



# The Effect of Entrepreneurship Management in Research and Development in the Engineering Faculty in Malaysia

Azlina Idris<sup>1</sup>, Suzi Seroja Sarnin<sup>2</sup>, Nani Fadzlina Naim<sup>3</sup>  
and WanFazlida Hanim Abdullah<sup>4</sup>

<sup>1</sup>Fakulti Kejuruteraan Elektrik, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.

[Azlina831@salam.uitm.edu.my](mailto:Azlina831@salam.uitm.edu.my)

<sup>2</sup>Fakulti Kejuruteraan Elektrik, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.

[suzis045@salam.uitm.edu.my](mailto:suzis045@salam.uitm.edu.my)

<sup>3</sup>Fakulti Kejuruteraan Elektrik, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.

[nanifadzlina@salam.uitm.edu.my](mailto:nanifadzlina@salam.uitm.edu.my)

<sup>4</sup>Fakulti Kejuruteraan Elektrik, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.

[wanfaz@salam.uitm.edu.my](mailto:wanfaz@salam.uitm.edu.my)

## ABSTRACT

In the era of globalization, education should be enhanced to achieve the vision of developed nation and highly educated people. Entrepreneurship education should also be applied especially in higher learning education to ensure students are more competitive in the workplace. This is also to ensure students are more independent and have the potential to open their own business rather than working with others. Hence, the Faculty of Electrical Engineering, UiTM, Malaysia has taken the step by providing opportunities for students and lecturers in exposing the entrepreneurial learning directly or indirectly. In this paper, the methods employed by the faculty in encouraging entrepreneurship education among students have been discussed. The effect of the new educational system that has been implemented has also been analyzed. It is found that this method has greatly improved the performance of the staff and the students especially in their career path.

**Key Words:** Entrepreneurship management, Entrepreneurship, Entrepreneurial Teacher

## 1. INTRODUCTION

Entrepreneurship is one of the important elements in the education of a student to ensure that the student will succeed in the workplace. Entrepreneurial education ensures that a student is more self-reliant and would not rely solely on wage-earning work. Employment

opportunities will be more widespread if students are exposed to entrepreneurship. In fact, graduates could also create new job opportunities for themselves in our now virtually borderless world. Entrepreneurship education has also a positive impact on young graduates in that it changes their perspective towards entrepreneurship, their employability and finally on their role in the nation, society and economy.

One of the listed Programme Outcome that has been outlined by Faculty of Electrical Engineering (FKE), UiTM is that students should be able to apply managerial, entrepreneurship and leadership skills in multidisciplinary projects, thus FKE offers entrepreneur based subject such as ECE503 Computer Engineering Design that challenge the students to produce marketable prototype by the end of the semester.

Students are also encouraged to be involved in entrepreneurial related activities such as those organized and funded by MASMED. Two (2) graduates successfully registered their business with Suruhanjaya Syarikat Malaysia (SSM) and more than 50% students have been awarded with International Google Web Academy certificate. FKE has been offering the entrepreneurship course since the year of 2000 for Bachelor degree programme students. The Technopreneurship course (3 credits) prepares students to enter the business world with an entrepreneurial mindset and the skills required.

## **2. ENTREPRENEURSHIP POLICY IN FKE**

FKE has always recognized their staff's and students' participation in entrepreneurship. For instance, staff who show high initiative in entrepreneurship education will be acknowledged and awarded in the appreciation ceremony such as Quality Day @ FKE and Appreciation Day @FKE which is conducted yearly. In addition, the Key Performance Indicator (KPI) for the staff also require the inclusion of entrepreneurship elements, for example, staff who are able to commercialize their research product will have the better chances at their career development.

In addition, the students are also appreciated through Malam Anugerah Kecemerlangan Akademik (MAKA) and Malam Pra-Graduan if they show great initiatives in entrepreneurship. Figure 1 shows the key components of entrepreneurship framework that has been employed by FKE. The related Key Performance Indicator (KPI) of the framework which include entrepreneurship elements are presented in Figure 2.

