

## IMPORTANCE OF QUALITY MANAGEMENT IN ORGANIZATIONS: HOW CAN SIXSIGMA HELP ACHIEVE ORGANIZATIONAL EFFECTIVENESS AND LAY FOUNDATION FOR INNOVATIONS

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### ABSTRACT

Quality is a major factor in achieving competitiveness (Christian N. Madu 1997). Globalization and liberal market systems have increased market competition to many folds. To sustain in this fiercely competitive market environment, businesses have to focus on increasing their quality standards. Producing high quality products and services was always a priority for firms, but in the post liberalized economy, it has become a (CSF) critical success factor for both profit making companies and nonprofit making organizations. Constantly changing business dynamics have brought major shifts in the business management methodologies, and this is no exception when it comes to quality management methodologies too. Customers today are more empowered and informed than they were ever before in the history of business world. Dealing with this new breed of customers, demands application of non-traditional methodologies, those which can make organizations add value to their business processes and remove those with low efficiency. Six Sigma quality management methodology is one such management approach which can help businesses not just increase the efficiency of their business process, but also become innovative in the pursuit of increased efficiency. The purpose of this study is to explore the importance of applying quality management methodologies with a focus on (TQM) Total Quality Management and SixSigma. This study is an attempt to particularly highlight how SixSigma contributes to organizational success, not only with its traditional role of increasing operational efficiency but also as a comprehensive approach and technique in achieving effectiveness and innovations throughout the business.

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**KEYWORDS:** SixSigma, Operational Efficiency, TQM, Innovations, Organizational Effectiveness,

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### INTRODUCTION

The manufacturing of top quality products is recognized as one of the most important strategic objectives of modern manufacturing (John G. Wacker 1994). Quality is one of the most critical driver for organizational success. Businesses flourish when they have a highly delighted customer base. Customer satisfaction is an outcome of conformance to customers' requirements. Higher level of customer satisfaction guarantees increased level of retention; often helps organization expand its market base, and leads to the realization of organizational objectives and goals. Higher competition demands higher customer care. It compels organizations to infuse quality in every aspect of the business.

In the words of Madu; Today's market environment is predicted by global events (Christian N Madu 1997). Globalization and open market competition put high pressures on business entities to develop long term moves to fight the competitive forces. Quality standards are often the most critical factor to be incorporated. Contemporary markets are driven by global factors and face global competition rather than regional. This trend has made it imperative for businesses to apply quality management as the most

important factor to fight competition and retain their market share

Aristotle once said "Quality is not an act but a habit" (Aristotle). Organizations need to adopt this habit at every level. Not meeting the quality requirements lead to bear the cost of poor quality; which is most of the time, far more than cost born in maintaining the quality standards in the first place. Therefore, the main purpose of this study is to show why it is very critical to have a proper quality management framework in the organization. For more than a decade organizations are implementing Six Sigma methodologies to maintain quality in their business processes. This study will shed light on how Six Sigma can contribute; besides its traditional role of operational efficiency, to innovations; let it be product or service innovation.

Six Sigma program is not just about doing things better, it is a way of doing better things (George Byrne, Dave Lubowe and Amy Blitz, 2007). Six sigma does not look merely at detecting errors and correcting them, instead; it proposes ways to run the business processes in a much refined, lesser deviated and efficient manner. It can uplift any organizations

through increased efficiency and innovation and at times help them redesign the baseline business model and replace them with more effective one. The topic of this research is significant as it talks about one of those areas of Six Sigma methodology which has been generally ignored or not paid appropriate attention to. The study will talk how quality management can help achieve customer retention and eventually gain competitive advantage to survive in the highly competitive environment with a focus of Six Sigma as a technique and methodology to achieve this competitiveness.

### Research Questions

This study emphasizes the significance of quality management in organizations with a focus of Six Sigma to achieve innovation. The following research question is generated:

1. What is the significance of quality management in organizations and how could Six Sigma quality management methodology lead to innovation in organizations?

Considering the various quality management methodologies prevalent in the market, this study also try to answer the following question:

2. Why Six Sigma methodology can be a better choice for quality management in organizations especially for organizations with aggressive innovative approach.
3. What factors lead to trust on the functionality of Six Sigma methodology by organizations?

### Research Justification, Significance & Aims

As per Dave, Six Sigma forces you to have the processes and the people accountable to make sure the results are enduring (Dave Burrirt 2006). By putting a comprehensive control mechanism in place, six sigma enables a delivery of promising and long lasting results.

This study attempts to explore the relationship between quality management and organizational effectiveness. Though, many research papers talk about the effects of quality management in organizations, however, few have touched the effects of Six Sigma based quality management from the point of view of achieving innovations in product and services.

