THE POTENTIAL OF INDIVIDUAL FACTOR TOWARDS GRADUATE ON TIME (GOT) AMONG PHD STUDENTS IN UNIVERSITI UTARA MALAYSIA (UUM)

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Abstract

One major issued faced by higher learning institutions in many countries' especially Malaysia is Graduate on Time (GOT), particularly among PhD students. This is followed by the concerns of university images and rankings. Past studies have shown that Graduate on Time (GOT) could be influenced by various factors. Therefore, this study investigated the relationship of individual factors such as personality type A and B, motivation, knowledge, skills, and abilities, and knowledge sharing behaviour as a predictor of graduate on time. A total of four hypotheses were developed, and binary logistic regression was carried out to examine the effect. The sample consisted of 159 PhD students and students were selected starting from 3rd semester and above. This is because the outcome of graduation among 1st-semester students is not identifiable. Two of the hypotheses were supported, and the results showed that knowledge, skills, and abilities and knowledge sharing behavior have a significant effect on the outcome of graduate on time. This study aims to implement the proposed models that comprise several factors in predicting the outcome of students that will complete their PhD studies on the predetermined time. The analysis techniques used are Binary Logistic Regression Model, whereby a set of data were examined to determine the outcome. The results and findings in this study may contribute major insights into institutions and students themselves as the gaps concerning student's personality traits as the causes of the decrease of graduation rates and how to handle and measure them. Moreover, the findings also imply that personality types seem to be a new predictor in research which lead to a person actions that may influence their completion of studies. Thus, stakeholders should join hands in providing a better solution to sustain the credibility of students and institutions as a whole.

Keywords: Graduate on Time (GOT), Personality Type A and B, Motivation, Knowledge, Skills, and Abilities, and Knowledge Sharing Behavior.

Abstrak

Isu utama yang dihadapi oleh institusi pengajian tinggi di seluruh dunia terutamanya Malaysia adalah kadar tamat pengajian, terutamanya di kalangan pelajar PhD. Ini diikuti oleh kebimbangan terhadap imej dan kedudukan universiti. Kajian lepas menunjukkan bahawa tamat pengajian pada masa yang ditetapkan (GOT) boleh dipengaruhi oleh pelbagai faktor. Oleh itu, kajian ini menyiasat hubungan faktor individu seperti jenis kepribadian A dan B, motivasi, pengetahuan, kemahiran, dan kebolehan, dan tingkah laku perkongsian pengetahuan sebagai peramal tamat pengajian. Sebanyak empat hipotesis telah disarankan, dan regresi logistik binari digunakan untuk mengkaji hasilnya. Sampel terdiri daripada 159 pelajar PhD dan pelajar dipilih bermula dari semester ke 3 dan ke atas. Ini kerana hasil tamat pengajian di kalangan pelajar semester pertama tidak dapat dikenalpasti kerana masih dalam peringkat awal pengajian. Dua hipotesis disokong, dan hasilnya menunjukkan bahawa pengetahuan, kemahiran, dan kemampuan serta tingkah laku perkongsian pengetahuan pelajar menunjukkan kesan yang ketara terhadap hasil tamat pengajian tepat pada masa yang ditetapkan. Kajian ini bertujuan untuk melaksanakan model yang dicadangkan yang merangkumi beberapa faktor dalam memprediksi hasil pelajar yang akan menyelesaikan kajian PhD mereka pada masa yang telah ditetapkan. Teknik analisis yang digunakan adalah Model Regresi Logistik Binary, di mana satu set data diperiksa untuk menentukan hasilnya. Hasil dan penemuan dalam kajian ini boleh menyumbangkan pemahaman utama kepada institusi dan pelajar sendiri dan mengenal pasti jurang mengenai ciri keperibadian pelajar sebagai punca penurunan kadar kelulusan. Selain itu, penemuan dalam kajian ini juga mengimplikasikan bahawa jenis keperibadian seseorang menjadi ramalan baru dalam penyelidikan yang membawa kepada tindakan seseorang serta mungkin mempengaruhi penyiapan pengajian mereka. Oleh itu, pihak berkepentingan perlu bersatu dalam menyediakan penyelesaian yang lebih baik untuk mengekalkan kredibiliti pelajar dan institusi secara menyeluruh.

Kata kunci: Tamat Pengajian tepat pada masa (GOT), Jenis Keperibadian A dan B, Motivasi, Pengetahuan, Kemahiran, dan Kebolehan, dan Perilaku Perkongsian Pengetahuan.

