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Factors influencing the success of six sigma program in an organization

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Abstract
The Six Sigma methodology is the most effective continuous improvement approach that can support an organization to maintain its competitive position in the global market, and achieve business goals and organizational. The purpose of this paper is to explore the factors influencing the success of Six Sigma program in an organization and to know the saving achieved contributes to the success of Six Sigma. On the other hand, the study indicated that the contribution made by sigma level achieved to successful Six Sigma implementation and also one time delivery of project contribution to success of Six Sigma. This article provides a platform to gain a deeper understanding of the requirements necessary to ensure the successful implementation of six-sigma in organizations.

Keywords: Global market, implementation, organization, success, six sigma

Introduction
Six Sigma being a project-oriented and statistically based approach towards quality measurement and improvement refers to accomplishing a sigma level of 3.4 Defects per Million Opportunities (DPMO) or 99.9997% precision for any product or service delivered by an organization. Defects may vary from any damaged tool to a faulty customer invoice. It is obligatory for any customer service organization to cater to the needs of the customer and ensure that their satisfaction is gained. Information Technology (IT) companies providing technological services to the customers have the privilege of getting closer to the customers, receiving their feedback and incorporating their voice in quality improvement programs. Of late, many companies compel their service providers to adopt the well-established Six Sigma practices to continue their business in the future. Because of the increasing high-quality product expectations of the customer, it is essential for companies to concentrate on their quality of products which constitutes the core of quality and serves as an adept technique to confront the challenges and outlive in the competition. Any kind of negligence or poor focus on these factors may pose high risk to the industries and may thwart the existence of the industry. Alternatively, companies tend to lose their customer base owing to poor quality of products or services.

The primary focus of Six Sigma is on developing and implementing quantifiable strategies that emphasis on perfecting the process by reducing the defects. Statistical interpretation of Six Sigma strategies is focussed far ahead of qualitative elimination of defects as perceived by the customers. Sigma quality level is determined by the frequency of defects in the final output or the yield of the process.

Introduction of any quality program faces resistance, unless the employees or all the stakeholders involved are perceive the necessity of the initiative. Therefore, perception of the benefits of Six Sigma by the employees is critical for the program. Six Sigma program would be beneficial to their organization. Six Sigma strategy can be used to eliminate causes of defects in business processes by concentrating on outputs which are critical to customers. This study also concludes that it is an approach that can be used to increase savings, on-time delivery and sigma levels that can reduce costs and increase revenue growth and business profitability.

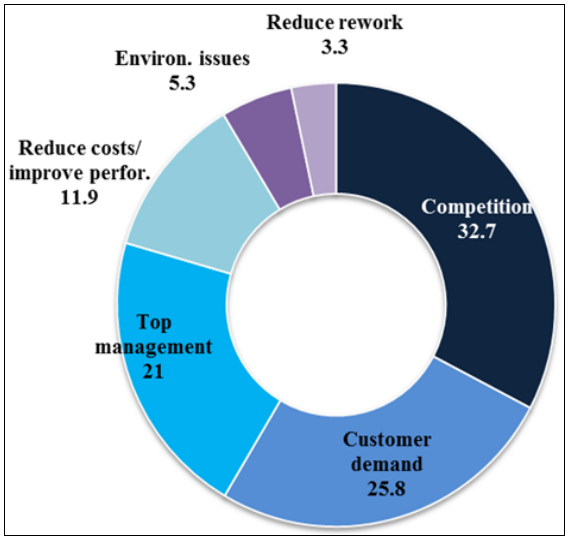

Fig 1: Motivation factor to start Six Sigma

Literature Review

Anthony & Coronado (2002) [2]. Critical success factors found were– commitment and involvement of management; understanding the principles, tools and techniques, and methodology of Six Sigma; relation of six sigma to business strategy; relation of six sigma to customers; process of selection, tracking and reviewing of projects; cultural and organizational structure; training and skills relating to project management; and linking of six sigma to employees as well as suppliers.

Anthony *et al*. (2007) [1]. The main critical success factors were found to be - focus on customers; involvement and commitment of management, business strategy's link with six sigma; skills of project management team; organizational culture; and understanding the methodology of Six Sigma.