Considering the significance of six sigma in the course of achieving innovative culture in organizations it is worth noting that in today's extremely competitive market environment, organizations must develop strategies to create and capture value for their survival. Six sigma together with innovation are the two tools often referred to by the managers in this situation. Though many believes that innovation and six sigma are distinct tools for

achieving the similar anticipated results, research shows that companies who over shadow their competitors are those who use a kind of integrated approach combining both six sigma and innovation. Organizations need to take innovation and six sigma as complementary rather than thinking about innovation or six sigma to achieve value. This study has shed lights on this very important concept of considering six sigma and innovation as complementary rather than considering them as mutually exclusive (Julius Bautistia 2010).

The aim of this study is to show that Six Sigma quality management methodology is not only beneficial for achieving organizational efficiency but also enables organization to achieve innovation.

### RESEARCH METHODOLOGY

This paper is a secondary research, as it is mainly concerned with the synthetization and analysis of available data regarding use of quality management methodologies in organizations. Systematic review is the main method used in this research.

Therefore, the research methodology consists of the following steps:

1. Formulating clear research questions, which has already been done in the previous sections.
2. Data collection: Establishing the search criteria in order to obtain empirical researches, which are relevant to the research questions. The criteria is defined as follows:
  - a) Two databases: Emerald Insight and Google Scholar.
  - b) Eight key words: SixSigma, operational efficiency, innovations, total quality management, market share, innovations, organizational effectiveness, globalization
  - c) Collected data stems from thirty-four sources: Data is mainly obtained from published academic articles, totaling thirty three. One book is also used as additional supporting sources.
3. Conducted a literature review of the available relevant material.

### LITERATURE REVIEW

Research papers by (Lakhal 2006, Zhao 2008 and George 2009), talk about the importance of quality management in organizations. As per Lakhal, "there is a positive relationship between the quality management practices and organizational performance" (Lakhal&Limam 2006). This stance is the one which is generally acceptable among the scholars. However, Zhao Li, Qui Su (2008) in his paper points out towards another angle and says that business performance is not directly influenced by quality management, instead, high performance is actually linked to a combination of both quality and results in research and development activities.

Research suggests that betterment in the financial and marketing outcomes of companies, through deployment of quality management methodologies is more in the service sector rather than in manufacturing.

Research by (George Byrne, 2007) suggests that, six sigma does not look merely at detecting errors and correcting them, instead; it proposes ways to run the business processes in a much refined, lesser deviated and efficient manner. It can uplift any organization through increased efficiency and innovation and at times help them redesign the baseline business model and replace them with more effective one. The above mentioned findings support the argument of this paper that application of Six Sigma in the appropriate manner will not only lead the organization achieve efficiency but would also help achieving innovations in product and services.

George Byrne (2007), in his paper on "*Using a lean six sigma approach to drive innovation*", further mentions findings of some consultants which shows that various leading firms have applied six sigma in their businesses, and it helped them towards achieving an organized work atmosphere which enabled them to efficiently address the needs of their customers. Companies like CAT showed great result after having implemented six sigma. It enabled (CAT) Caterpillar to move towards product innovation too (George, Dave, Amy 2007).

The above mentioned references from the relevant literature supports the basic argument of this research paper about the functionality of Six Sigma quality management methodology in not only improving the efficiency of organizations but also helping them to achieve innovations. In order to study the importance of quality management this paper has looked into few sectors of the industry namely which are as follows:

**Education Sector:** Research papers by Paula Y.K Kwan (1996) & Robert A. Cornesky (1993), talks about how quality management methodologies benefited the management of educational institutions. For instance, Kwan (1996), in his paper mentions the case of Delaware County Community College (DCCC) where TQM was successfully implemented in the teaching and learning process and how it increased collaboration in the institutions. Despite of the skepticism on using TQM approaches in educational institutions, the author is a big proponent of using the concept of TQM in academic sector. Another research paper by Jaideep Motiwala & Ashok Kumar (1997), further addresses the concerns about applying TQM in educational institutions. The researchers say that staying in the state of denial and ignoring the need for change in the academic institutions along with the slow process of

degradation in the education sectors are those factors that barred the implementation of quality management in education sector. All the authors referred for this paper, agree to the need of implementing quality management in educational institutions. The paper therefore concludes that quality management at academic institutions will lead to high standards of contents and curriculum, designed as per the requirements of the world market.

**Banking Sector:** Research work by G.S Sureshchandar, Anantharaman, Kamalanabhan (2002), El Essawi & Abd El Aziz, (2012), Miran Ismail & Rasha (2013), Hall (1995) and Saha & Nesa (2011) agree to the significance and benefits of implementing quality management in the service sector. According to Sureshchandar and Anantharaman (2002), the after math of liberalization has left India with extreme competition and has made TQM a popular approach to deal with it.