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LIST OF ABBREVIATIONS

GOT	Graduate on Time
KSAs	Knowledge, Skills, and Abilities
KSB	Knowledge Sharing Behavior
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factor
PhD	Doctor of Philosophy
UUM	Universiti Utara Malaysia
UTM	Universiti Teknologi Malaysia
CGS	Council of Graduate School
NEO	Neuroticism, Extraversion, Openness
OYAGSB	Othman Yeop Abdullah Graduate School of Business
AHSGS	Awang Had Salleh Graduates School of Arts and Sciences
GSGSG	Ghazali Shafie Graduate School
SE	Self-Efficacy
RU	Research University
US	United States
UK	United Kingdom
STR	Senior Tutor for Research
HEA	Academic Affairs Department
IPTA	*Institusi Pengajian Tinggi Awam*
ABBPS	A/B Behavioral Pattern Scale

MS	Motivation to Achieve Success
MF	Motivation to Avoid Failure
SEI	Self-Efficacy Inventory
AMS	Achievement Motivation Scale
ANOVA	Analysis of Variance
ANCOVA	Analysis of Covariance
MANOVA	Multivariate Analysis of Variance
MANCOVA	Multivariate Analysis of Covariance
TRA	Theory of Reason Action
DBMs	Deepe Boltzmann Machines
SVMs	Support Vector Machines
GPs	Gaussian Processes

CHAPTER 1

INTRODUCTION

1.0 Introduction

This is a study on the relationship of individual factor among PhD students and graduate on time (GOT). Hence, this chapter provides some background information on personality types and behavior of the selected respondent. This information is channeled through several part which is background of the study, followed by problem statement, research questions, research objectives, scope and limitations of the study, definitions of key terms and lastly is the organization of the theses.

1.1 Background of Study

Student's academic achievement is always a key contributor to the institution's education quality. The expeditious expansion in tertiary education can be seen through the admission rate in higher institutions. This escalation is in line with the burgeoning role of tertiary education which is to achieve the objective of tertiary education development 2001-2010, aims to provide sufficient quantity and quality of manpower to meet the needs of a country. Hence, it is an obligation for higher institutions to produce graduates who excel in academic, competent, competitive and possess a good attitude. In order to strengthen the capabilities of higher learning institutions, human capital with high caliber personality needs to be generated rapidly and it can be achieved by offering a higher qualification in education commonly known as Doctorate. Malaysia's strategy

to generate human capital that has Doctor of Philosophy (PhD) or equivalent qualifications shall be enhanced by stressing efforts to increase the enrollment of PhD candidates (National Higher Education Strategic Plan, 2007-2010). As a whole, universities as the highest education level have come under increasing performance scrutiny as they are expected to play a vital role in shaping a better and credible future leader.

University Utara Malaysia (UUM) has offered a variety of PhD programs since 1992. Over the year, the number of candidates who wish to pursue their studies in the doctoral program has been expanding with a total of 506 candidates in the year 2014. However, According to Chin, Ch'Ng, Jamil, and Shaharanee (2017), the number of PhD candidates enrollment at UUM has increased but their ability becomes deteriorate and ultimately leads to non-completion because they exceeded GOT time frame. This issue has long been a concern to students, lectures, and universities.

Recently, statistic shown by University Technology Malaysia (UTM) indicates an increasing number of Doctor of Philosophy (PhD) candidates, from roughly 4,000 in 2002 to approximately 40,000 in the year of 2012 (education in Malaysia, 2016). Along with the growth in PhD enrollment, however, there is increasing concern over the rate of completion in doctoral studies as stated by Ampaw and Jaeger (2011); C. Golde, Jones, Bueschel, and Hutchings (2008); C. M. Golde (2005). Based on the data attained form Council of Graduate School (CGS) from a PhD completion project, and it is reported that both private and public institutions globally have low completion rates at 56.6% ten years after students start their doctoral program (Gardner 2013; King 2008) whereas they can complete it within the predetermined time. Surveys such as that conducted by Bourke, Holbrook, Lovat, and Farley (2004) showed that the time taken to complete PhD studies has internationally become a concern to government, universities and the students

themselves. This scenario is worrisome as it can have an adverse effect on students (Ali & Gregg Kohun, 2007; Levecque, Anseel, De Beuckelaer, Van der Heyden, & Gisle, 2017). Apart from facing a failure of studies, it also affects a student's career aspirations. There are various implications of non-completion: (1) failure to complete can leave students with enormous debt and limited career opportunities (C. Golde & Dore, 2001). (2) Losses to university as it affects recruitment. (3) Lead to lower rates of student accomplishment. (4) Society would lose confidence in the country's education system. As a result of the above effects, students who do not complete their studies on time will contribute to larger and longer-term problems. Therefore, remedial and supervisory measures should be implemented in the education system so the rates of non-completion students could be reduced.

