

Analysis from "Creative Destruction" to "Destructive Creation" Through the Evaluation Matrix System

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ABSTRACT

Innovation is the driving force for companies to survive, especially in the contemporary knowledge-based economy. Without the discovery of new ideas and breakthroughs in development of products can companies hardly keep a competitive profile in the market. This paper is to introduce an evaluation matrix system, which is designed to evaluate the potential of the products. It illustrates the two terms, i.e. "creative destruction" and "destructive creation" and then elaborates on the details of the evaluation matrix system. The process of innovation can be divided into three parts, i.e. ideation, selection and execution, and the author considers the stage of selection as the most challenging and also the most important part throughout the whole process, and creates the "evaluation matrix system", in which several selection criteria are included. The design of the matrix targets is intended to help companies select the most prospective idea based on a concrete system, especially when they are faced with a vast amount of thoughts that they have come up and wonder which one to choose. This research has a great significance in helping companies select the ideas of innovations that are most likely to achieve market success.

Keywords: Innovation, Schumpeter, Creative destruction, Selection, Evaluation matrix system.

1. INTRODUCTION

A well-known theory of Schumpeter, i.e. "creative destruction", describes the process that new innovations replace existing ones that are rendered obsolete over time. He argues that economic progress is not gradual and peaceful but rather disjointed, abrupt, and sometimes even unpleasant, and that innovation is the driving force of the economy [1], which was a unique insight into the development of economy and contrasted sharply with the traditional economic dicta at that time, insisting that markets passively tend toward equilibrium until profit margins are wiped out [2]. The economist used the term "creative destruction" to describe the dismantling of current practices to make way for new innovations, including new products, new methods of production, new means of distribution, etc.

However, the destructive part of the creation cannot be ignored because it may turn out to be an extra cost in social, economic, environmental and

other respects, which may sometimes outweigh the benefits and thus lead to a complete destruction. Innovative economic activities have always also meant losses, sometimes even hardship, to some members of society, and incalculable risks [3]. There is no doubt that during Industrial Revolution, the magnitude of the destructive elements is relatively small compared to net value added to GDP. However, the author believes that recently the destructive component of innovations has increased relative to the size of the creative component since the new technologies are often creating products which are close substitutes for the ones they replace whose value depreciates substantially in the process of destruction. This paper attributes the arising problem to the failure of the company when it comes to selecting the prospective ideas from the huge amount of thoughts.

People have to confess that innovation is difficult from all aspects. People have seen many seemingly prospective ideas at the beginning finally

turn into a catastrophe, bringing more damage than benefits. In fact, innovation can be divided into three phases, i.e.: ideation, selection and execution. Generally, companies are good at generating new ideas; therefore, the process of ideation cannot pose a real difficulty. This paper is to focus on the stage of selection, which is commonly regarded by many companies as the most challenging part during the process of innovation. Companies are usually confronted with various ideas but do not know which one to choose thus hinder the next stage of putting the selected one into practice.

The aim of this paper is to introduce a method of evaluation matrix to help companies that are flooded with various ideas and do not know which one to select and put into execution. In order to help the companies who are struggling to pick out the most prospective product, an evaluation matrix system is designed, in which several selection criteria are included. The evaluated matrix system can be used to equip the company with the acute insight when it analyzes the prototypes of the ideas that it has come up with. Having a sharp eye is the key for corporations to guarantee that the chosen idea has more possibilities to become a "creative destruction" rather than a "destructive creation". Therefore, this designed evaluation matrix system can be a reference for companies at the stage of selection.

Admittedly, there is a research gap in how companies can select the potentially best idea to raise the possibility of success. In order to fill this gap, this paper is to put forward a reasonable method, i.e. evaluation matrix system, intending to help companies with the process of selection, so that they can move forward to execution, the final stage of innovation. This paper also calls for further research in innovation economics to study the effects of innovations by investigating their creative and destructive components, so that companies can launch more products which are conducive to the growth of GDP and to employment [4].

2. THE THEORY OF "CREATIVE DESTRUCTION"

Schumpeter argues in "Capitalism, Socialism, and Democracy" that capitalism is always evolving and never unchangeable, with new markets and new products entering the sphere. He also raised the self-coined term "creative destruction", which is regarded as one of his best-known theories. The phrase describes the process that sees new innovations replacing existing ones that are

rendered obsolete over time [5]. For example, in the late 1800s and early 1900s, incremental improvements to horse and buggy transportation began to be valuable, and innovations in the buggy and buggy whip could fetch a considerable price in the market, because people no longer use horse-drawn buggies to commute. In this way, the demand for whips to drive the horses has widely been destroyed. With the Ford's Model T appearing in 1908, however, these former technologies were effectively driven out by a superior innovation [6]. Over time, the latest innovations will continue to weed out older ones, just as numerous iterations of vehicles have subsequently driven out the Model T and generations of its successors [7]. Similarly, the electric power market has witnessed the first steam turbines replaced, generation by generation, with the current natural gas plants, solar panels, wind farms, etc.

