

An Exploratory Study on Student Retention and Academic Success Among Engineering Students at Malaysian Technical Universities

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Abstract

Academic excellence is the main goal of most students at institutions of higher learning (IPT). It is a measuring tool that determines the level of success of a student. There are many different viewpoints on retention issues in higher education, and they are difficult to comprehend. It is vital to comprehend why some engineering students make it to their final year while others do not. The people factor is proposed as a significant external motivator that may have an impact on students' performance and persistence in the engineering program. This study explores extrinsic motivation, or just the people factor, is one of the motivational aspects that have impact engineering students' performance and retention. This study was conducted using a qualitative case study approach and data were collected using semi-structured interviews. This study involved final year engineering students from Malaysian Technical University Network (MTUN) namely UTHM, UTeM, UMP and UniMAP. Thematic analysis of the data was used to identify themes that addressed the study topic. Four themes emerged from the study's extrinsic motivation for the people factor: family, peers, lecturer and community. The results of this study have explained the results of the analysis obtained from the entire study and a comprehensive discussion to understand the retention and success of engineering students at MTUN especially from the point of view of external motivation.

Keywords: - External motivation, the people factor, retention, success, higher education

1. Introduction

Economic development in the country is greatly influenced by education (Habibi & Zabardast, 2020). Education is a key factor in technical innovation and economic progress in society, particularly in the engineering sector. This means that a nation must anticipate and ready itself with skilled labor to satisfy the demands of the industry. Ashar (2016), has emphasized that to meet the demand of the industry, Malaysia is in dire need of qualified engineers.

However, the number of students enrolling in bachelor's engineering degree programs is more than the number of students who graduate in the following years. This indicates that engineering students left before final year. Vooren et al. (2022), Opazo et al. (2021) and Jose Maria et al. (2018) also reported that a huge number of engineering students dropout from engineering programs after first year of study.

Since the dropout problem is seen as important, today's university counterparts also want to know more about the behavior of successful students. Therefore, the influence of motivation on student engagement and academic performance makes it a crucial component for engineering students to continue their studies without dropping out (Labib et al., 2021).

It is important to explore the factors that influence the retention and academic success of engineering students. Student retention and success have been institutional priorities and the subject of intensive research effort for decades (Shah et al., 2021). This paper focuses on only the people factor as external motivation such as family, peer, lecturer and community. These factors will be discussed further on how those people can affect the retention and success of engineering students at the higher education level.

According to Walberg (1986) and Delahunty & O'Shea (2021), extrinsic motivation refers to a concept related to reinforcement where reinforcement refers to the process when the stimulus or external event caused by the response increases. While according to Ma (2023), "Extrinsic motivation" refers to motivation that comes from the outside and occurs when we take action in order to receive a reward. Rogti (2021) state that it represents behavior initiated to achieve a desired external consequence or to avoid punishment.

Furthermore, extrinsic motivation is generated by outside stimuli with the intention of persuading the person to engage in an activity that will benefit their self. Praise, rewards, awards, and grades are a few ways to encourage this extrinsic drive. Motivation from outside sources is referred to as extrinsic motivation. Extrinsic motivation refers to the desire to

because I want to get a higher GPA than the previous semester” (Informant 22).

This demonstrates that their family is the primary motivator for their achievement. According to Tumeran & Abdullah (2024), extrinsic motivation exists in an individual due to the desire for recognition or even approval of something. Proven that students who practice extrinsic motivation will feel that they are being manipulated to get praise or rewards.

Apart from that, being an example or model in the family by having excellent exam results is also categorized as praise for students. In other words, it is one of the motivators for students to try harder to compete with family members to be recognize. Informants stated that they strive to maintain a good GPA because of want to be a good example in the family or insistence in the competition of other family members.

“I must get good results because normally all my family members will compare my results with my cousin's. They will praise me for having the highest GPA and they make me a role model for their children” (Informant 7).

The conclusion of the this study can be related to Aristotle (1985) aspirations which Hedonic Aspiration when how the informant continues to try to get excellent results to have self-pleasure when got praised while Eudaimonic Aspiration put their self as a person responsible for providing or contributing to family (Akin & Uzun 2023).

3.2 Peer Factor

Peers are categorized as the second most important group in life as a student after the family role. Informants agree that the effect of this relationship facilitates them to solve learning problems together:

“If I have any problem about any subject I will meet friends or senior students who specialize in the subject. So I asked him to teach me difficult subtopic and he helped me a lot” (Informant13).

During the study period, students face various challenges because learning is a long process. According to Hirsch et al., (2021), the role of peers who together solve learning problems is seen as the main driver of how a student is able to stay even through various challenges and obstacles starting from the first year studies.

This shows a positive relationship between peers extrinsic drive that is clear and has a positive effect on the process student learning (Zepke, 2018). Furthermore, peers are also seen to be a good influence in healthy competition and beneficial to exam results. This study shows that the informants stated that they work hard every semester because they want to compete with other friends.