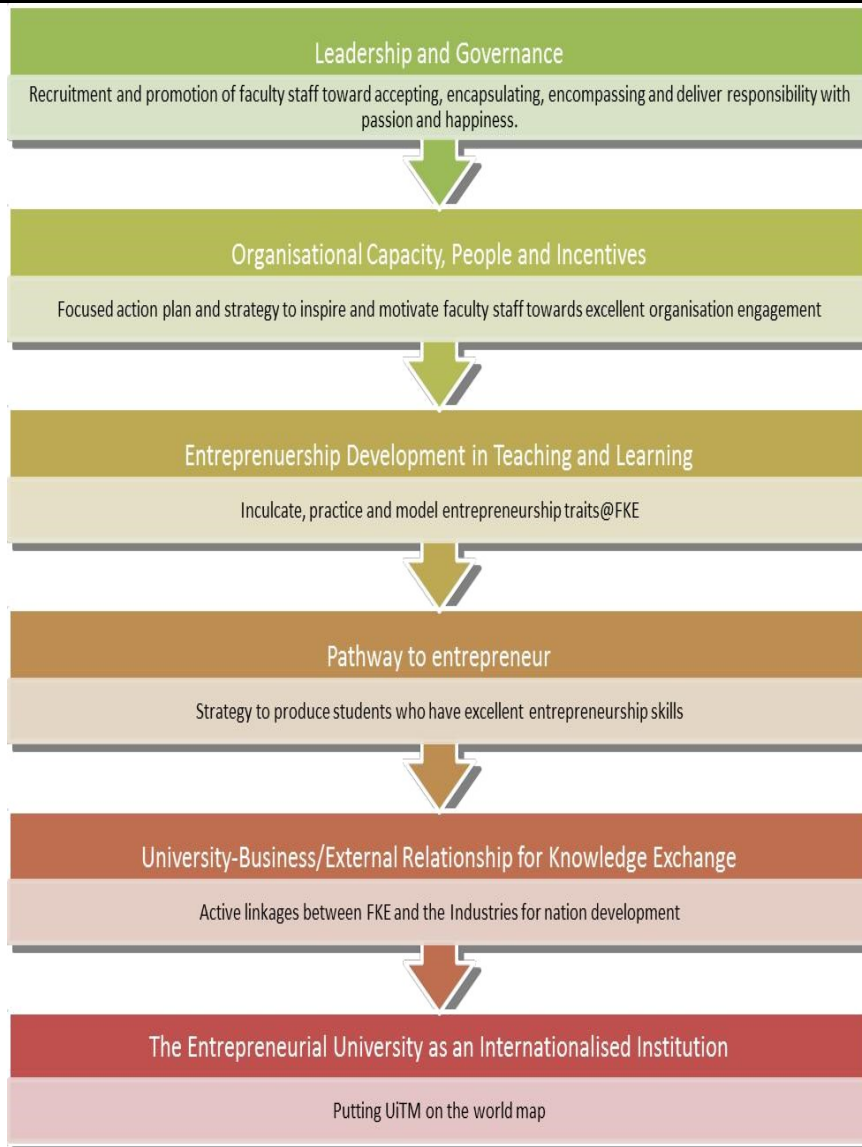


Figure 1: Entrepreneurship framework components at FKE



Figure 2: Key performance indicators of FKE

## 2.1 Entrepreneurship Support

FKE is projected to produce 2.2 % of the graduate involvement in entrepreneurship. Students are exposed to real business environments organized by the students’ associations such as Electrical Engineering Association (ELETA) and Persatuan Pembangunan Fitrah Insan, Keusahawanan, & Kerjaya (FIKIR) which are fully funded by the faculty. Additionally, the Invention and Robotic Club (IRC) of FKE is the place for students who are interested to be creative and innovative and to expand their ideas and opinions in the robotic world. Students and staff are also encouraged to participate in the innovation competitions such as Innovate Freescale Cup, Malaysia Design Competition and build linkages with the industries. Figure 3 displays the entrepreneurship supports that are given by the faculty to the students and staff.



Figure 3: Entrepreneurship supports by FKE

### 3. ENTREPRENEURIAL IMPACT

FKE strategy highlights the need to embed creativity, research, innovation and entrepreneurship into education and proposes a number of actions to staff and students of FKE. Staff and students immerse themselves in researches that produce new discoveries, invention and innovations.

#### 3.1 Global recognition for Malaysian universities' research

Global recognition for Malaysian universities' research news from New Straits Times, NST has reported Dr Nofri Yenita Dahlan, from Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM) is a fervent advocate of solar thermal energy and its applications in industry, business and households in the country as well as the region. She has been working on several research projects in the area of energy such as power generation investment in liberalised market, Malaysia’s power generation mix, economic evaluation of solar energy, energy management and efficiency and measurement and verification in energy savings. The full report can be obtained on New Straits Times, NST by O. C Yeoh - 13 November 2016. Please refer to Figure 4.



