

The Process in Developing a New Successful Product

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Introduction

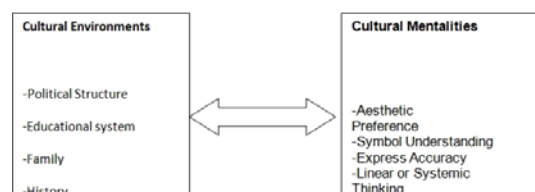
New products play an important role in increasing business value for a company. Identifying key success factors in product design provides an opportunity that allows the product to become successful. There are many factors that could influence a better product outcome, and they can cause difficulties for product developers to sustain their product success in the market. In the manufacturing industry, new product development activities are more focused on developing new products that purposely work according to their specification. According to Janhager (2005) and Pat & OToole (2006), new product development must be analyzed from various views such as: 1) product characteristics establish the elements of product design, 2) design to fulfill the technical requirements, 3) process efficiency manufacturing performance, and 4) marketing increasing return on investments. It is more successful if the new product can bring high performance, give a significant benefit and is more dominant compared to other products (Alli, 2014). In addition, for the success of a product it is also required to integrate all the requirements, such as market needs, environmental consideration, and user needs and preferences.

Process to Develop a New Successful Product

New product development (NPD) is often defined as a process to produce a new physical product accompanied by its purpose and integrated with function while considering the aesthetic elements. A new product development is aims to produce a

product design specification and physical form based on the needs, wants and wishes of the user, which bring a new product technology into a product that is available for sale (Krishnan & Ulrich, 2001 and Ulrich & Eppinger, 2008). The development of a new product involves a series of activities; namely, assessment of business opportunities, generation of product idea, conceptual and development, product engineering, product testing, production and manufacturing, and launching in the marketplace. In a marketing perspective, the product development also includes tasks, such as idea screening, marketing strategy, business economic analysis and market testing (Nijssen & Frambach, 2002). Generally, the development of a new product passes through six stages; namely, product planning, design and development, product engineering, product testing and validation, production and marketing (product introduction). However, other researcher argues that the produce development process has varying development stages depending on the product to be product, such as size, type of product and component (e.g., Clark & Fujimoto, 1991; Najissen & Frambach, 2002; Ulrich & Eppinger, 2008). Table 1.0 classified the five main stages in the development of a new product by Clark & Fujimoto (1991).

Table 1.0: New product development process stage (Clark & Fujimoto, 1991)



The Design and Development Stage

The design and development stage is the most important stages in the NPD. The design and development stage is refers to the design process, which is known as the process for creating tangible form. The activities involved in this stage are activities that lead to innovative ideas, recognize the product specification and increase the performance of the product function, and as well as aesthetic. The design is defined as a process of converting idea into information from which a product can be produced (Caldecote, 1986), which involves both designing and communicating activities (Love, 2000). According to Baldwin & Clark (2000), design as a complete description of an artifact, can be broken down into smaller units, which are called design parameters e.g., color, height and weight of the artifact, and the design task is to choose these parameters. While the process is considered as being a continuous and regular action or succession of actions, taking place or carried on in a definite manner and leads to the accomplishment of some result; a continuous operation or series of operation (Caulkin, 1995). It is a logical sequence of tasks performed to achieve a particular objective (Martin, 1997). The design process consists of a series of design development activities in order to produce a useable product. The process provides a solution that can later be applied in the development of a specific product concept (Ottosson, 2006), and the concept can only start once the product requirements are well described and have met with approval (Dieter & Schmidt, 2009). Figure 1 shows the concept development

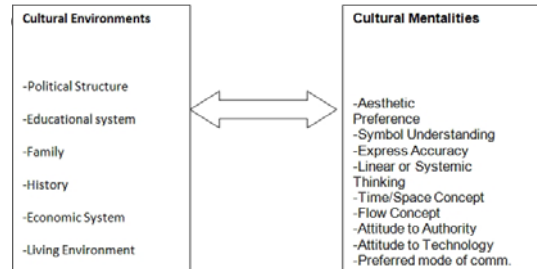


Figure 1: The concept of car design (Alli & Mohamad, 2014)

Step to Design Process

New product development involves a through integration of the process of the design component into a complete product design specification and included the characteristics of a new product. The product process starts with the product definition stage. It attempts to identify the product requirements before the concept of the design begins and later proceeds to product testing and validation and detail product specification. Figure 2.0 shows the steps in the design process. The figure indicates that the characteristics of a new product can be only established in the product definition stage of the design process. The product definition is known as the early stage of the design process in which a new product is born. In this stage, the new product idea must be checked to fit the technology, the market strategies of the company, and requirements for resources.

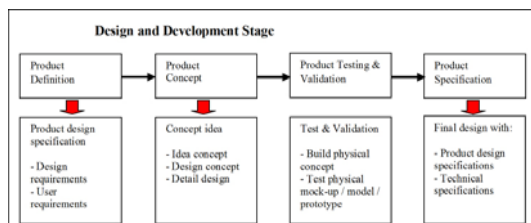


Figure 2: The design process (Alli, 2014)

Increasing the Success of a New Product

The success of a new product is typically acknowledged as a product that satisfies user needs. The user plays an important role in the development of a new product, particularly in determining the characteristics of a new product by offering their perspectives. The user

perspective is a personal point of view that is essential to identify the specification of a product. The involvement of the user in product development has contributed to product competency (Bonner et al., 2005). According to Alli (2014), coordinating product development activities and resources with users is valuable for enhancing the development process and increasing the likelihood of product success. To some extent, collaborating and communicating with the user during the development of a product can provide more opportunities in producing the success in a new product. Many product developers indicated that the user provides considerable access to innovative product idea. They offer a new approach in order to facilitate the product developer to bring new technology, market information and support the development capabilities of the manufacturer. Understanding the user during product development will provide a clearer picture of the intended product that is to be produced. In addition, it will also help to create a new physical image, identity, value and also a new look of product quality (Alli, 2014). The role of the user is not only important in generating new product ideas during the product development process but also in testing the finished product, and in providing end user product support. Table 2.0 shows the user roles in product development.

User role	Development stage	Key issues
User resource	Product planning	<ul style="list-style-type: none"> - Appropriateness of user as a source of information - Selection of user innovator - Need for varied user incentives - Infrastructure for capturing user knowledge - Differential role of existing and potential user
User as co-creator	Design and development	<ul style="list-style-type: none"> - Involvement in a wide range of design and development tasks. - Nature of the NPD context: Industrial/ consumer product - Tighter coupling with internal NPD teams - managing the attendant project uncertainty - Enhancing users' product / technology knowledge.
User as User	Product testing	<ul style="list-style-type: none"> - Time-bound activity - Ensuring user diversity
	Product support	<ul style="list-style-type: none"> - Ongoing activity - Infrastructure to support user interaction

Table 2.0: The user role in product development (Nambisan, 2002)

User role Development stage Key issues.

Conclusion

The success of a new product is dependent on the development process in terms of implementation and completeness. The ability to develop new products that could compete successfully in new markets is a core competency of many successful companies. The product developers must be able to identify key factors that contribute to the success of a new product such as cost, quality, delivery effectiveness, dependability, innovation and flexibility in variations of demand. However, it is suggested by a number of researchers that a successful new product can be analyzed from four different viewpoints; namely, a design that fulfills the technical requirements, increases the return on investments, delivers high performance and fulfills user needs. From a product designer perspective, the success of a product depends on the acceptance of a user for variety reasons, some of which are technical and non-technical. A product not only must fulfill a user satisfaction, but also attract more users and must also feel good to use, and have an appealing design.

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