1996-F-520-21-1

Product Development Cycle Time and Commercial Success

Individual Research Evaluation Paper

Management of Engineering and Technology EMGT 510/620 Dundar F. Kocaoglu

> by Hyuncher Chong

Many supporters of time-based competition believe that reducing the product development time will lead to product success. By reducing the product development time, the product can be in the market before any of their competitor's. This allows the company to establish themselves as the market leader and set standards for technology. In addition, by releasing the product ahead of any competition, the product can have a high profit margin and longer product life, allowing the company to increase their profit and market share.

This research paper, "Product Development Cycle Time and Commercial Success" has shown that on the contrary, reducing the product development time has no correlation to the product success. Some of the research paper states that longer product development time and extensive work during initial stages of product development is a critical factor of the product success. They claim that investing numbers of years of careful planning and testing and designing the solid platform for the product that can be easily adaptable to new technology is a critical factor of product success.

There were various studies done to understand the relationship between the product development cycle and various product life. This paper focuses on the following three aspects of the product development cycle time.

1. Relationship between the product development time and commercial success.

2. The product characteristic effects of product development time.

3. Product development time effect on corporate renewal and product line extensions.

This research paper, "Product Development Cycle Time and Commercial Success" was based upon a study of a company with substantial technological strengths in its core

1

consumer and industrial product market area. The data analysis was based upon findings of their 23 product development cycle over 6 years. This research paper used different types of statistical analysis to analyze and validate their findings. The frequency distribution method was used to measure the product development time, and the Q-sort method was applied to assess product performance. For this analysis, they used five categories (ranging from inferior to superior) to rate the product success and tabulated the results according to their frequency.

The nonparametric test and Kendall rank correlation T were used to correlate and find significant factors between product development time, product characteristic effects, and the performance. The p value of less than 0.05 was analyzed as significant factor for this analysis.

The results from this study clearly suggest no relationship between the product development time and the product commercial success. The data shows an even distribution of product success frequency independent of development time. However, there was a good correlation between the product characteristics and product development time. The study suggests that the development time is much longer when the product requires a new technology, technology integration, new customers, or new distribution channel. The study also shows that higher budgets tend to extend the development time.

In addition, the results also indicate that the product development cycle time for the new product is much longer than the product development cycle time for the existing product extension. However, the product commercial success between the new product development was very similar to the existing product extensions. This suggest that the development of the new product do not guarantee greater chance for the product success. Although popular studies suggest that the product success may depend upon rapid development cycle time, this study shows that reducing the development cycle time without carefully understanding the underlying organization and technical foundation will lead to immature product release and may be the major cause for product commercial failure.

The contributions of this paper to the literature is that it points out several important aspects of the product development cycle time with correlation to the product marketing variables. This paper analyzes that such factors as newness of customers, distribution channels, and technology, had major impact on the development cycle. In addition, this paper categorizes some of the various important aspects of the product market success as well as the relative strengths of technology in terms of newness and integration effect. Other research papers in the field did not capture this component of the product development cycle time.

Several research papers, such as the Clark and Fujimoto study, and the Sanderson and Uzumeri study support the conclusion drawn in this paper. The idea being that to reduce product development cycle time in isolation from underlying organization and technology foundation will not lead to product commercial success. In addition, the studies claim that the product success come from careful planning and achieving the simplicity and efficiency design before the product release.

The strengths of this paper lie in the systematic approach of the data analysis. The data analysis shows that the significant and nonsignificant factors were tabulated with statistical confidence. Another strength is that this paper was able to analyze some of the very difficult components of marketing variable effectively using various statistical method to validate the significant factors.

3

Some of the weaknesses of this paper is that only a single company was used as the basis of their study and analysis. Although the data analysis clearly showed no correlation between product development time and commercial success, if this study was conducted in an industry where the product introduction was time sensitive, the results might have been very different.

Another weakness is that the study didn't account for any product life stage effect and did not differentiate by product type. If a product is at the bottom of the S curve in product life cycle, and products were categorized according to their industry sector, the conclusion drawn from this paper might have been very different. For example, semiconductor memory chip makers are constantly trying to reduce their product development cycle time. Current leaders of the market might introduce the memory chip at X price at early stage of the product life cycle, but after a 2-3 year period of product introduction, as more competitors enter the market, the price will drop to one tenth of the original price. Therefore, the market leader's profit margin is over 200-300% at early stage of the product life cycle but as the competitors enter into the market, the profit margin can drop substantially. This is one of the major reasons to shorten the product development cycle time.

The conclusion of this paper is clearly stated and well summarized. All of the aspects were appropriately analyzed and discussed. A meaningful conclusion was drawn and adequate references were given. The conclusion states, with the justification of their research that there is no correlation between the product commercial success and the development cycle time. However, the paper also discusses that the rapid development in certain situations, as in high technological arena and in times of market uncertainty may result in product failure. This

4

statement was stated in the first paragraph of the conclusion and I feel that the paper didn't justify this with meaningful data.

After studying this paper and its related literature, I feel the following can be a good research area for future topics. 1) Effect of different sector of industry on development cycle and product success, 2) Longer product cycle effect on product commercial success, 3) Critical factor of product development cycle in commercial success.