As per Essawi & Aziz (2012), quality management is the only solution to achieve perpetuity in the business operations. Similarly, Miran & Rasha (2013), mentions the case of Egyptian banks, how they managed to sustain in the fierce competitive environment of the banking sector in Egypt.

#### **SIX SIGMA, ORGANIZATIONAL EFFECTIVENESS & INNOVATIONS**

There is enough evidence available regarding the benefits and functionality of six sigma in terms of effectiveness and innovation. In their research work, Linderman (2003), Choo (2007), Hammer, M (2002), Douglas & Ervin (2000), Andersson (2006) and Dahlgaard (2006), bring forward the applicability and fruits of six sigma as a methodology for quality management. Linderman (2003), holds an opinion that organizational success is based on improvement in its processes and six sigma helps a great deal in achieving process improvement. As per Hammer (2002), a project approach is used in the framework of six sigma which makes it highly effective in problem solving and recommending solutions. In the opinion of Douglas & Ervin (2000) six Sigma is targeting more on the needs of customers rather than achieving excellence in the product as a vague idea. Because of its highly measurable and quantitative approach six sigma stands out in the arena of all other quality management methodologies (Andersson et al., 2006; Dahlgaard and Dahlgaard-Park, 2006). The ability of six sigma in providing an organizational context that facilitates innovation and problems identifications and removals organizationwide, is the fundamental difference between six sigma and its traditional counterparts. Six sigma presents a different methodology because of its time boxed approach and measures which are highly quantifiable.

## **SIX SIGMA METHODOLOGY**

Six sigma follows a progressively elaborated project based approach where the project deliverables are achieved in phases. This phased approach is termed as DMAIC methodology. Each letter in this word is a complete phase in itself. Starting from the define phase where it looks for the basic problem in the system and puts forward a documented evidence to pursue to the next level of measure.

### **Six Sigma lays Foundations for Effectiveness and Innovation**

As per the research done by Mahour Prasad (2011) six sigma is more into process improvement it and therefore it helps those firms who are looking for increased efficiency. This approach results in providing various technological variations which help a firm to even alter its business model.

Further evidence comes from the research work of [George Byrne](#), [Dave Lubow](#), [Amy Blitz](#), (2007). The authors point out that some of the leading organizations applied six sigma with an intention to achieve radical improvement and at times breakthroughs in their innovative environment and succeeded.

Six sigma mainly as a tool which might complement the existing approaches ([Tilo Pfeifer](#), [Wolf Reissiger](#), [Claudia Canales](#), (2004). Compared to the traditional quality management methodologies, six sigma has proven to be the most effective methodology due to its feature of interrelation between its strategy, organizational structures, procedures, tools and methods.

Chu-Hua Kuei and Madu (2003) highlights another aspect of the importance of six sigma. The paper talks about the contribution of six sigma in creating dependable processes with high reliability. As more of the operations these days are run and controlled through electronic and computerized, six sigma and its effectiveness has even increased due to the fact that that these computerized processes need to be monitored, controlled and effectively operated at all times at a continuous basis. If these processes are not reliable they will produce variations which will cost more to organizations, therefore six sigma in such cases proves its worth by helping organizations to eliminate these errors and variations and often designing an altogether new business model. These dynamics provide a lot of room for innovation. In case the current operational processes are not delivering the desired outcome for an organization it is left with two options: one to have some changes in the inputs or to bring some changes in the processes producing the output. Ultimately when organizations are not able to hit the right outcome even when applying the most optimum inputs they are left with

the only option of changing the process. This change of process lead to innovations. This innovation could be in terms of having some changes in the existing system or it could be a change in the tools and machines used. Not only that it will open the gates to introduce research in the product or services as the current product or services have not been able to satisfy the customers. Now with unsatisfied customers organizations will end up having increased cost due to variations or deviations which are the enemy of any business. Even if the deviations are controlled the result is not bringing any value to the customers, in such a case it leads towards bringing in changes in the product or services offered. Thus in the process of trying to increase the efficiency and effectiveness of the end deliverables six sigma will lead the organizations towards innovations. It is eventually the accountability and responsibility of the management to achieve organizational excellence which is not an infused approach rather one with diffused effects which require a view on strategic variables and operational planning in totality.

### **Six Sigma Promotes Critical Thinking**

While achieving the reliability organizations has to go through problem solving approach starting with problem identification, drafting solutions, choosing solutions and then implementing the most suited one. It is not done merely through some routine ways of problem solving rather it must involve a lot of critical thinking.

The first step of critical thinking demands suspension of judgment and look into every possible perspective of the problem, thus doing so six sigma helps organizations lead their course into process innovations which eventually end up in product or service innovations.

