

**MEASURING LEVEL OF INDIVIDUAL INNOVATIVENESS AMONG UT_eM's
ENGINEERING STUDENTS**

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**Report submitted in fulfillment of the requirement for the Bachelor Degree of
Technology Management in Innovation**

**Faculty of Technology Management and Technopreneurship
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ENGINEERING STUDENTS**

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DECLARATION OF ORIGINAL WORK

“I declared that this project is the result of my own research except as cited in the references. This research project has not been for any degree and is not concurrently submitted in candidature of any other degree.”

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SUPERVISOR DECLARATION

“I hereby declare that have read this thesis and in our research is sufficient in terms of scope and quality. This project is submitted to Universiti Teknikal Malaysia Melaka as a requirement for completion and reward Bachelor Degree of Technology Management (Technology Innovation)”

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DEDICATION

I am dedicating this thesis to my beloved people who have meant and continue to mean so much to me, my loving mother, Pn. Noor Hawa binti Hj. Apandi and to my beloved father En. Zakariah bin Ahmad, who has been a constant source of support to further and complete my study.

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ABSTRACT

In the present study carried out with 279 final year engineering students, the individual innovativeness of them was examined. As a result of the study, it was found out that the engineering students considered themselves as early majority. It was also revealed that engineering students with the best academic performance, which CGPA is 3.51 and above had the high level of innovativeness and those CGPA below 2.00 tend to have many resistances to change and they are unwillingness to change and hard to accept new method or innovation . The results also demonstrated that engineering students with experience on innovation tend to have high level of individual innovativeness. Depending on the results obtained in the study, various suggestions were put forward for applied and future studies.

ABSTRAK

Dalam kajian ini dijalankan dengan 279 pelajar kos akhir kos kejuruteraan, tahap inovasi individu daripada mereka telah diperiksa . Hasil daripada kajian ini , didapati bahawa pelajar kejuruteraan menganggap diri mereka sebagai majoriti awal. Ia juga telah mendedahkan bahawa pelajar kejuruteraan dengan pencapaian akademik yang terbaik, yang CGPA 3.51 dan ke atas mempunyai tahap yang tinggi inovasi dan orang-orang PNGK di bawah 2.00 cenderung untuk mempunyai banyak rintangan untuk berubah dan mereka enggan untuk berubah dan sukar untuk menerima kaedah baru atau inovasi. Keputusan juga menunjukkan bahawa pelajar kejuruteraan dengan pengalaman inovasi cenderung untuk mempunyai tahap yang tinggi dalam mengukur inovasi individu. Berdasarkan kepada keputusan yang diperolehi dalam kajian ini, pelbagai cadangan telah dikemukakan untuk kajian digunakan dan akan datang.

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

This chapter will briefly discuss on the overview of the research carried out. The overview including the background of the research, problem statement, and research objectives will be presented in this chapter. This chapter also will explain the reason to develop this research.

Innovation is a change in mindset to refine or to achieve better productivity from time to time. It's not just science and technology alone.

Towards achieving Malaysia as a develop country 2020, Malaysian need to be inventor not only as a user or consumer. This country is faced with a crisis resulting

innovation now. Thus, awareness of the importance of innovation in society needs to be improved in line with the national development and global change said Chief Executive Officer of the Special Innovation Unit Office of the Prime Minister, Dr. Kamal Jit Singh. (Utusan Malaysia, March 2011). Malaysians should make innovation as culture to meet the challenges of globalization.

Engineering, the application of science and mathematics by which the properties of matter and the sources of energy in nature are made useful to people, meanwhile engineer is a person who has scientific training and who designs and builds complicated products, machines, systems, or structures; a person who specializes in a branch of engineering (Merriam Webster). Thus, this research study is conducted onto engineering students because they have already exposed to the innovation environment therefore surely this will contribute to the educated results at the end of this research.

1.2 Problem Statement

Innovation has long been recognized as an important driver of economic growth. Most empirical research and surveys of firms show that innovation leads to new products and services that are higher in quality and lower in price. Basically, innovation has been treated as residual measure after accounting for other factors mostly labor and capital. The primary goal in measuring innovation is to improve understanding of growth. (Frameworks for Measuring Innovation: Initial Approaches, March 2009)

Report of the New Economic Model (NEM) said innovation is deteriorating in Malaysia between 2002 and 2007. The World Bank also predicted the situation regarding the risk of causing Malaysia to face serious economic problems in the future if changes are not implemented. (Utusan Malaysia, March 2011).

The researcher comes out with a research topic on ‘measuring level of innovativeness among engineering students’. Therefore, there are several research questions to be answered throughout the research study such as follow:

1. What is the level of individual innovativeness among engineering students in UTeM?
2. Which one of the factors that impact individual innovativeness the most?
3. Is there a relationship between individual innovativeness and student’s academic performance?

1.3 Research Objectives

According to Bernama (2014) reported that Deputy Minister of Science, Technology and Innovation Datuk Dr Abu Bakar Mohamad Diah says academicians who tended toward innovation and invention could drive the institutions in the country in various fields.

