

# Six Sigma-A Case Study of Amazon.Com

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**Abstract:** Year after year, Six Sigma continues to be a keystone of the business world, opening the doors for rising professionals to embrace the tenets that have already led so many to prosperity. Six Sigma is now an enormous 'BRAND' in the world of corporate development.

In some cases, the term "Six Sigma" is cryptically applied to describe a measure of quality adopted by a business organization. Truth be told, there is a lot more to Six Sigma than simply the formless perception some may have of its principles.

Six Sigma is a set of techniques and tools for process improvement by reducing the defects; it means maintenance of the desired quality in processes and end-products. In this article, we will go through the introduction, features, history and background of Six Sigma, Methodology of Six Sigma and a case study of Six Sigma applications in Amazon.com.

**Keywords:** Six sigma, Strategy, Methodology, DMAIC, DMADV

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## I. INTRODUCTION

A Six Sigma process is one in which 99.99966% of all opportunities to produce some feature of a part are statistically expected to be free of defects (3.4 defective features per million opportunities). Six Sigma seeks to improve the quality of process outputs by identifying and removing the causes of defects. It is highly disciplined process that helps in developing and delivering near-perfect products and services.

Six sigma is a set of techniques and tools for process improvement. It was introduced by engineer Bill Smith while working at Motorola in 1986. That's why, he is known as father of Six sigma. Six sigma projects produce major returns on investment. Jack Welch (GE's CEO) made it central to his business strategy at General Electric in 1995. He wrote in the annual report that in just three years, Six Sigma had saved the company more than \$2 billion.

### Features

Six Sigma puts the customer first and uses the facts and data to drive better solutions. Six Sigma efforts target three main areas:

- 1) Improving customer satisfaction
- 2) Reducing process cycle time
- 3) Reducing defects

### Background of Six Sigma

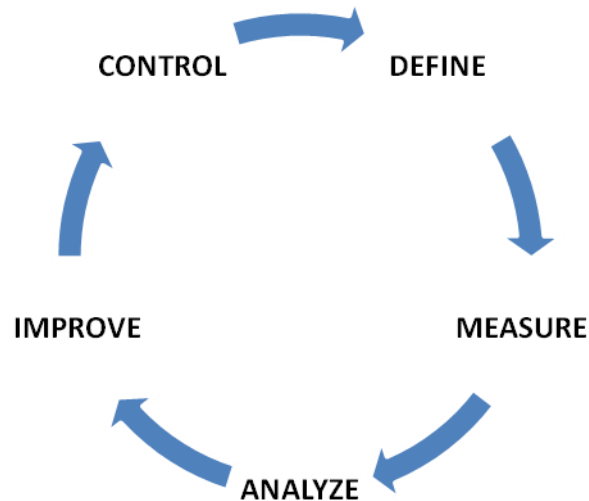
- Since the 1920's the word "SIGMA" has been used by mathematicians and engineers as a symbol for a unit of measurement in product quality variation.
- In the mid-1980's engineers in Motorola in the USA used "SIX SIGMA" an informal name for an in-house initiative for reducing defects in production process, because it represented a suitably high level of quality.
- In the late-1980's Motorola extended the six sigma methods to its critical business processes, and significantly six sigma became a formalized in-house 'branded' name for a performance improvement methodology, i.e., beyond purely 'DEFECT REDUCTION.'
- In 1991 Motorola certified its first 'BLACK BELT' six sigma experts, which indicates the beginnings of the formalization of the accredited training of six sigma methods.

## II. METHODOLOGY OF SIX SIGMA

There are two methodologies of six sigma such as- DMAIC & DMADV:-

### 1. DMAIC

The set of six sigma methodologies that is most applicable to the manufacturing side of a product or service, DMAIC includes these project stages:-



**Define-** Address the identification of specific processes to be examined.

**Measure-** Record data and use metrics to track effectiveness and evaluate efficiencies.

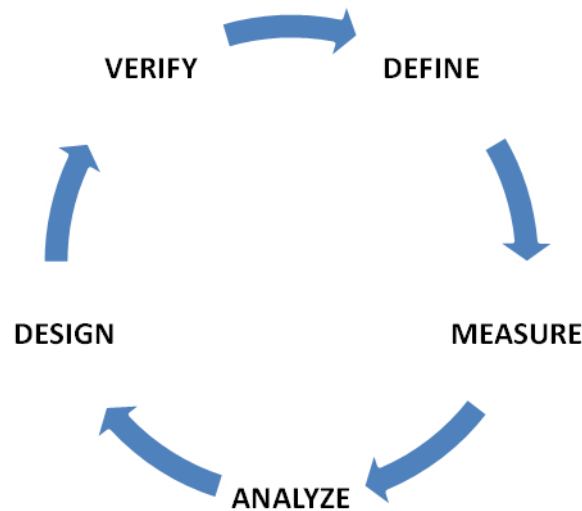
**Analyze-** Utilize critical thinking skills to review data and clarify goals.