Figure 4: Global recognition for Malaysian Universities Research

### 3.2 Employability of Graduates

One of the listed programme outcomes is the ability of the student to apply managerial, entrepreneurship and leadership skills in multidisciplinary projects. As such, FKE offers entrepreneurial based subjects such as ECE503 Computer Engineering Design that challenge students to produce marketable prototypes by the end of the semester. Students are encouraged to be involved in the entrepreneur related activities such that organized and funded by MASMED.

Entrepreneurship education offers a solution for graduates to be marketable. It seeks to prepare students; particularly youths, to be responsible, enterprising individuals who become entrepreneurs or entrepreneurial thinkers by immersing them in real life learning experiences where they can take risks, manage the results, and learn from the outcomes.

Entrepreneurship education also enhances the transfer of technology from the University to the private sector, and promotes technology based firms and products. On average, graduates are more likely to be employed with firms that license new technology or that license technology to others. Almost every semester, the graduate’s marketability of FKE increases as shown in Figure 5 and 6.



Figure 5: Percentage of employability of FKE’s student in July 2016

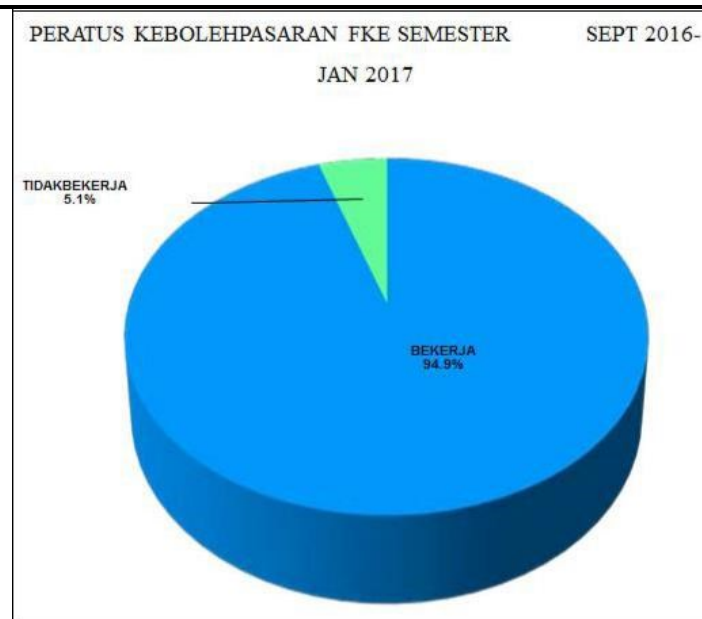


Figure 6: Percentage of employability of FKE's student January 2017

### 3.3 Innovative and Entrepreneurial Staff

Entrepreneurship is an important element that should be grown not only among the students but also among the staff. Innovative and entrepreneurial staffs are the important criteria in this faculty. These criteria will ensure a highly dedicated staff and hence, produce a high talented student with many good qualities.

Centre of Excellent (COEs) have been established by the faculty in order to ensure more research activities are being conducted. Several staff with same research interests are combined in the same Centre of Excellence (COE). All Faculty of Electrical Engineering (FKE) staffs are involved in COE and research centre which is the main pillar to the innovative and entrepreneur activities. Example of COEs and research centre are as follows:

- Green Energy Research Centre (GERC)
- NANO-ElecTronic Centre (NET)
- Microwave Research Institute (MRI)
- Engineering & Technical Education Research Group (EnTER)
- Biomedical Research and Development Laboratory for Human Potential (BioMedicR&D)

#### 3.3.1 Research Activities

The active involvement of the academic staff of Faculty of Electrical Engineering in the consultancy and contract research with government and the private sectors through RMI has been the underpinning to the development of the entrepreneurship activities in Faculty of Electrical Engineering. In between 2016 and early 2017, a number of academic staff has been involved in the consultancy projects and contract research. Figure 7 and Figure 8 represent the earning from the consultancy projects and research activities. In 2015, the consultancy grant approved was RM241895 and in 2016 is RM176240. The total amount of grant received by the

faculty is RM 6.819394 million which shows an increasing trend as compared to 2015 which is RM 6.5 million.