In the process of providing customers with the attractive and performance and value added features through applying the six sigma tools and techniques, organization develops its learning curve and start moving on the traits of innovations.

### **Six Sigma Leads to Open Learning**

Research by Ashish Malik and Stephen Blumenfeld (2012) sheds light on the contribution of six sigma in promoting an atmosphere conducive for open learning.

The innovative process is triggered as the customer comes up with some sort of gesture of not being satisfied and demands changes. In other words customer must show the need for changes in order for the process improvement to follow. As mentioned earlier once the process is triggered by the customer, six sigma then takes the lead and helps organization develop those processes which are innovative in

terms of producing something which the customer will find valuable whether a product or a service.

### **CONTRIBUTIONS TO THE SSBOK (Six Sigma Body of Knowledge)**

At present there is no single standard body of knowledge for Six Sigma. This paper can contribute in a very substantive way to the available versions of the SSBOK. Different organizations have created their own distinct SSBOK ([www.asq.org/www.isixsigma.com](http://www.asq.org/www.isixsigma.com)). In addition to the referred organizations, there are others who have not produced any literature in this direction.

The available literature reveals about the traditional role of six sigma and does not touch the innovative angle of this highly effective quality management approach ([www.asq.org/www.isixsigma.com](http://www.asq.org/www.isixsigma.com)). This paper therefore will add this innovative side of six sigma to its body of knowledge.

### **Disadvantages of Six Sigma**

In addition to the enormous advantages of six sigma mentioned in this paper, there are certain disadvantages too which should not be by passed. Following disadvantages are revealed in the literature.

Research by John De Merceau reveals that six sigma might lead to delays in the cycle time due to its application to all aspects of production and planning processes. He further says that the extensive focus of six sigma approach on customers might make the company over shadow its own very effective internal processes. He further highlights the limitation of six sigma for SMEs as they could not afford the six sigma certifications and trainings cost due to their limited budgets (John DeMerceau 2016)

### **Limitations of Quality Management**

This segment sheds light on the limitations of implementing quality management and functionality of quality management approaches in gaining sustainable gains by businesses. Research work from the papers selected as reference for this study show that quality management methodologies are equally applicable in manufacturing and service sectors. However certain areas like education have some concerns over the functionality of employing quality management due to the distinct concept of customers in education. Due to its predominant factual and number based approach six sigma is not very suitable for behavioral processes where it is difficult to create the required inputs (MahourMellatParast 2011). Therefore it cannot provide solutions in the human centric areas as six sigma is fundamentally designed as a quantifiable and measurable approach.

### **CONCLUSION**

Widespread technology has empowered customers today to such a level where they are actually sovereign and at some points literally dictating organizations to provide what they truly want. Globalization and liberalization have opened new frontiers for collaborations among companies across the globe. Not only capital, but labor pooling is a common phenomenon between organizations operating at two separate poles of the continent serving different types of customers. Organizations cannot operate in silos any more. No entity can resist to competition any further. Even for an organization operating in a place deep inside the empty-quarter of Middle East or a multinational operating at different cities of the Europe, competition is at the door step like an uninvited guest who you have to entertain willingly or unwillingly.

With the diffusion of electronic commerce product comparison in terms of price and features offered, is at the push of few keys only. Not only the customers can compare the prices and characteristics of a particular product or service, they can also contrast the quality they are looking for among the available alternatives.

In such an environment, organizations' only option to survive is to adopt updated and smart management approaches. One must maintain an intimacy with its customer base in order to learn what the customer wants and then by using the various process improvement approaches try to serve these customers with the acceptable quality which the customer finds equally valued in terms of price and attributes.

Companies serving a specific customer base like that of oil industry, it is expected to remain stable over time. In such an industry innovations in process improvement is more required than in the product itself. Oil companies for instance are serving the customers with almost a standard varieties in fuel and the profit margins in this business is controlled by the international process in the oil market. In such an industry increasing profit margins can be achieved through organizational effectiveness. Firms need to target more on the improvement of their operations so as to minimize the variations in their processes thus cutting down the cost due to deviations in processes.

Six sigma is a big rescuer in this area. It offers an integrated approach for process improvement through deploying customers' requirements in the business processes. As mentioned in this study the scope of six sigma is very broad and one should not adopt it merely as a tool for the detection of root cause and after successful fixing of the problem consider it as a project successfully completed and close it. Rather it

should be ingrained in the employees of an organization from top to bottom and be applied as a continuous improvement approach. While implementing six sigma various factors needed to be considered. These factors are size of the organization, the industry (service or manufacturing) and customer's base.

Organizations do benefit from six sigma projects but they need to develop a mechanism addressing product innovation, changing customer base and in the external factors in order to improve their processes. With such a comprehensive approach six sigma is going to deliver the desired positive results for organizations.

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