**Improve-** Create changes in business processes geared toward improvement and better alignment with corporate goals.

**Control-** Build a system of checks and adjustments for ongoing improvement in production processes.

## 2. DMADV

The complementary set of six sigma processes that is most applicable to examining and improving the customer relations side of a company, DMADV includes these project stages:



**Define-** Address customer needs in relation to a product or service.

**Measure-** Involve the use of electronic data collection to measure customer needs, response to product, or review of services.

**Analyze-** Utilize metrics to evaluate areas where product or service can be better aligned to customer goals and needs.

**Design-** Overlap the improvement of business processes that streamline corporate goals to best meet client and customer needs.

**Verify-** Build a system of tests and models to check that customer specifications are being met through on-going improvements.

### Who are implementing six sigma

Six sigma is being implemented by almost all the sectors because it is an epitome of a proper improvement in business. Some of them are-

- **Financial-** Bank of America, GE Capital, HDFC, HSBC, American Express.
- **IT-** ICICI one source, Accenture, Satyam PO, IBM Daksh, TCS, Infosys.
- **Hospitality-** ITC Hotels, GRT Hotels, Apollo Hospitals.

- **Manufacturing-** GE Plastic, Johnson & Johnson, Motorola, Nokia, Microsoft, Ford, Wipro, Nestle, Samsung.
- **TELECOM-** Bharti cellular, Vodafone, Tata.
- **E-Commerce-** Amazon.com

### III. CASE STUDY OF AMAZON.COM

Amazon is such a shining example of six sigma, in fact, that the company would certainly serve well as an inspiration for your own business. Six sigma is rarely mentioned by name in Amazon's annual reports and press releases, yet the methodology is entrenched in the culture of company.

#### History of Amazon.Com

When Amazon.com was first launched on July 5, 1994 by Jeff Bezos, it was an online bookstore which others thought doomed to fail. Many critics thought Jeff Bezos crazy when stocked his online bookshop with one million book titles. The e-business has since expanded to sell music, electronics, videos, pharmaceuticals, pet supplies, home improvement products and groceries. Not to mention its evolution as a market place for Third party sellers, A supply chain management expert for business customers and Amazon Web Services (AWS) for networking infrastructure. Over the 2000-2010 decade, Amazon has developed a customer base of around 30 million people.

#### Vital Status

- **PrimeFunction:** Amazon.com is American based multinational electronic commerce company.
- **Founder:** Jeff Bezos (founded in 1994 in a garage in Seattle, launched online in 1995)
- **Vision:** 'Our vision is to be earth's most customer centric company; to build a place where people can come to find and discover anything they might want to buy online'
- **StartUpCosts:** \$10,000 savings (personal equity), \$44,000 bank loan, \$245,000 borrowed from family. After 1996, an additional \$1 million was raised from 20 or so angel investors(venturecapital)

### IV. SIX SIGMA APPLICATIONS IN AMAZON.COM

Ever since beginning life as an online bookstore, Amazon.com has drastically expanded its product range. They have even implemented innovative practices like same-day delivery, set to reach new heights for efficiency with automated drone delivery.

*But have you ever wondered how Amazon became one of the largest online retailers in the world?*

- *The answer is SIX SIGMA.*

Six sigma methodology is in the culture of company. Six sigma is part of the operational excellence program that began in 1999 when Jeff Wilke joined Amazon as VP of operations. He came from Allied signal and his background in six sigma made him the perfect choice to drive efficiencies in operations.

*"Operational excellence: To us, operational excellence implies two things: delivery continuous improvement in customer experience and driving productivity, margin, efficiency, and asset velocity across all over businesses." 1999 Annual Report of Amazon.com*

#### How Amazon have Incorporated Six Sigma into their Work

The concept of six sigma was developed as a way to cut costs in business manufacturing processes. However, its use is not exclusive to the sphere of goods manufacturing, as the online retailer and distribution company Amazon.com, one of the world's largest online retailers has also implemented the six sigma way of business into its strategy.