Postgraduate students have to face a maturing process of learning during their studies. It must be strengthened by appropriate support and time management. University should provide ample guidance to postgraduate students without disregarding the consistency and generic input necessary for academic programs. Many researchers investigate the factor related to GOT as a whole without segregate it into a single factor. In response to this problem, the researcher plans to carry out an inclusive participatory investigation into a student's personality and behaviour. Thus, this study focuses more on individual factor namely type A and Type B personality, motivation, knowledge, skill, and abilities and knowledge sharing behaviour among PhD students. This study further amplified by the previous study that mentions that successful completion seems to be influenced by the existence of several fortuitous qualities or characteristics within a person (Humphrey, Marshall, & Leonardo, 2012; Welsh, 1980).

This matter about non-completion and longer time is taken to complete studies has attracted many scholars to delve into the factors that relate to this concern. Even though this study has been widely investigated but few studies have focused on individual factor as a whole. According to Hakimi, Hejazi, and Lavasani (2011), a person differs in a way of learning, in other words, not only they have different personality characteristic but also featured different attitudes and emotions. While research from Ismail, Abiddin, and Hassan (2011) focused more on establishing methods for effective supervision but these did not determine the factors influencing student's rate of completion. Completing PhD studies is an academic achievement in educational infrastructure and it is a massive investment in human capital. Thus, an adequate resource from government and institutions is highly desirable (Mangematin, 2000; Sauermann & Roach, 2012). As mentioned by Collis and Hussey (2013); Phillips and Pugh (2010), carrying out research degree lead to a great transition in the lives of students. Thus, it is veritably significant to a potential candidate's life.

Ng, Muhd, Rahman, and Ismail (2011) identified the number of admissions into doctoral programs in Malaysia was 4,942 and indicates a total number of enrolments with 16,947 for both public and private universities. "What makes a great PhD student?" this question has bother academicians for ages. Similarly, educators and students at University Utara Malaysia (UUM) are still pondering regarding these issues. A critical concern towards non-completion rates should be noted however it can also serve as a benchmark to identify the success of each course and evaluated the terms of obtaining actual graduations. Hence, current researchers would like to dig and identify at greater depth the individual factors that lead to student's outcomes of graduation on time particularly that come from within students themselves. Therefore, the factors investigated by the

researcher can help educators and institutions to recognize their student's individual differences and attain higher academic performance and finally graduate on time.

To address these issues, it is essential for universities to participate in the transformation of society and raised educational preparation for a larger population. The role of the faculty's academic community is also important in finding solutions to the low rates of PhD student's success. As Malaysia aims to train 60,000 students postgraduates' level over the next nine years and has scaled back a plan to train 100,000 doctoral students by 2023. Therefore, issues of low completion rates should be expanded in order to meet the country defined goals. Hereby, these current studies focus more on individual factors that came deep within a person's behaviour and thoughts in the hope to shed light on the factors that may contribute to GOT.