Throughout this research study, the researcher will be able:

1. To measure the level of individual innovativeness among engineering students in UTeM.
2. To investigate which factor that impact individual innovativeness the most.
3. To comprehend the relationship between level of individual innovativeness and academic performance (CGPA)

1.4 Scope, Limitations and Key Assumptions of the Study Scope

In this section, the researcher will further explain the scope, limitation and key assumptions for the research study on Measuring Level of Individual Innovativeness among Engineering Students at UTeM.

1.4.1 Scope

The researcher will focus the research study in Universiti Teknikal Malaysia Melaka. . Universiti Teknikal Malaysia Melaka (UTeM) was established on 1 December 2000. It was formerly known as Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM) before being rebranded to university status on 2 February 2007. Its vision is to be one of the world's leading innovative and creative technical universities.

As one of UTeM's general education goals is to foster development and innovation activities in collaboration with industries for the prosperity of the nation and this is the best reason to conduct this research among UTeM's final year engineering student to measure how far the level of individual innovativeness among them.

The University is mainly made up of seven faculties namely Faculty of Electrical Engineering, Faculty of Electronics and Computer Engineering, Faculty of Mechanical Engineering, Faculty of Manufacturing Engineering, Faculty of Information and Communication Technology, Faculty of Technology Management And Technopreneurship and Faculty of Engineering Technology. The researcher will not covering students in Faculty of Technology Management and Technopreneurship,

Faculty of Information and Communication Technology, and Faculty of Engineering Technology as the research study only involved students in engineering course.

1.4.2 Limitations

Limitations are influence beyond the researcher control (BCPS, 2014). Limitations are shortcomings, conditions or influences that cannot be controlled by the researcher that place restrictions on the researcher methodology and conclusions. Two limitations are identified in this study. Firstly, the research study is to measure the level of innovativeness in oneself or personality of engineering students. The research will not be covering other aspects of innovativeness enhancement. The research is only conducted at UTeM. Therefore, the result and outcome of the study is only suitable for UTeM references. Secondly, the case study is to determine the individual innovativeness of final year engineering students. Thus, the research only focuses on the factor of innovativeness in oneself and will not be covering other aspects of the innovativeness such as analyse the factor that leads innovativeness in personality of engineering students.

1.4.3 Key Assumptions

Throughout the research study, the researcher had assumed the following assumption before conducting the research such all respondents will answer all survey questions honestly and to the best of their abilities. Second, this study only focuses on

respondents' behavior and does not take into account environmental or economic factors.

1.5 The importance of the study

The main importance of the research study is the researcher wants to explore the level of individual innovativeness among engineering students in UTeM. In addition, throughout this research study, the researcher aims to increase the existing literature on the measurement of individual innovativeness level among engineering students.

1.6 Summary

In the next chapter, there will be a further explanation regarding individual innovativeness which gives detail theories related to the research topic and hence will answer the research objectives. The researcher will focus the research study in UTeM engineering campus to obtain the primary data

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents the issues and factors, ideas and opinions, and results of the research that others have undertaken in the study area. The conceptual framework that best describes the theory with the relevant variables identified and discusses how they are related

2.2 DEFINITION OF REVIEW SCOPE

Vom Brocke et al. propose that “a review must begin with a broad conception of what is known about the topic and potential areas where knowledge may be needed”. Thus, in order to choose the key concepts on which to base the literature review, the researcher began to study on Measuring Innovativeness by deeply looking at the definition of the innovativeness in term of engineering

2.2.1 Innovation

The term ‘innovation’ has many meanings. It can refer to inventive process by which new things, ideas, and practices are created, R.E. Goldsmith and G.R. Foxall (2003). Sullivan (2008) stated that innovation is the process of making changes to something established by introducing something new that adds value to customers.

D.M. Ferguson and M.W. Ohland (2012) emphasize that innovation is the implementation of a new or significantly improved product (goods and service), process, marketing method, or organizational method in business practices, workplace organization or external relation. Innovation is often used in conjunction with terms such as creativity, design, invention and exploitation. Sullivan (2008).

2.2.2 Innovativeness

According to R.E. Goldsmith and G.R. Foxall (2003), there are at least three approaches to the conceptualization of innovativeness which are behavioral that identifies the concept with the act of adoption, global-trait that view type of personality trait 'willingness to try new things', and domain-specific activity that works as an alternative to the global view of innovativeness in terms of prediction and explanation in marketing.

Innovativeness can be an umbrella term for risk-taking, openness to experiences, creativeness and opinion leading. Clearly, individuals have different experiences with and orientations to innovativeness. Rogers (1995) classifies individuals into five different categories in terms of their innovation characteristics. These categories are Innovators, Early Adopters, Early Majority, Late Majority and Laggards (Kilicer & Odabasi, 2010)

2.2.3 Engineering students

The reason why this research study is conducted to the engineering students is because their exposure to the innovativeness and they are more exposed to the technology. According to Kris M. Y. Law et al, (2015), engineering students are found to be of higher level of innovativeness, attitudes, self efficacy and intention, while students from other disciplines may need 'strengthened' educational measures and facilitation.

It has been noted that the perception of engineering and non-engineering students about innovativeness and creativity are different, Gupta et al. (2005). The result will