“I always make sure that my exam results are much higher than my friends. I put competition between classmates since the first year” (Informant 8).

White et al. (2021), also proved that competition between peers is an important factor that affects student achievement in University. Overall, the results of the study prove that peers are among the themes that influence students to get excellent results and survive to final year. This suggests positive relationships with peers are an important predictor of retention and better grades in higher education (Ibarra-Sáiz et al., 2020).

3.3 Lecturer Factor

Based on the results, the informants concur that students are more motivated to learn more when their lecturers are very helpful and teach with sincerity:

“The lecturers who are always active and eager to teach in the class make me more motivated to study. If there are students who still do not understand, they will repeat the topic until all students understand” (Informant 22).

Filgona et al. (2020) believes that the variety of teaching methods used by lecturers has an effect in increasing student motivation. With a diverse teaching style and answering students' questions makes it easier for students to understand the engineering subjects.

In addition, informants stated that they are excited when attending a class taught by a lecturer who has previous experience working as an engineer because the lecturer will not only teach theoretical concepts, but also real-world engineering experiences.

“My lecturer explained a lot of engineering concepts with his experience as a former engineer. With the shared knowledge, it makes it easier to get a real picture of the topics being taught and arouse my interest in the field of engineering” (Informant 6).

The results of the study are in line with the opinion of Noori et al. (2020) and Maralani (2016), who stated that the use of teaching methods based on the lecturer's experience can influence students' perception of the field of engineering by revealing real world issues and it leads to an increase in student motivation in the engineering program. The study's findings indicate that a lecturer's knowledge of and enthusiasm for the subject matter they are teaching has a big impact on how well they teach (Hazzam & Wilkins, 2023).

3.4 Community Factor

Lastly, the informants emphasized that they aimed to achieve respect and societal acceptability among society. Again, one example of extrinsic motivation is the desire to be respected and acknowledged by others by actively participating in society. The informants provided the following concise explanation for this:

“If one day I become a successful engineer, the whole society will respect and appreciate me. Therefore, in order to achieve that success, I need to maintain excellent exam results every semester to become competent engineer” (Informant 14).

The results of the community factor proved to have contributed to the extrinsic motivation factor, which is that informants stated that they wanted to finish their studies with good results so that they could get praise from the community. According to Deng & Shi (2024), extrinsically driven students work toward goals in order to receive extrinsic benefits, such as community recognition and pleasant comments. Among those who took part, half said that receiving praise from others inspired them to do better.

Furthermore, the community sub-theme also drives another facet of extrinsic motivation: empathy. Some worries on the issues the neighborhood is facing were voiced by informants. The informant also underlined the necessity of gaining as much engineering knowledge as they can in order to support the community and assist in resolving engineering issues due of the troubles the community faces.

“My goal is to become an engineer with the ability to use all of my expertise to benefit the community. Therefore, I will try to gain as much knowledge as I can throughout my studies at the University so that I can use it to serve the community” (Informant 21).

The results of the findings can conclude that students are motivated by the community based on the praise they receive and want to help the problems experienced by the community. As such, students persist until the final year and strive to get excellent results so that they can be recognized by the community as successful students and through the knowledge and skills they acquire can help the community.

In line with Hwang et al. (2023), students not only obtain a degree for their own benefit but also benefit society categorized as social responsibility. Moreover, mastering engineering content knowledge and skills is the key element of engineering curricular. However, as emphasized by many scholars, we need to use more holistic approaches to educate engineering students to be socially responsible and indirectly affect the retention and success of engineering students (Byrne, 2023; Tassone et al., 2018; Lathem et al., 2011).

4. Conclusion

The study's overall findings demonstrated that highly motivated students were more likely to succeed academically in postsecondary education. Four primary elements have been identified by this study as potential motivators. These include family, peers, lecturers, and the community. The research given indicates that each of them has some motivating

effects on students' learning. The four elements have one thing in common: they are catalysts for inspiring students to pursue their goals, which may include employment, financial gain, recognition from others, or rewards. According to Hwang et al. (2023), the behavior connected to the result of individual acts is the behavior obtained from external factors, such as incentives, punishments, and social support.

This study has been able to prove that outside variables do affect and maintain students' determination to succeed in higher education institutions. In summary, the present study advances knowledge on the extrinsic drivers of higher education motivation. This knowledge has the potential to improve graduate students' achievement, particularly among higher education students. Finally, this study suggests that future researchers to look more deeply at the effect of extrinsic motivation on students' intrinsic motivation that causes them to strive until the final year and obtain excellent academic results.

Acknowledgement

The researchers are grateful to Politeknik Mukah Sarawak (PMU) for granting permission for researcher to conduct this research with collaboration with lecturer at Universiti Tun Hussein Onn Malaysia.

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