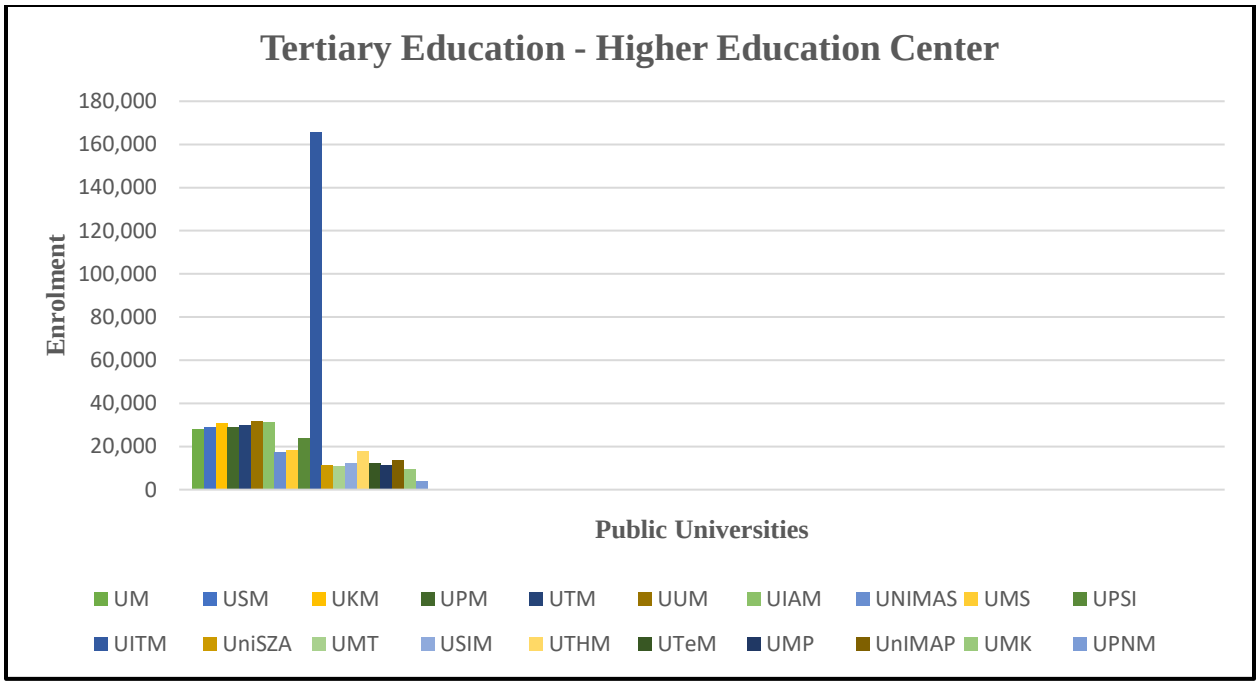

Figure 1.1: *Data as of 31st December 2017*
Source: Planning, Research and Policy Coordination Division, Higher Education Sector, MOE

