their products and markets, but also the benefit and risks associated with platform planning, in order to make the best decision as to when and why platform planning should be used.

## References

Calantone, Roger, S. Tamer Cavusgil, Jeffrey Schmidt, and Geon-Cheol Shin (2004), Internationalization and the Dynamics of Product Adaptation. *Journal of Product Innovation Management* 21: 185-198.

Chincholkar, Mandar, Jeffrey Herrmann, and Yu-Feng Wei (2003), Applying Design for Production Methods for Improved Product Development. *ASME DETC/CIE Conference*, Chicago, IL: September 2-6.

Crawford, C. Merle and C. Anthony DiBenedetto (2008), *New Product Management 9<sup>th</sup> Edition*. New York, NY: Irwin/ McGraw-Hill.

de Weck, Olivier, Eun Suk Suh and David Chang (2003), Product Family and Platform Portfolio Optimization. *Proceedings of DETC: ASME Design Engineering Technical Conference*, Chicago, IL: September 2-6.

Halman, Johannes, Adrian Hofer, and Wim van Vuuren (2003), Platform-Driven Development of Product Families: Linking Theory with Practice. *Journal of Product Innovation Management* 20: 149-162.

Kahn, Barbara (1998), Dynamic Relationships with Customers: High-Variety Strategies. *Journal of the Academy of Marketing Science* 26(1): 45-53.

Kekre, Sunder and Kannan Srinivasan (1990), Broader Product Line: A Necessity to Achieve Success? *Management Science* 36(10): 1216-1231.

Kim, Kilsun and Dilip Chhajed (2000), Commonality in Product Design: Cost Saving, Valuation Change and Cannibalization. *European Journal of Operational Research* 125: 602-621.

Kristjansson, Arnar and Hans-Petter Hildre (2004), A Framework for Evaluating Platforms in Product Developing Organizations. *7<sup>th</sup> Workshop on Product Structuring – Product Platform Development*, Chalmers University of Technology, Goteborg: March 24-25.

Kristjansson, Arnar (2005), Platform Assessment Matrix (PA Matrix): A Method to Support Decision Making on Product Platforms. Doctoral Dissertation, Norwegian University of Science and Technology, Trondheim.

Meyer, Marc and James Utterback (1993), The Product Family and the Dynamics of Core Capability. *Sloan Management Review* 34(3): 29-47.

Meyer, Marc and Michael Zack (1996), The Design and Development of Information Products. *Sloan Management Review* 37(3): 43-59.

Meyer, Marc and Alvin Lehnerd (1997), *The Power of Product Platforms*. New York, NY: The Free Press.

Meyer, Marc and Arthur DeTore (2001), Creating a Platform-Based Approach for Developing New Services. *Journal of Product Innovation Management* 18(3): 188-204.

- Michalek, Jeremy, Oben Ceryan, Panos Papalambros, and Yoram Koren (2006), Balancing Marketing and Manufacturing Objectives in Product Line Design. *Transactions of the ASME* 128: 1196-1204.
- Moore, William, Jordan Louviere, and Rohit Verma (1999), Using Conjoint Analysis to Help Design Product Platforms. *Journal of Product Innovation Management* 16: 27-39.
- Muffatto, Moreno and Marco Roveda (2000), Developing Product Platforms: Analysis of the Development Process. *Technovation* 20: 617-630.
- Naughton, Keith, Emily Thornton, and Kathleen Kerwin (1997), "Can Honda Build a World Car?" *BusinessWeek*, September 8.
- Pitta, Dennis and Lea Prevel Katsanis (1995), Understanding Brand Equity for Successful Brand Extension. *Journal of Consumer Marketing* 12(4): 51-64.
- Reiter, Chris (2011), "A Mini Mercedes with Big Ambitions." *BusinessWeek*, September, 22.
- Robertson, David and Karl Ulrich (1998), Planning Product Platforms. *Sloan Management Review* Summer: 19-31.
- Sanderson, Susan and Mustafa Uzumeri (1995), Managing Product Families: The Case of the Sony Walkman. *Research Policy* 24: 761-782.
- Sawhney, Mohanbir (1998), Leveraged High-Variety Strategies: From Portfolio Thinking to Platform Thinking. *Journal of the Academy of Marketing Science* 26(1). 54-61.
- Smithson, Arlene, Karim Hamza and Kazuhiro Saitou (2007), Design for Existing Lines: Part and Process Plan Optimization to Best Utilize Existing Production Lines. *Transactions of the ASME* 7: 126-131.
- Swan, K. Scott, Masaaki Kotabe, and Brent Allred (2005), Exploring Robust Design Capabilities, Their Role in Creating Global Products, and Their Relationship to Firm Performance *Journal of Product Innovation Management* 22: 144-164.
- Taylor, Don, John English and Robert Graves (1994), Designing New Products: Compatibility with Existing Production Facilities and Anticipated Product Mix. *Integrated Manufacturing Systems* 5 (4/5): 13-21.
- Wheelwright, Steven and Kim B. Clark (1992), *Revolutionizing Product Development: Quantum Leaps in Speed Efficiency and Quality*. New York, NY: Free Press.

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