Mapping the strategic objectives between new product development and product design

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Abstract: This study explores the strategic groups developed from the new product development strategies of various firms in the Taiwanese information industry. The product design strategies of the surveyed companies and the mappings the strategic objectives between product design and new product development are discussed. Based on the questionnaire survey and interviews, in terms of new product development strategy for dealing with global competition, enterprises in the Taiwanese can be divided into four groups: namely prospector, analyzer, defender, and reactor groups. Companies in different strategic groups employ different product design strategic objectives and mappings exist between product design and new product development, particularly for features such as enterprise scale, business type, and product category. Furthermore, in terms of product design strategic objectives, companies in the prospector group tend to be aggressive innovators; those in the analyzer group exhibit innovation in applications engineering; those in the defender group are technologically innovative, and those in the reactor strategic group are progressive innovators. This investigation focused on generalizing the responsive strategies that Taiwanese information firms faced with the global market environment changes. For the product design strategy when an industry faces similar business environmental changes, this study can be a framework for similar research.

1. Introduction

Product design strategy is closely related to new product development strategy [7,16]. The best method of performing effective new product development is not merely a key factor to enterprise survival but also a vital trigger for maintaining firm competitive superiority [1,6]. A general consensus exists among enterprises that "design leads marketing and helps bring firms closer to consumers," and that "enterprises sell not only products but also design" [13]. A good design not only benefits an enterprise, but also offers customers cognition regarding product operation and excellent values of the enterprise identity [14]. Rapid changes in the global market have exerted a significant impact on the information industry, the main industry in Taiwan. For managers in R&D departments and product designers of enterprises, attention should be paid to the actions of competitors, whether they are OEM-oriented or have their own brands. They must deal with the conflicts and challenges resulting from environmental change. Moreover, they have to implement new product design according to the goal set as part of the new product development strategy [7,22,25]. Researchers also claim that integrating product development in an enterprise can promote new product development performance [3,10,11,15,17-21,].

On t he other hand, numerous st udies have sh own t hat "design" ca n provide a n i mportant i ntegral reso urce. "Design" is no t on ly a key m echanism in the fun ctional in tegration of produ ct development b ut also a fundamental series loop in t he total enterprise valu e ch ain [2,5,9,15,23]. Chang and Hsu [4] and Hsu [12] also demonstrated that Taiwanese enterprises have their own strategies and approaches in product design. However, there is limited literature on the integration of front end needs and real end execution of product design, namely the complementation of product development and produ ct design strategy in practical acti vities, is li mited. This study fo cuses o n co mpanies in th e T aiwanese info rmation indu stry with R&D, design and m anufacturing abilities. Ques tionnaire survey and i nterviews a re us ed to expl ore the m appings between new product development strategy and product design strategy. This study has three aims: (1) To explore the status of product development an d st rategy execution in t he T aiwanese in formation in dustry; (2) T o an alyze th e co ncrete operational approaches in product development st rategy and pr oduct design strategy in Taiwanese information industry companies; (3) To identify the strategic objectives of companies in different strategic groups in Taiwan's information industry.

2. Methods

The product design and development strategy study is implemented in two stages: questionnaire survey and in-depth i nterview. D uring S tage 1 , a questionnaire s urvey was em ployed to ex plore new p roduct de velopment strategies, in cluding literature rev iew, questionnaire d esign, selection of su rvey subjects, and qu estionnaire delivery, t o a nalyze t he si tuation o f new pr oduct development st rategy an d t he ne w product development strategic groups in the Taiwanese information industry. During Stage 2, subjects from questionnaire survey were chosen for the in-depth interview. The data regarding the execution of product design strategies of local firms in the information industry were then analyzed via content analysis. Finally, the relationships between new product development strategies and product design strategies were explored.

3. Mapping the strategic objectives between new product development and product design

Following conducting content analysis based on the interview results, 21 strategic objectives related to product design were iden tified: reducing production co sts, ease of m anufacturing an d m aintenance, upgrading product quality lev el, in creasing product add ed v alue, rei nforcing tech nical co operation, reinfo rcing marketing information gathering and adaptation ability, reinforcing the division of labor in the same trade, developing new target m arkets, im proving design a nd development pr ocedures, desi gning a good h uman-machine i nterface, reinforcing promotion ef fectiveness, designing unique product f unctions, co nsidering e nvironmental desi gn, increasing R&D i nvestment, adding product va riety, de veloping s pecial product form feat ures, upgrading firm product desi gn i mage, i mproving product i mage an d popularity, st ressing s ocial a nd cul tural performances, considering special users, and emphasizing marketing research.

Companies i n t he P rospector st rategic group ha ve diverse desi gn strategic o bjectives, i ndicating t hat t hese companies actively stress R&D and enterprise brands. Such firms thus maintain their market dominance. Owing to their strong brand image and popularity, such firms continuously adjust the marketing service system, actively develop new concept products, improve production flow, reinforce product price advantage, improve production automation ef ficiency, and a ctively develop ne w m arket segments. The se com panies are ge nerally lar ge sca le and primarily i nvolved i n OB M. M oreover, such co mpanies ha ve com prehensive product d evelopment categories and diverse design strategies.

Companies in the Analyzer strategic group are competent in applying current technology to create low cost and high quality products with high value added to promote their own corporate image, while simultaneously minimizing risk and maximizing benefits. The way companies in this strategic group adopt design strategy resembles that used by companies in the Prospector strategic group. These strategies include reducing production costs, achieving easy manufacturing and maintenance, upgrading product quality level, increasing product added value, reinforcing technical cooperation, reinforcing marketing information gathering and adaptation ability, reinforcing the division of labor in the same trade, developing new target markets, improving design and development procedures, designing a good human-machine interface, developing unique product functions, considering environmental design, increasing R&D investment, adding product variety, developing unique product forms, and upgrading firm product design images. Their business type tends to be ODM focused and covers numerous products.

Companies in the Defender strategic group exhibit a technical innovation tendency, stressing the improvement of product manufacturing flow and production techniques to produce and launch low cost and high quality products. Due to environmental restrictions, such companies rarely adjust their technologies, structure, or organizational operations. Instead, such firms emphasize the maintenance of current products and market. Consequently, such firms are mainly involved in pursuing stable growth and improved production efficiency. Companies in this strategic group stress technological innovation in product design, and share the following measures in common: reducing production costs, ease of manufacturing and maintenance, upgrading product quality level, increasing product added value, reinforcing technical cooperation, reinforcing marketing information gathering and adaptation ability, reinforcing the division of labor within the same trade, establishing new target markets, and improving design and development procedures. The scale of such firms ranges from medium to small and they are mainly involved in ODM. Therefore, these firms place considerable emphasis on manufacturing techniques and enhancing quality.

Finally, companies in the Reactor strategic group demonstrate a tendency of progressive innovation, adjusting their current product design and product mix in response to environmental and market pressures. In terms of design strategic objectives, companies in this group tend to adopt conservative or progressive innovation product development strategies, including reducing production costs, ease of manufacturing and maintenance, upgrading product quality level, increasing product added value, and reinforcing technical cooperation. They are small enterprises and mainly involved in OEM. The product categories of such companies thus are less diverse than those of firms in other strategic groups. Companies in this group are more conservative in design innovation but are mainly focused on reducing costs and improving their manufacturing ability.

This investigation focused on generalizing the responsive strategies that Taiwanese information firms faced with the global market environment changes. For the product design strategy when an industry faces similar business environmental changes, this study can be a framework for similar research.

4. References

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