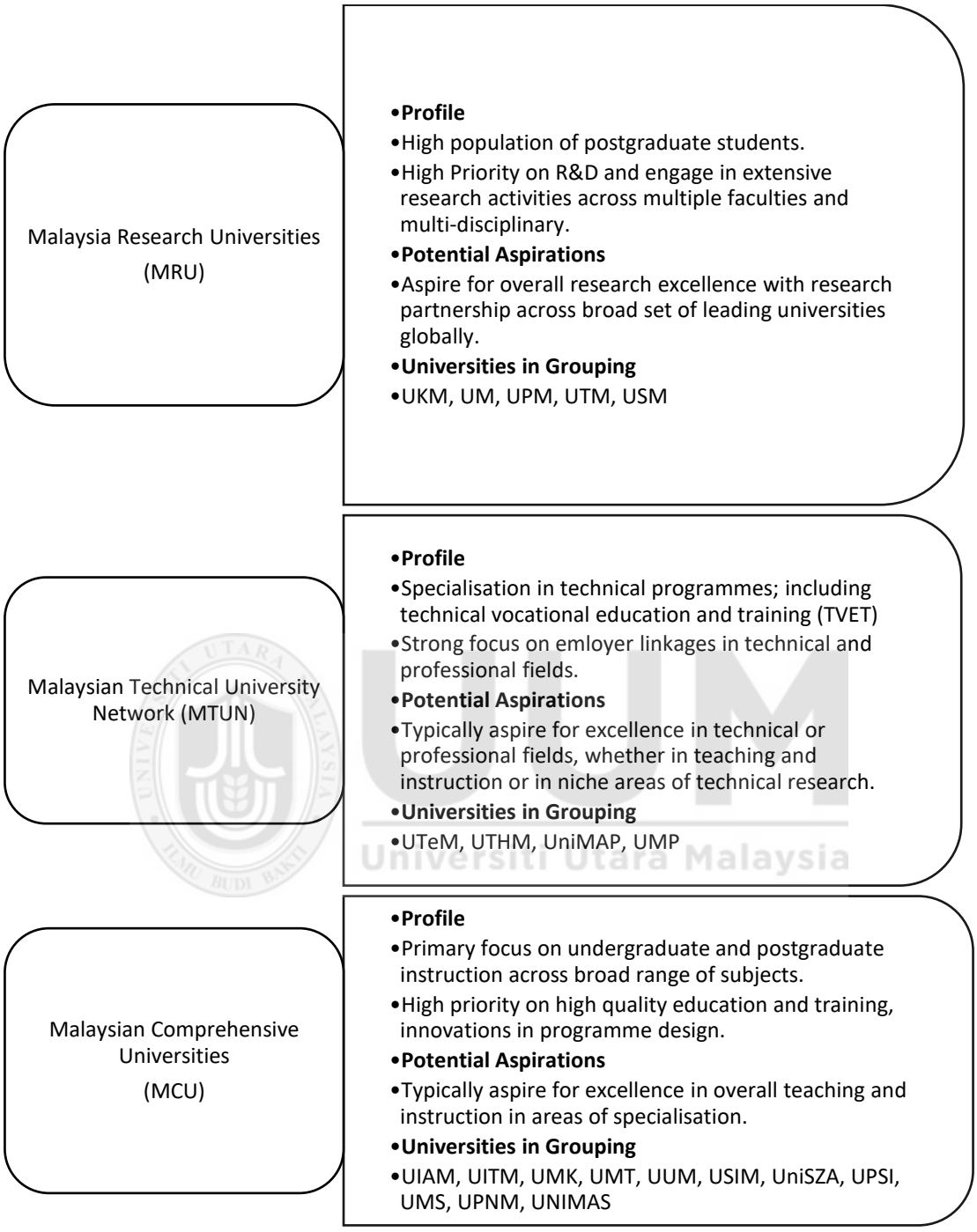

Figure 1.2: *Public University Category*
Source: Enhancing Academic Productivity and Cost Efficiency, (2017).

1.2 Problem Statement

In this climate growth and diversity, many of the studies reviewed higher education as the platform to develop and train the needs of research higher degree students especially those involved in research area such as PhD students. Doctoral students are considered as highly selected and skilled students whereby they need to be competence in research area. However, obtaining a PhD is always an arduous journey. Previous research on doctorate program showed that although students find the doctoral process is inspiring, some may face serious obstacles, such as practical difficulties in completing their dissertation and other personal factors (Jairam & Jr., 2012; Spaulding & Rockinson-Szapkiw, 2012; Vekkaila, PyhältÖ, & Lonka, 2013).

Despite the critical review about having knowledge and success through PhD degree, completing it on time have to go through a complex process which is affected by many interacting factors. Issues concerning the completion of doctoral studies are undeniably an increasingly challenging and it is significant in the area of literature of higher education (Robert Wamala, Oonyu, & Ocaya, 2011). Although holding doctorate degree is considered as an epitome in education, the United States has recorded an increase in time taken to obtain a doctoral degree over the years (Hoffer, Hess, Welch, & Williams, 2007; J. Williams & Todd, 2016). In response to the issue about the prolongation trend in PhD education, several studies have been conducted to analyze the factors that influence GOT.

Most scholars have studied other variables such as environmental factors, institutional attributes, or student-supervisor relationship (Spaulding & Rockinson-Szapkiw, 2012;N. M. Shariff, Abidin, Ramli, & Ahmad, 2015). Albeit the predictors often attribute to internal and external factors, only some studies have so far investigated individual factors as the main source

of GOT. Some theoretical underpinnings indicates that personality act as the most important predictors of student success (Wolters & Hussain, 2015). Even so, there are many personality factors which have an impact on student success in higher education. For instance, research conducted by Soraya Hakimi et al., (2011) investigate the relationship of personality traits and academic achievement and they use NEO Big Five personality factors as the predictors. Even though Big Five personality is widely used to identify people's characteristic patterns, too many researchers have used this method compared to personality type A and B which is more practical as it only classifies two categories of character types to identify the nature of students in completing their study. The findings of the literature on the predictive factor of personality types model on academic institutions differ widely (Sahinidis, Frangos, & Fragkos, 2013). Individual factors are considered as the reason behind the diverging conclusions.

According to Schultz and Schultz (2016) the importance of the relationships between personality and performance is the evidence conducted from a large number of relevant studies. The question rises on 'why would anyone need to investigate this subject further? Even though vast amount of research has been done, it is still showing some loophole that have yet been discovered in the literature. According to Komarraju, Karau, Schmeck, and Avdic (2011); Komarraju and Nadler (2013) personality traits have an impact on students' academic performance because behavioral characteristic expressed in personality traits can trigger certain habits and influence academic success. As cognitive ability represents what a person can do, personality traits illustrate what a person will do (Hazrati-Viari, Rad, & Torabi, 2012). Thus, personality factors in predicting academic achievement, provide support to the previous finding by Feyter, Caers, Vigna, and Berings (2012). In many cases, students have never thought that their personality traits might have been the cause of delaying in completion of study (S Hakimi, Hejazi, & Lavasani, 2011;

Hazrati-Viari et al., 2012; Raveendran, Raveeswaran, & Ananthasayanan, 2011). There is a need exists to address the gap research on personality types and behavior especially PhD students, this is due to the fact that doctoral student indicates a higher rate of non-completion in their studies compared to another program and considering that few studies have focus individual factors as the casual factors in students GOT.