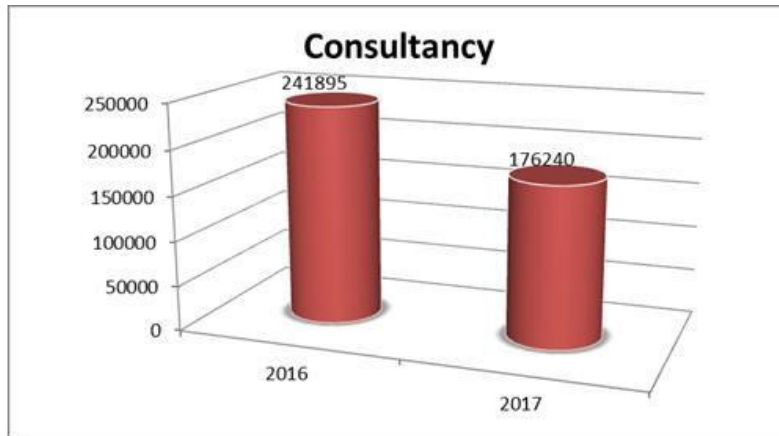


Figure 7: Consultancy Approved for 2016

The academic staff who have been actively involved in variety of innovations and establishing strong platforms for collaboration with the IEEE Society in Malaysia, Ministry of Education, Sustainable Energy Development Authority (SEDA) Malaysia, Bina Quality Electron Sdn. Bhd, Universiti Putra Malaysia, GEOINFO Services Sdn. Bhd., Suruhanjaya Pengangkutan Awam Darat (SPAD) and the latest with International Foundation of Science (IFS). It is found that the research activities are becoming more highly developed as the element of entrepreneurship is taken into account.

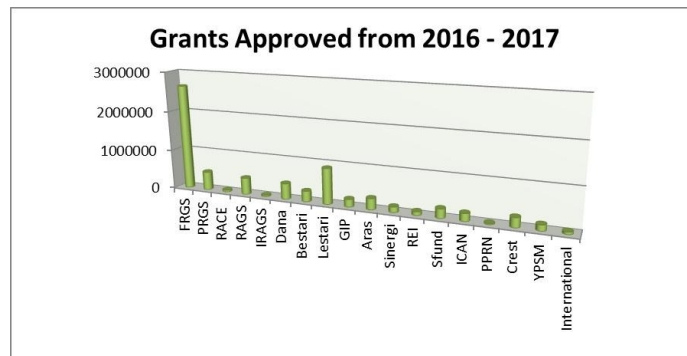


Figure 8: Grants Approved from 2016 to 2017

**4. Conclusion**

Innovative and entrepreneurial in education shows huge impacts and designates our graduates personality. FKE fosters innovative characteristics through teaching and learning to provide students with insights to problems and issues associated with establishing and managing the development of any innovative project. Entrepreneurship education yields to positive impact on entrepreneurial mentality especially for fresh graduates. It transforms their perspective towards entrepreneurship, their employability and finally on their role and importance in economy, society and nation.



---

**Acknowledgement**

The authors would like to thank members of Electrical Engineering Faculty, Universiti Teknologi MARA Shah Alam, Malaysia for the guidance and support during this project. This research was supported by Faculty of Electrical Engineering, UiTM, Shah Alam, Malaysia.

**REFERENCES**

- Atanasova, Y. 2007. High-Performance Global Account Management Teams: Design Dimensions, Processes and Outcomes. University of St. Gallen, St. Gallen.
- Athayde, R. 2009. Measuring Enterprise Potential in Young People. *Entrepreneurship: Theory & Practice*, 33(2): 481-500.
- Autio, E., Keeley, R. H., Klofsten, M., Parker, G. G. C., & Hay, M. 2001. Entrepreneurial Intent among Students in Scandinavia and in the USA. *Enterprise & Innovation Management Studies*, 2(2): 145-160.
- Bakotic, D., & Kruzic, D. 2010. Students' Perceptions and Intentions Towards Entrepreneurship: The Empirical Findings From Croatia. *The Business Review*, Cambridge, 14(2): 209.
- Bandura, A. 1986. *The Social Foundations of Thought and Action*. Englewood Cliffs: Prentice-Hall.
- Bandura, A. 1994. Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1998).
- Bechard, J.-P., & Gregoire, D. 2005. Entrepreneurship Education Research Revisited: The Case of Higher Education. *Academy of Management Learning & Education*, 4(1): 22-43.
- Bennis, W., & Thomas, R. J. 2002. Crucibles of Leadership. *Harvard Business Review*, Sept.
- Bergmann, H. 2000. Gründungspotenzial und Gründungsengagement im Spiegel des Sozioökonomischen Panels (SOEP), *Schriften und Materialien zu Handwerk und Mittelstand*: Heft 8.