Swami & Prasad (2010) [12]. The critical success factors for implementation of six sigma strategy were– strategic planning (before quality implementation), commitment of leaders for leadership, work culture of the organization, implementing the feedback received from VoC (Voice of the Customer) and contribution of effective process parameters.

Leong & Teh (2012) [8]. This study revealed that involvement and commitment of top management as well as training and education was positively related to implementation of Six Sigma. Conversely, teamwork was one factor that was negatively correlated with Six Sigma implementation

Objectives

1. To Know Savings achieved contributes to the success of Six Sigma.
2. To Study On-time delivery of projects contribute to the success of Six Sigma.
3. To Study the contribution made by sigma level achieved to successful Six Sigma implementation
4. To identify various motivating factors to start a six sigma program in an organization.

Methodology

The study was conducted in selected companies across Karnataka. The study used exploratory research design. A total of 336 respondents of the firms were selected as a part of sample. The respondent samples were from different levels in the organisation, Master Black Belts, Black Belts, Project owners, Team members, and other stakeholders (Sponsors, Champions) of the organizations. The data collected has been analysed with the help of SPSS software, the statistical technique used for the analysis is Extraction Method: Principal Component Analysis., KMO and Bartlett's Test, factor analysis and Chi-square.

Table 1: Model summary for contribution made by savings achieved to successful Six Sigma Implementation

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	DF 1	DF 2	Sig. F Change
.419a	.176	.173	.46418	.176	71.183	1	334	.000

In the case of the Table (1), the linear regression model established that savings achieved significantly contributed to the successful implementation of Six Sigma. Savings achieved contributed to 17.6% variance in the successful implementation of the Six Sigma. It had an F change value of 71.183, which was significant at p = 0.000 (Table 1).

Table 2: Model summary for contribution made by on-time delivery achieved to successful six sigma implementation

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	DF 1	DF 2	Sig. F Change
.595a	.354	.352	.41100	.354	182.816	1	334	.000

From the above table (2) On-time delivery of projects contributed 35.4% to the success of the six sigma implementation. The F change was equal to 182.816 and was highly significant (p = 0.000) (Table 2).

Table 3: Model summary for contribution made by sigma level achieved to successful Six Sigma Implementation

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	DF 1	DF 2	Sig. F Change
.670[a]	.450	.448	.37931	.450	272.782	1	334	.000

From the above table (3) a linear regression established that sigma level achieved after using Six Sigma methodologies could statistically significantly predict the success of Six Sigma implementation with F = 272.782, p = .0001 and sigma level achieved accounted for 45% of the explained variability in success of Six Sigma.

Table 4: Motivation factor to start Six Sigma

	Frequency	Percentage	T value	P value
Pressure from competitors	129	32.7	33.805	0.000
Demanding customers	102	25.8		
Top management	83	21		
Environmental issues/considerations	21	5.3		
Need to reduce costs and improve performance	47	11.9		
Need to reduce rework and scrap	13	3.3		

From the above table (4) various motivating factors were identified as being responsible for starting a six sigma program in an organization. The key factors were pressure from competitors (32.7%) and the demands from customers (25.8%). The results indicate that external pressure is often the reason for implementing Six Sigma in organizations.

The other factors for initiating a Six Sigma program, in reducing order of significance, were top management (21%), environmental issues (5.3%), need to reduce cost and improve performance (11.9%) and need to reduce rework and scrap (5.3%)

The p-value for this parameter was observed to be <0.05, indicating that there is a significant difference in the factors that motivate an organization to start a Six Sigma program.

Conclusion

Six Sigma strategies can be used to eliminate causes of defects in business processes by concentrating on outputs which are critical to customers. This study also concludes that it is an approach that can be used to increase savings, on-time delivery and sigma levels that can reduce costs and increase revenue growth and business profitability. Success of Six Sigma in this study can be measured in terms of Sigma level achieved, On-time delivery of projects, and Savings achieved. All the three are crucial factors that determine the success of this methodology.

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