Furthermore, review of literature has also indicate that certain variables has conflicting findings such as motivation which has been reported in education as one of the factors that influence academic achievement (Cerasoli, Nicklin, & Ford, 2014; Vansteenkiste, Sierens, Soenens, Luyckx, & W., 2009). Quest for achievement has been seen as the behavior of an effective person's personality. As anyone can be motivated, not all can manage to maintain the enthusiasm, this will create a problem of persistency in pursuing studies. Motivation is recognize as a key factor that can influence human behavior, hence, many scholars interpret motivation as one of the important factors in ensuring students continues success (Alkis, 2015; Alucdibi & Ekici, 2012). While Azizollah, Abolghasem, and Amin (2016) also stated that lack of motivation could affect performance and could lead to failure to achieve success. Students lacking in motivation often encountered academic difficulties to pursue their studies (R. Sukor, A.F. Mohd Ayub, Z.Nurhasnida, & A.R. Nur Khaizura, 2017). Nevertheless, Bakar, Tarmizi, Mahyuddin, Elias, Wong SL., and Ayub (2010) found that there was a negative relationships exists between students motivation and their academic performance. Meanwhile Azar (2013) and Mahyuddin et al., (2009) revealed that the relationships between motivation and academic achievement is significantly low, thus, their studies did not support the positive relationships between the two variables. Therefore, this study proposed to include motivation as one of the antecedent factors to identify the correlation

it has with GOT. Hence, such lacking could result in delaying of studies and lower students' ability in learning.

As for Knowledge, skills, and abilities (KSAO), several studies had acknowledge the importance of research skills to PhD students (Mowbray & Halse, 2010). According to Aziz, (2018) recruiters believe that there is a shortage in graduate skills, indicating that universities may not necessarily provide students with ample opportunities to develop their critical skills. There are quite a number of factors influence the issues of time completion and one of the factors is the inadequacy of students preparation in the program of doctoral studies. T. S. M. Meerah et al., (2012b) stated in their research that many candidates applied for doctoral program with insufficient knowledge and skills in conducting research, so students who lacks of KSAO would be part of the reason that they taking a longer time to graduate. However, the demand to develop research skills are more exposed to postgraduate students that engaged in full research work, as this study would focus on PhD students. Besides, few studies have emphasized the element of research skills that they deem important for student's development. Hence this research aimed to contribute the body of knowledge within PhD students by identifying the relationships of KSAOs and GOT.

Finally, this study would also consider knowledge sharing behavior as the predictors of the outcome of graduate on time. Ghadirian, Ayub, Silong, Bakar, and Zadeh (2014) stated the importance of knowledge sharing to improve learning process. Furthermore, Volady (2013) stated that knowledge sharing is derived dependence of individual factors, which include personals beliefs, experience, motivation, and attitudes or mindset towards knowledge sharing. Most research centered on bonuses and monetary opportunities to facilitate, for instance sharing information (Roger Fullwood, Rowley, & Delbridge, 2013). According to Maliasi and Ainin (2015), they found out that non-monetary factors such as self-efficacy, pleasure by helping others

and scholar humility; these were highly correlated with sharing knowledge behavior and consistency. Many studies have conducted a research regarding knowledge sharing behavior, however research studying the relation between knowledge sharing behavior and the outcome of graduate on time among PhD students is rare. This research seeks to fill the gap, by identifying student behavior towards sharing knowledge during their studies. Identifying the level of willingness and why PhD students shared knowledge among their peers is important for universities as it can help them in developing information sharing platform.

1.3 Research Questions

Below are the research questions that these current studies intend to investigate:

1) Are there any relationships between type A and B personality to the outcome of Graduate on Time (GOT)?
2) Is there any relationship between motivations for the outcome of Graduate on Time (GOT)?
3) Are there any relationships between knowledge, skills, and abilities (KSAO) to the outcome of Graduate on Time (GOT)?
4) Are there any relationships between knowledge sharing behaviours (KSB) to the outcome of Graduate on Time (GOT)?

