

## **Optimization of Production Quality using Lean Six Sigma**

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### **Abstract**

The process of manufacturing production it's a complex process that involves processes from raw materials sourced from a variety of suppliers, operators at the workshop, suppliers' stock, and quality processes. Quality is one of the important aspects to be considered when designing a product, as it is a crucial step in the success and reputation of a business. When designing a product, its specifications must be clearly outlined before the actual product can be designed, the product functions must meet the product specifications to be considered as a quality product. In this paper a Lean Six Sigma method was used to optimize the quality of production alternatively improving customer satisfaction. This paper aims to explore the potential application of Lean Six Sigma principles and methodologies in the production industry to optimize quality. By using these Lean principles that emphasize waste reduction and Six Sigma's focus on reducing variation, the production manufacturing process can be streamlined, resulting in improved product quality, reduced costs, and increased customer loyalty. The paper adopts a qualitative approach to follow an applied research type of study that focuses on improving the quality of production manufactured in a production company.

### **Keywords**

Lean, Quality, Control, Six-sigma and database.

### **Biographies**

Zanele Mpanza is a lecturer in the department of industrial engineering, in the college of science engineering and technology, at the University of South Africa. She has taught courses in production management and entrepreneurship and innovation for engineers. Ms. Koketso Masenya is an emerging researcher and member of woman in engineering. She is a member of IEOM and SAIIE.

**Ngaka Mosia** is a lecturer at the University of South Africa. He holds a Master of philosophy in Engineering Management degree from the University of Johannesburg. Ngaka has presented various national and international conference papers and published several journal papers. He is a member of SAIIE, IEOM, NADEOSA and SASEE and has more than 20 years' industry experience on various levels.

**Kemlall Ramdass** is a full Professor and associate director of quality in the School of Engineering in the college of science, engineering and technology. He is the first full professor in the department Industrial Engineering in the University of South Africa. He earned a master's in engineering management from the University of Johannesburg and PhD in Engineering Management from University of Johannesburg. He has published journal and conference papers. His research interests include manufacturing, simulation, optimization, reliability, scheduling, manufacturing, and lean. He is a member of IEOM, SAIIE, ECSA and SASEE.