Financial Incentives and Students Achievement: A Qualitative Study on Students' Success in Engineering Program

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***Abstract*— Issues on retention in higher education have been discussed from variety of perspectives and is complex to be understood. There is an urge need to understand how some engineering students could survive until final year while the others not. Financial incentive is suggested as an important external motivational factor that could influence student's achievement in the program. These beliefs have led to the use of financial incentives (along with the intrinsic incentives already presumed to be present) to motivate students. This study explores the role of financial incentives in motivating positive emotions of students in collectivist context, Malaysia. The main aim of this study is to qualitatively explore how financial incentive contributes to students' academic achievement. 24 final year engineering undergraduates were purposely selected from four Malaysian Technical Universities Network (MTUN) who obtaining a CGPA of at least 3.60 and above were selected as research informants. Data were collected using semi-structured interviews, integrated with two creative methods namely graph sketching and photo-card activity. Data were analysed using a thematic coding approach and the coding process was assisted using Atlas.Ti software. Findings of the study discussed how education loan and scholarship play role in.**

Keywords—Financial Incentive, External Motivation, Student Success, Higher Education

I. INTRODUCTION

Education is synonymous with rapid country development all around the world. [1] states that the engineering sector is one of the important areas that is strongly related to a country's development. The increasing numbers of student enrolments in engineering program from both public and private institutions indicate increasing trend by years [2]. However, a high rate of enrolment does not guarantee a high return in terms of number of successful engineering graduates.

Statistics shows that the number of students enrolling in Bachelor's engineering degree programs is higher than the number of students who graduated in the consequent years [3]. This rate can be supported by a statistical report by National Education Statistics from Ministry of Higher Education [4] which showed that the number of engineering students who dropped out before the end of the study period was fluctuated between 15 and 30 percent for each of the respective years.

Some of the previous research also reported that a huge number of engineering students dropout from engineering programs after first year of study [5-7]. Based on the dropout issue, there has been increasing interest from universities counterpart in understanding the behavior of the successful students. The purpose of this study is to explore about students' experiences related to their academic achievement and factors that influence them to survive from the first year to the final year specifically in the financial incentives.

II. LITERATURE REVIEW

Previous research have discussed several factors that influence student academic achievement in engineering programs. These factors will be discussed further in this section.

A. Educational Financing for Higher Education in Malaysia

Financial assistance has become essential for students who wish to pursue their studies at higher education level [8]. Regularly, Malaysia's tertiary education funding comes from various sources such as personal or self-financing, government or private funding. Due to financial crisis, it is becoming hard to obtain a scholarship and there are usually two main sources of financial supports, namely education loans and scholarships.

National Higher Education Fund Corporation (NHEFC) (also known as Perbadanan Tabung Pendidikan Tinggi National, PTPTN) is an agency responsible to provide and administering education loans to students who pursuing their studies at public and private institutions in Malaysia. Apart from the PTPTN loan, students are also rely on the second funding options, scholarships which comes from either government institutions or private agencies such as Maybank, MARA, CIMB Bank, Bank Rakyat, SHELL, Khazanah, Petronas, and many more to complete their studies in higher education institutions [9-10] .

Settlement of PTPTN educational loan is compulsory for those who funded by PTPTN funding according to the terms of the arrangement [11]. However, there is also an incentive provided by PTPTN where students could apply for an exemption if they manage to obtain a Bachelor's Degree with First Class Honours results (CGPA for first class are varies by

institution) and graduate within the scheduled time (graduate on time). Meanwhile, there is also a situation where the funding is paid according to yearly basis where each students will be assessed every semester and students must meet the minimum CGPA requirements that have been set (for example, GCPA 3.0), otherwise the scholarship funding will be ceased the next semester if they did not fulfil the minimum requirement.

B. Motivation

Motivation is the driving factor of the will and desire to succeed or achieve something [12]. Motivation can also be considered as a condition where a person plans towards achieving success to avoid failure [13-15]. [16] stated that students' success in higher education can be driven by motivational factors, namely the intention from the heart that drives a person to make an action that includes all kinds of urges, stimuli, needs and desires to achieve a goal. In the context of this study, extrinsic factors such as financial incentives refer to external supports that is believe to influence engineering students' inner motivations to persist and bouncing back from any adverse situation (resilient) throughout their study period.

C. Theory of Reasoned Action (TRA)

The theory of reasoned action model (TRA) connects individual mental states namely belief, attitude, intention to form a specific behaviour [17-19]. There are several elements of intention namely desire, resourcefulness, initiative and persistence [20]. [21] Intention is believed as the main determinant of behaviours where an individual's actions can directly influenced by the formation of intention within oneself. This view is in line with [22] study, who provide evidence to the direct relationship between resourcefulness and academic achievement of engineering students at an Australian university. According to the original theory, a person's positive or negative belief about performing a certain behaviour (which is known as behavioural belief) can influence emotional states which consequently leads to intentional behaviours. An individual will intend to perform a particular behaviour when he or she positively evaluates that the intended behaviour will have a positive impact on him or herself. In the theory of planned behaviour model (TPB), normative beliefs and subjective norm are proposed as the contributing factors of intention prior to form an action [23]. In this situation, an individual's beliefs to act is also shaped by their perception on the external motivation factors such as community, culture, and environment.

D. Incentives

An incentive is a material or rewards given or offered as an encouragement to a person for the purpose of motivation or encouragement or inspiration that indirectly leads to individual change in behaviours as an effort to obtain the incentive [24]. [25] study stated that a person who controls his or her motivation to obtain an incentive known as controlled extrinsic motivation which refers to the means of a person to control his or her behaviours to get the desired incentive.