1.4 Research Objectives

Below are the objectives set for these studies;

1) To examine the relationship between type A and B personality and Graduate on Time (GOT) among PhD students.
2) To examine the relationship between motivations and rates of Graduate on Time (GOT).
3) To examine the knowledge, skills, and abilities possess by students and the outcome of Graduate on Time (GOT).
4) To examine the thoughts of students in knowledge sharing behaviour (KSB) towards the outcome of Graduate on Time (GOT).

1.5 Significance of the Study

The main objectives of this research study are to examine the relationship between individual factors and graduate on time (GOT) among PhD students. The researcher intends to highlight the importance of individual factors such as personality type and behaviour towards achieving academic success. Furthermore, it is also hoped to enrich knowledge by providing theoretical and practical perspectives in the related area.

1.5.1 Theoretical Contribution

In relation to the theoretical perspective, this current study considered the literature on personality trait and behavior as a predictor of graduate on time. Researchers found that motivation is strongly linked to doctoral completion. For instance, several researchers have cited that lack of motivation is the single most important predictor associated with attrition Cayirdag (2012); Nagi (1974); Wyman (2013). In common with previous studies indicates that both completers and non-completers conclude that lack of motivation was led by individual reason for both completion and non-completion of doctoral study (Devos et al., 2016). Nevertheless, a scholar such as Brien (1993) and Cardona (2013), found that students who have strong attitudes which never giving up on task they conducted are more likely to complete the doctoral studies than others who have low self-efficacy. In addition, this current study considered persistence theory as the underlying theory in student's completion and time-to-degree (Dwyer, McCloud, & Hodson, 2012; Perna, 1998). Previous researchers have focused on the effects of several factors have on study's persistence. However, few writers have been investigating individual factors as the main pillar of their study. As mention by K. C. Campbell and Fuqua (2008), the theory of persistence by Tinto (1993) is the basic elemental theoretical foundation for academic performance and any related studies.

Individual factors and Graduate on Time (GOT) have been the subject of few empirical studies. In the search of research literature, there are no studies that focused primarily on the variance of individual personality characteristics and behaviour used in identifying Graduate on Time among PhD students. According to Tinto (1993) comprehensive model of theory would give an outline to doctoral student persistence of studies. Rates of non-completion for doctoral students and persistence vary widely depending on the area of study. Psychological factors have been

attracting researchers, particularly over the past decade, they had grown interested in investigating doctoral student's characteristics and how it affects non-completion and persistence (Bair & Haworth, 2004). Four personal characteristics namely type A/B personality, motivation, KSAO, and KSB have been the main factors of the recent inquiry.

As reported by Caspi, Roberts, and Shiner (2005); Schultz and Schultz (2016), a person personality related to their academic achievement when i.e. an individual choose environment that correlates with their personalities, when this two criteria overlap, it is considered as related. Therefore, it is generally accepted that personality is considered to be one of the predictors influencing graduate on time (GOT). Several studies have highlighted that type A personality is positively associated with academic achievement and finally graduate within the time limit (Ghazi, Shahzada, & Ullah, 2013). While type B personality demonstrates contradictory results compare to type A personality, indicate an insignificant relationship with academic achievement (Rosander, 2013). As this study aims to uncover the personality types within students and the linked-to their achievement of graduate on time, personality terms are recommended to be used in this study.

1.5.2 Practical Contribution

In regards to the finding in this study, researchers are expected to practically contribute with further insight on the individual factors that influence GOT that affect the outcome of graduation rates for PhD students and stakeholders. Although not jointly exclusive, factors that influence the non-completion of study may be categorized as personal. Individual factors may be perceived as a characteristic that specifies to a student's situation and is not directly controlled by

other factors. From the practical perspective, this current study could help institutions to develop a relevant remedy to enhance the quality of postgraduate students and subsequently reducing non-completion rates. Although the university offers programs or classes to the various research learning process, it still lacks first exposure to actual research when students themselves participate in conducting the dissertation. Thus, student engagement in research should be undertaken from the early program. Postgraduate students need advising in an important subject and interaction from an assigned supervisor or course mate would help students to share knowledge and hone their talents. Besides, this study is expected to provide valuable information to university administrator which allow them to better understand the research issue and help them prepare for institution-wide-self-study of factors influencing doctoral completion. Once the faculty were made aware of a rise of the influence factors on completion rates, they will be inspired to develop their own 'grass-root' measures to enhance doctoral students in pursuing their goals (Grasso, Barry, & Valentine, 2009). Furthermore, during the admission process university may conduct a personality evaluation on PhD candidate to test their potential in order to aim for an optimum doctorial completion rate. As stated previously by Grasso, Barry, and Valentine (2007), faculty should be considered the importance of measuring internal student characteristics which can be associated with doctoral completion. Therefore, this study is significant as the researcher can contribute to having a more proper and meticulous evaluation of the relationship between individual factors and GOT.

