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Research Paper

Six Sigma - Can A Key For A Large Door Open A Small One?

Management

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ABSTRACT

The concept of six sigma found its utilization in huge company very effectively. The purpose of this paper is to explorate whether the scope of six sigma can fit into the small scale industry. It follows a qualitative research design aided with factor analysis to support the study. The basic ideology behind the working is, 'the belief of human is responsible for his attitude and that attitude is responsible for his action'. The first part of the paper helps in validating the factors identified. The results prove that the quality of the product demanded helps in making a positive impact in the attitude whereas the monetary issues make a negative impact. This paper also describes the factors in such a manner that it makes this area as a prominent area of research.

INTRODUCTION

The origin and the past history read six sigma is a winning formula in companies. The companies which proved enormous results are huge and organized sectors. This point is the point of consideration for us. We question why can't six sigma be implemented to small companies? Whether it's a phenomenon for large companies alone? Whether a costlier process? Needs any special change in the organizational structure? This paper seeks an answer for all these questions through this qualitative study. This study follows "The Theory of Reasoned Action, Theory of Planned Behavior, the Composite Model of Attitude Behavior Relations and the Technology Acceptance Model, we develop and test a model to explain whether six sigma hinders the interest of small scale industry people. The findings shed light on factors that have contributed to the factors provoking the implement of six sigma.

BACKGROUND OF SIX SIGMA

Around 1980 Robert Galvin, at that time CEO at Motorola, realized the importance of working systematically with variance reduction as the Japanese had done for a prolonged period (Bergman and Klefsjö, 2003). Together with Bill Smith, Mikel Harry and Richard Schroeder, he created an improvement program that was given the name Six Sigma. According to Basu (2004), Bill Smith came up with the idea of "inserting hard-nosed statistics into the blurred philosophy of quality". The program was inspired by Japanese work, but also strongly influenced by Juran's thoughts. Due to Six Sigma, Motorola managed to reduce their costs and variation in many processes and were an inaugural winner of America's Malcolm Baldrige National Quality Award in 1988.

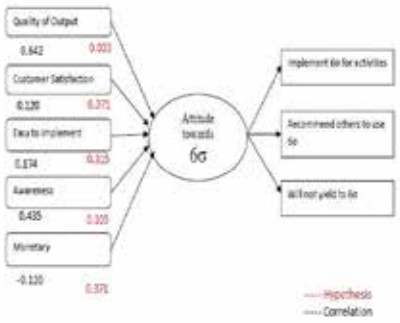
They reported a profit from the program of USD 700 million for 1991 alone (Bergman and Klefsjö, 2003). Another example is the Volvo Car Corporation in Sweden who claim that their Six Sigma program has contributed with more than 55 million Euro to the bottom line between 2000 and 2002 (Magnusson et al., 2003).

The Six Sigma results by Motorola impressed Jack Welsh, then CEO at General Electric (GE), and Welch launched Six Sigma in late 1995 as one of four strategic initiatives. The success of Six Sigma at GE under Welsh's leadership is undisputed. In the 2000 GE Annual Report Welsh said: "Six Sigma has galvanized our company with an intensity the likes of which I have never seen in my 40 years at GE". As a result the Six Sigma accelerated during the late 1990s.

MODEL DEVELOPMENT

The paper has a model designed to provide a frame work for examining the factors identified. The factors are segregated as independent factors and dependent factors. This particular case has two set of dependent factors, for our convenience we coin them as first order dependent variable and second order dependent variable. The framework provides the comparison of the independent factors against the first order dependent factor and the comparison of independent factors against the second order dependent factors and also the cross comparison. This research deals only with the impact of the independent factors with the first order dependent variable. The framework for the study is shown in Figure 1.

FIGURE 1
FRAMEWORK OF SIX SIGMA



METHODOLOGY

The primary objective of this study is to identify the factors which hinder the belief of the small company's perspective towards the implementation of the six sigma. For this purpose the paper uses a model framework. This framework helps in validating the factors.

Samples are the people working in the small companies (diaries and notebook binding). Sample size is 10. Sampling methodology is convenient sampling.

INDEPENDENT FACTORS

Quality of Output

In the present world all people need their value for money. This can be achieved by assuring the quality of the product. Ensuring the assured quality is the only way to achieve customer delight. So this factor is regarded as the key element in determining the attitude of the owner of the small company towards six sigma.

