UNIVERSITI TEKNOLOGI MARA

IMPROVING ENERGY CONSERVATION USING SIX SIGMA METHODOLOGY AT FACULTY OF COMPUTER AND MATHEMATICAL SCIENCES, UiTM SHAH ALAM

NUR HIDAYAH BINTI MOHD RAZALI

MASTER OF SCIENCE (APPLIED STATISTICS)

FACULTY OF COMPUTER AND MATHEMATICAL SCIENCES

January 2014

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Project submitted in fulfillment of the requirements for the degree of

Master of Science (Applied Statistics)

Faculty of Computer And Mathematical Sciences

January 2014

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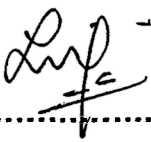
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Candidate's Declaration

I declare that the work in this project was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This project has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

In the event that my project is found to violate the conditions mentioned above, I voluntarily waive the right of conferment of my degree and degree to be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

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Program   Master of Science (Applied Statistics)

Faculty   Faculty of Computer and Mathematical Sciences

Project Title   Improving Energy Conservation Using Six Sigma

                   Methodology at Faculty of Computer and Mathematical

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Date   27th of January 2014

ABSTRACT

Electrical consumption is increasing rapidly in Malaysia due to the sustenance of a modern economy way of living. Recently, the Vice Chancellor of Universiti Teknologi MARA, YBhg. Tan Sri Dato' Professor Ir Dr Sahol Hamid Abu Bakar has shown a great deal of concern regarding the high electrical energy consumption in UiTM's main campus in Shah Alam. This study seeks to evaluate the factors that contribute to high electrical energy consumption in the Faculty of Computer and Mathematical Sciences (FSKM), UiTM using the Six Sigma methodologyand to compare electrical energy consumptions before and after the EC (Energy Conservation) initiatives campaign. Many companies worldwide continue to achieve improvements in business performance using the Six Sigma approach. The electrical consumption from January 2011 until December 2013 was analyzed using five stages of Six Sigma which is Define, Measure, Analyze, Improve and Control (DMAIC). The total electrical consumption for 2011 was 1, 648, 791 kwH (RM 514,422.79) and 1, 657, 808 kwH (RM 517, 236.10) in 2012 which is an increase of 0.5% (RM 2813.31 or 9017 kwH). From the results obtained, pareto chart shows that air-conditioner (57%) is the major factor that contributes to high consumption of electricity, followed by lightings (22%), sockets (16%) and others (5%). The electrical consumptionwas almost doubledwhen the new semester begun. After the campaign, there was areduction of 2% in electrical consumption. This study has successfully implemented Six Sigma methodology which involves a systematic DMAIC process to evaluate electrical consumption in FSKM.