3. THE THEORY OF "DESTRUCTIVE CREATION"

The phrase "destructive creation" is newly coined and adapted from the original Schumpeterian theory, referring to a very different thesis that the damage caused by a new product or technology appears to outweigh the benefits of it. This term alerts us to the downsides of some innovations, which are often overlooked due to the superficial benefits but actually pose a threat or a potential one to many aspects, including environment, health, economics, etc. [8] In addition, large numbers of skilled workers in an existing industry may be driven into unemployment. New technology that is adopted to replace the old one might cause latent environmental or economic damage that may show up later on. One of the typical examples of destructive creation is the development of single-serving coffee pods and machines, which has been almost ubiquitous in commercial and office coffee service. While it seems to bring convenience to those who are keen on coffee, it produces an enormous increase in waste generated every day as many millions of servings are produced and consumed daily, each one leaving a non-recyclable, individual serving pod to be disposed of. John Sylvan, the inventor of the innovation, confessed in a 2015 interview in *The Atlantic* magazine that he felt bad sometimes for creating this "destructive creation" [9].

4. THE EVALUATION MATRIX SYSTEM

There are many studies focusing on Schumpeter and his theories, including "creative destruction", entrepreneurship, business cycles etc, and also those discussing the newly-coined phrase "destructive creation" and enumerating many related examples. However, a research gap in how to prevent the occurrence of "destructive creation" is identified. In fact, innovation can be divided into three phases, i.e. ideation, selection and execution. "Destructive creative" comes into being mainly because something goes wrong in the second stage, i.e.: selection. Since the problem has been pinpointed, the scope of the study could be narrowed down and it is easy to find out a solution to help companies choose the product with the potentially best prospective, which is called evaluation matrix.

Supposing a person has now been hired by a fitness company who came up with two different ideas: one is an intelligent leg strap (Product 1) and the other is called Holographic Coach (Product 2). Since only one product can be put into practice, the person is asked to choose the one with better potential. So this paper lists four criteria types to evaluate the two products from different dimensions, including payoff, investment (including total product cost and time to completion), risk and user experience.

In addition, the study intends to involve all the departments to decide the weight for each criterion and take the average before removing the two extreme scores, so that relative fairness can be guaranteed. "Table 1" shows an example that how much weight the department of R&D, the department of Marketing, the department of

Finance and the department of Customer Service give respectively to the criterion "payoff" and how the final overall weight for "payoff" is calculated. The final overall weight for other three criteria can be determined in the same way, which is clearly illustrated in "Table 2".

Table 1. Final overall weight of the selection criterion type of payoff after removal two extreme scores by the department of Risk Control and of Human Resources

Selection criterion type	R&D	Marketing	Finance	Customer Service	Final overall weight
payoff	20%	60%	50%	40%	$(20\%+60\%+50\%+40\%)/4=42.5\%$

Table 2. The final overall weight for each criterion

	Payoff	investment	risk	User experience
R&D	20%	60%	10%	10%
Marketing	60%	20%	5%	15%
Finance	50%	20%	20%	10%
Customer Service	40%	10%	10%	40%
Human Resources	10%	70%	10%	10%
Risk Control	70%	5%	10%	15%
Final overall weight	42.5%	27.5%	10%	15%

Since all the criteria, i.e. payoff, measured by NPV(net product value), investment, calculated by annual R&D (research & development) project cost and risk, quantified by probability of success are measured by different units, and user experience is completely not measurable, we cannot simply sum up all the data directly. Therefore, the study gives each product a ranking as for one specific ranking, ranging from 1 to 3 (1=low, 3=high).

Finally, this study multiplies "ranking" and "importance weight" for each criterion and sums up all the sub-score with consideration of the direction and gets the final overall score for each product.

Table 3. Evaluation matrix of Product 1

Evaluation Matrix of Product 1					
Selection criterion type	Specific indicator	Direction	Ranking (low=1, high=3)	Importance weight	score
payoff	Product selling price	+	2	42.5%	0.85
investment	Total R&D cost	-	2	27.5%	0.55
risk	Probability of market success	+	3	10%	0.3
User experience	portability	+	3	15%	0.45
Total score: 1.05					

Table 4. Evaluation matrix of Product 2

Evaluation Matrix of Product 2					
Selection criterion type	Specific indicator	Direction	Ranking (low=1, high=3)	Importance weight	score
payoff	Product selling price	+	3	42.5%	1.275
investment	Total R&D cost	-	3	27.5%	0.825
risk	Probability of market success	+	2	10%	0.2
User experience	portability	+	1	15%	0.15
Total score: 0.8					

As is shown in the "Table 3" and "Table 4", Product 1 gets a higher score than Product 2. Therefore, it is recommended for the company to select Product 1 for the launching program.

5. CONCLUSION

The evaluation matrix shows clearly the exact score that each product gets. According to the final result for each evaluated product, companies can make decision more wisely on the basis of a rational evaluation system. Therefore, the evaluation matrix system serves an inspiration for companies to choose their potential product during the innovation progress. But this system has some shortages, e.g.: it does not involve many criteria because the author wants to simplify the experiment. But in reality, the company should consider many aspects when it is going to launch a new product. Besides, the judgement is still subjective, even though this paper has involved every department of the company to decide the overall weight of each selection criterion, attempting to omit the unfairness caused by subjectivity. There are not many studies focusing on how to help companies selecting the product with the best prospective, therefore, the references that are relevant to this study are insufficient.

AUTHORS' CONTRIBUTIONS

This paper is independently completed by Guning Jiang.

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