

CERTIFICATION OF APPROVAL

Assessment for Process Capability Using Weibull Analysis

By

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

NURUL ATIQAH BINTI ROSZOPOR

ABSTRACT

For a production process, meeting the customer's specification is important. Thus process capability should assist the company to overview their manufacturing processes. In order to maintain the satisfaction of the customer, production has to achieve a normal distribution for their production output, where the production itself has to be in between the limit that the customer set. With this pattern, process capability can be find using normal process capability indices. These normal process capability indices however cannot be applied to non-normal distribution production data. Thus, in a normal approach assessing a non-normal distribution production data is to convert the distribution to be a normal distribution using specific variables as stated by Peter J. Sherman. With this method, process capability indices for normal distribution now can be use for the non-normal distribution of production data.

Besides using the method of transforming the non-normal distribution, a new process capability index S_{pmk} is established, this process capability index can straight away finding the process capability for non-normal distribution without having to convert it first. This study will use Weibull distribution to find a process capability on one set of production data. Process capability able to identify whether the manufacturing process is at the top of the games or some improvement can be done to improve the production rate. After knowing the process capability, further step can be taking for example applying Six Sigma into the manufacturing processes. Six sigma help company to improve the quality of process output by eliminate the causes of production error or defects and minimizing the variable in manufacturing process to deliver near-perfect products to the customer. Finding a process capability is essential for the company to maximize profit by increasing the process capability. Without careful measurement of process capability, company will end up losing more money unwittingly

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ABBREVIATIONS AND NOMENCLATURES

1. PCI	Process capability index
2. $C_p, C_{pl}, C_{pu}, C_{pk}$	Process capability
3. USL	.	.	.	.	.	Upper specification limit
4. LSL	.	.	.	.	.	Lower specification limit
5. <i>Pdf</i>	.	.	.	.	.	Probability density functions
6. <i>Cdf</i> (Φ)	.	.	.	.	.	Cumulative density functions
7. B	.	.	.	.	.	Weibull shape parameter
8. η	.	.	.	.	.	Weibull scale parameter
9. μ	.	.	.	.	.	Mean for data
10. σ	.	.	.	.	.	Standard deviation for data