III. METHODOLOGY

The qualitative case studies approach was chosen as the study design considering the nature of the study that are more compatible with informants' experiences. The elaboration of findings is also clearer, concrete and easy to understand. According to [26-28], case study inquiries are contextual specific focusing on the researcher's answers for each questions to the informants. Qualitative researchers themselves play role as research instruments who responsible for the entire process of data collection and analysis [29-31].

In this research, semi-structured interviews were conducted with 24 undergraduate engineering students at four technical universities in Malaysia namely Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Technical Malaysia Melaka (UTeM), Universiti Malaysia Pahang (UMP) and Universiti Malaysia Perlis (UniMAP). All the informants were final year engineering students specialised in one of three main fields of engineering; Civil, Electrical and Mechanical, and must obtaining a CGPA of at least 3.60 and above.

The purposive sampling selection in this study was made by using referral and chain referral techniques. According to [32-33], data from informants chosen via purposive sampling ensures richness and completeness of data for the phenomena under study. Each interviews took place individually between 00:52:04 to 01:48:10 hours and was recorded with informants' consent. Other than using semi-structured interviews, graft sketching and photo card activity were an alternative approach of collecting data in this study. Ethical considerations were also applied and a full consent was obtained from the Universities, the faculties and the informants themselves before data were collected. After the interview data were transcribed and transform into a transcript, thematic analysis was undertaken to identify common themes using the ATLAS.ti software.

IV. FINDINGS

Two themes were proposed under financial incentives that are education loans and scholarships. Financial incentives can comes from any sources of fundings that encourage students to strive and thrive to obtain excellent results with various form of intentions that are directed towards securing or preserving the incentives.

A. Education Loan

From the results obtained, all the informants who had educational loans stated that they strived their best to obtain good results for the purpose of getting the loan exemption. Informants also strived to maintain their first-class GPA to waive their loan commitment. Here are some statements from the informants regarding their intentions to obtain the financial incentives.

> *I received an education loan from PTPTN, I strived to maintain high GPA starting from the first semester to obtain exemption of the loan payment (Informant 7).*

> *I remain perform my best until now (final year) because I want to maintain my exam results and most importantly, I want to obtain exemption from PTPTN (Informant 17).*

> *Although my motivation level is decreasing every semester, I still remain until now (final year) and strive to get a first-class degree to obtain education loan payment exemption from PTPTN (Informant 10).*

> *I work hard to foster interest in this field so that I can score good results in the exams so that my studies are funded by PTPTN (Informant 20).*

I always work hard in all my subjects so that I can obtain the best exam results and qualify for loan payment exemption from PTPTN (Informant 3).

My main goal throughout my studies is to obtain a loan payment exemption from PTPTN. Therefore, I have to work hard to be able to get first-class results as required (Informant 18).

All these statements have proved that financial commitment can be one of motivational factors that influence students' efforts to maintain and achieve good results with a main goal to obtain an exemption for the loan commitment. The result of this study is in line with [34-36], who also provide very similar outcomes in their study. Across the three decades, financial factor play important role as a driven factors that could influence students' intention to achive and maintain better performance in engineering program. Furthermore, [37- 39], claimed that when the rate of payment for free education fees increases, the rate of student attendance also increases. This reflects that students can be more motivated to participate in the learning process and strive to meet the academic requirements in order to obtain the assured incentives.

B. Scholarship

The results showed that only six informants who did not receive any loans from PTPTN instead, they received scholarships from either the state governments or private companies. The following excerpts are some of the informant's statements regarding their scholarship;

I was funded by a scholarship from the Sabah state government. I force myself to remain until final year and strive my best to get a good GPA to make sure that I can continually get the funding (Informant 9).

Because I being bonded by a scholarship agreement, I had to work hard each semester to earn a first-class GPA (Informant 14).

I am so determine to obtain the Dean's lists for each semester to ensure the continuity of my scholarship funding. Therefore, I always forced myself to foster deep interest in any of the engineering topics eventhough this field was not my first choice (Informant 2).

All informants who get the scholarships stated that they need to strive hard to maintain a high GPA and to ensure the continuity of the scholarship throughout the years of study otherwise, their sponsorship will be terminated. This results in line with the Theory of Reasoned Action (TRA) where individuals will set an intentions in the first place and striving persistently towards achieving the desired goal [19]. This indicates that the insistence from their sponsors, eventough seems to be stressful, can be a good motivation for students to persistently put high commitment in ther study. Such an external force, can be a promising approach to ensure that students always strive their best to maintain good performance until graduation. According to [40], efforts made to move an individual toward one or more specific goals and to ensure the attainment of incentives or rewards are a form of extrinsic motivations.

The findings of this study are in line with [41-42], that the provision of incentives in the form of finance has a positive effect on student achievement at the tertiary level. In addition, the findings also clearly showed that each informant has set the beliefs that if they could succeed in getting excellent results, they are also able to obtain financial incentives or loan exemption [43]. This findings provide support to the notion that a person's behavior and actions are depending on establishment of intentions and beliefs [17&43].

V. CONCLUSION

In overall, findings of the current study demonstrates the role of financal invcentives as an extrinsic driven factors of success behaviours where informants demonstrated specific behaviours towards goal attainment, such as to secure scholarship funding or to get exemption for PTPTN loan. This study highlighted that the two main factors as important supportive factors to ensure good academic performance. Students strive to achieve high results with the purpose to obtain educational scholarship or loan, getting loan exemption and to ensure continuity of their scholarship funding. Therefore, students need to clearly establish learning intentions and goals so that every effort they made could potentially leads them towards the desired achievement. Based on these findings, these researchers propose a potential relationships between financial incentives, desire, persistence and student achievement for a further investigation.

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