- **Operational Excellence-** Six sigma has always been firmly rooted in Amazon's company culture. With around 2000 items ordered every sixty seconds, Amazon can't afford to let standards slip. As far back as 1999, the company began a program of Operational Excellence aimed at improving company processes. Amazon defines Operational Excellence in two ways: Firstly, to deliver continuous improvement for customer experience. Secondly, to drive productivity, margin, efficiency, and asset velocity across the entire corporation.
- **Hiring 'BEST & BRIGHTEST'**- To achieve their goal, Amazon set about hiring the best and brightest – A *COMMON SIX SIGMA TACTIC*. They took things one step further by training their employees as Six Sigma Black Belts.
- **Six Sigma methods-** By using six sigma methods, Amazon was able to reduce variation by actively seeking it out using DMAIC, Root Cause Analysis, and similar tools. They reduced waste by cutting spending, eliminating non-value- adding process stages, and cultivating a Kaizen-based company culture.
- **Outcome-** The outcome of six sigma was a completely different company with greater inventory management, increased efficiency, and stronger value stream control.

## V. IMPACT OF SIX SIGMA ON AMAZON.COM

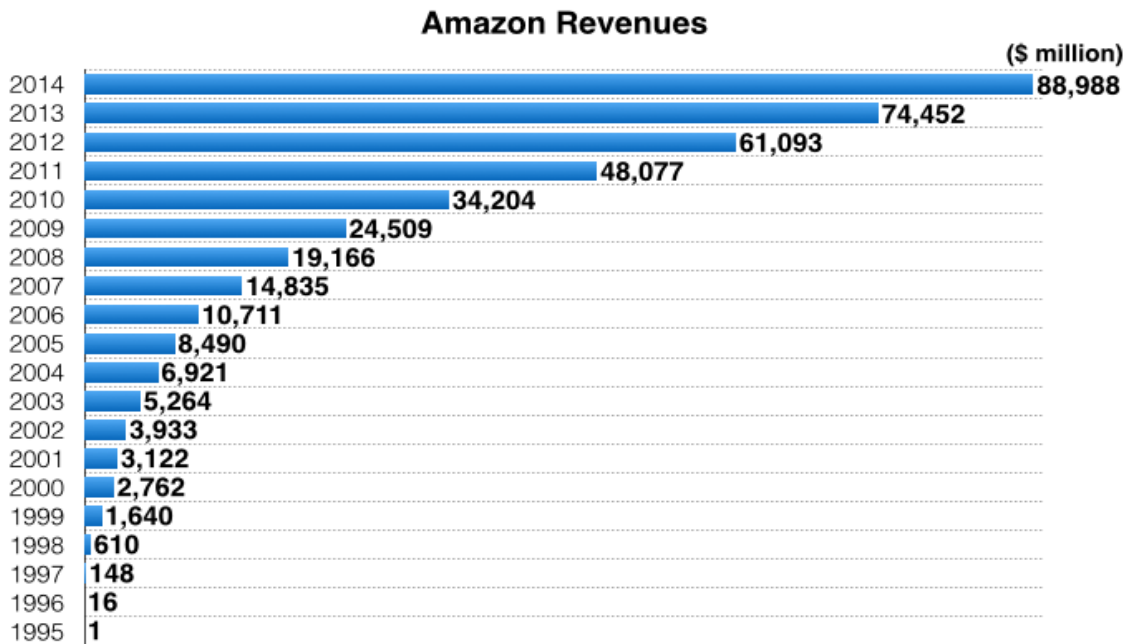
Amazon is devoted to excellent customer service and experience. Before they revamped their business operations at the start of the millennium, they were indistinguishable from any other online bookstore.

Using Six Sigma they have made rapid progress in becoming a global online retailer. With a culture focused on continuous improvement and greatest efficiency possible, Amazon has taken over the world. In doing so, they have emerged as a technology giant to stand alongside the likes of Apple or Microsoft.

The impact of Six Sigma on Amazon.com can be seen through the statistical representation.

### Amazon Revenues– 1995 to 2014

Amazon.com revenues have increased manifold after implementing six sigma in 1999 and that can be seen through the data given below:



(Source-revenueandprofits.com)

## VI. CONCLUSION

Six Sigma being a well-known term in the industrial sector today, it helps the management in various ways such as; it is a total management commitment, philosophy of excellence, customer focus, process improvement and the rule of measurement rather than gut feel. It is about making every area of the organization able to meet better the changing needs of the customers, markets and technologies- with benefits for employees, customers and shareholders.

As we all know, Six Sigma has some loopholes also, as it is time consuming, requires skilled man force and some critics also say that there is nothing new in Six Sigma.

But the benefits offered by Six Sigma overshadow all loopholes and make it an adequate concept to improve the process. So, after going through the case study of amazon.com, we can say that Six Sigma is a key to upgrade the business.

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