H1a : The quality of the product significantly affects the quality method to be followed

Customer Satisfaction

At the same time supplying a good quality product at high price is not a tough task. The effective operation lies when a company can produce a good product at an optimum price. This does not mean neglecting some features and reducing the price. Hence a customer gets satisfied when he gets all his desire fulfilled at an optimum price.

H1b : Customer satisfaction has an impact on the methodology to be followed/to be implemented

Easy to implement

It's a human mentality that we tend to do work which deserve minimum calculated risk. When a thing is easy to be done or

carried out our mind goes to it. This six sigma has proven results that it has methodologies which are easier than the other methods like TQM, LEAN. This paper helps to find whether that proven results is sufficient to hinder the interest of the small company employees towards it.

H1c : Selection of the methodology is significantly impacted by the ease of use.

Awareness
We are always bit hesitant to try new methodologies. This attitude resists us in learning the new things too. Hence we are not aware about the entire thing before we accept or reject. This partial awareness may sometimes result in avoiding a useful technique and accepting a not so useful technique.

H1d : Awareness about the methodology enhance the attitude of the employee towards the implement of the method.

Monetary
Everything is money now. It's quite obvious that we don't want to try something new by incurring loss or without any profit. Moreover engaging a new technique needs separate training, change in organizational structure and time consuming. All these require money to be spent more than the actual. Hence monetary policies play a key role in opting for a new venture.

H1e: Monetary policies significantly hinder the attitude towards the implement of the new methodologies.

DEPENDENT FACTORS
The attitude and the outcomes are the dependent factors. For the convenience the factors have been segregated into first degree and second degree. This paper restricts itself to the first degree i.e. the attitude.

EXPERIMENTAL RESULTS
The executed results from the statistical package tool are depicted in Table 1.

TABLE 1
CORRELATION AMONG INDEPENDENT FACTORS

		Aggregate	Quality	Customer	Easy	Awareness	Monetary
Pearson Correlation	Aggregate	1.000	0.642	0.120	0.174	0.435	0.120
	Quality	0.642	1.000	-0.303	-0.139	0.071	0.058
	Customer	0.120	-0.303	1.000	-0.112	0.039	-0.514
	Easy	0.174	-0.139	-0.112	1.000	0.027	-0.133
	Awareness	0.435	0.071	0.039	0.027	1.000	-0.618
	Monetary	0.120	0.058	-0.514	-0.133	-0.618	1.000
Sig. (1 Tailed)	Aggregate		0.023	0.371	0.315	0.105	0.371
	Quality	0.023	-	0.197	0.350	0.423	0.437
	Customer	0.371	0.197	-	0.379	0.458	0.064
	Easy	0.315	0.350	0.379	-	0.471	0.357
	Awareness	0.105	0.423	0.458	0.471	-	0.028
	Monetary	0.371	0.437	0.064	0.357	0.028	-

(Computed Data)

DISCUSSIONS
This explains the independent factors and the impact it makes over the employees of the small companies in making a decision towards the implementation of six sigma. The result from this qualitative approach explains that the devised model fits the factors identified. The output diagram portrays the comparison of the observed and the forecasted values. Then the hypothesis testing (0.023) explains that the factor Quality of the product has significantly influenced the attitude of the employee towards six sigma. The correlation test explains that the quality of the product enhances the attitude with the maximum level of 0.642. The monetary factor explains that it correlates negatively with the attitude -0.120.

The quality of the product when tested for hypothesis following a one tail analysis reveals that the significance value is 0.023 which explains that there is no significant difference in the quality and the attitude i.e. the mean quality of the products do not varies with the mean obtained for the attitude. Whereas the other factors easy to implement, monetary, awareness and customer satisfaction experience the null is rejection which reveals out three is a significant difference in the mean obtained.

For enhancing the results obtained we undertake correlation analysis and this also explains that the quality of the factor prominently impacts the attitude of the employee towards implementation and the monetary factor has a negative correlation, and this portrays that they both are correlated negatively such that when the money for implementation increases their tendency to implement will decrease.

This paper opens the further scope for carrying the research towards establishing the prominent relation between these factors and how they are really correlated against each other which explains the outcomes of the belief.

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