This current research represents a thorough review of the predictors (e.g., personality type A/B, motivation, KSAO, and KSB) found to be influencing the graduate on time of PhD students. Meanwhile, this research also presents a significant contribution to the field of doctoral education as it seeks to gather all the factors found to form and promote the success of student's completion. In addition, this study also contributes to the education levels on economic growth by using the

measurement of the school enrollment rate in PhD education. Specifically, in the case of doctoral completion, this current research will significantly contribute to the research methodology perspective notably to the existing knowledge concerning the predictors of PhD timely completion. Besides that, it will also lead to the successful preparation of postgraduate's schools for the PhD candidate's potential success. The main objective of this study is to point out the influence of personality in student behaviour to predict their academic success. Given that the importance of personality traits of all PhD candidate within education sector including university or educators themselves, therefore it is crucial to examine and analyze the personality traits of PhD students using personality type A/B. These current findings could be used to describe the expected and unexpected of the future candidate in relation to the requirement. Based on the research conducted on personality traits, parties involve can predict individuals with certain traits that can manage to graduate on time while different traits may take times to complete. These traits can demonstrate why a student who is prone to personality type A can perform better than personality type B. For instance, being inquisitive and perceptive help students to a better understand of many things in achieving academic success. In conclusion, this research could help educators to confront future types of causal factors in behavioral characteristic in students and provides steps to address the issue. Overall, the significance of these personal differences should be taken seriously especially in the education sector.

1.6 Scope of study

This study is conducted among PhD students at University Utara Malaysia. PhD students are selected from three main branch of postgraduate school department. These respondents were chosen in this research as they have the higher probability of delay in graduation compared to another program. This can be seen from the figure 1.3 which shows an increase in rates of non-graduate students from 2006 until 2017. Since much of the investigation on the outcome of graduating on time literature focuses on internal and external factors, this research study focusing more on the personality and behavior within PhD students. This current research significantly addresses the influence of individual factors towards the outcome of graduate on time among PhD students in Northern Region University UUM Malaysia. Quantitative research is used in this current research to test the hypothesis constructed. There are four (4) independent variable chosen for this research which are personality type A/B, motivation, knowledge, skills, and abilities (KSAO) and knowledge sharing behavior (KSB). In order to study individual factors on the outcome of GOT, this study was conducted on the PhD students, from three graduate schools in UUM; OYAGSB, AHSGS, and GSGSG. The scope was limited to only PhD students due to the lengthen time needed to complete full research. The PhD students were chosen for this study as they hold a higher level of education and have gained importance over the years. As mentioned by Halse and Mowbray (2011), the impact of a qualified doctoral degree to society is not only to the holders but also to other stakeholders involved such as the institutions and government. Apart from that, a PhD holder has a wide career path especially in an academic area (Cyranoski, Gilbert, Ledford, Nayar, & Yahia, 2011; Sauermann & Roach, 2012).

In regards of the obstacles encountered in this study, research was delimited by the selection of respondents. Only students starting from 3rd semester and above of upperclassmen that enrolled at UUM during the time the survey were conducted are considered in the sample. This is because freshman is in their early stage of study and the expectation on their graduation is vague. The purpose of quantitative research methods is the potential to generalize findings from a larger population, however some aspects of this research methodology limit its generalizability especially the selection of research respondent.

The sample was drawn from a systematic sampling at public university UUM. This type of non-random data collection method could reduce predictive validity of the study. There is a possibility that perhaps the type of student who attends the target university vary from the larger population. Moreover, respondent provided feedback by filling the questionnaire themselves. Meanwhile, the nature aspect of self-report give rise to possibility of validity concerns. In terms of respondent, researchers have limited data as it only collected in UUM whereby larger sample could improve the finding results.

Besides there are many variables that could affected GOT but this study only focuses on certain variables which is individual factors. According to Mairesse, Walker, Mehl, and Moore (2007); Schwartz et al., (2013) conducting an investigation on the prediction of human behavior is a complex problem and psychologist believe that a person's personality may affect various aspects such as performance. In addition, there is a lack of reliable data required by this research as it is a significant hindrance in finding a trend and meaningful relationship between the variables. For instance, research on personality type A and B are mostly found in medical field as it used to identify patient traits and their illnesses, it is quite difficult to find a secondary data that cover those personality in academic area.

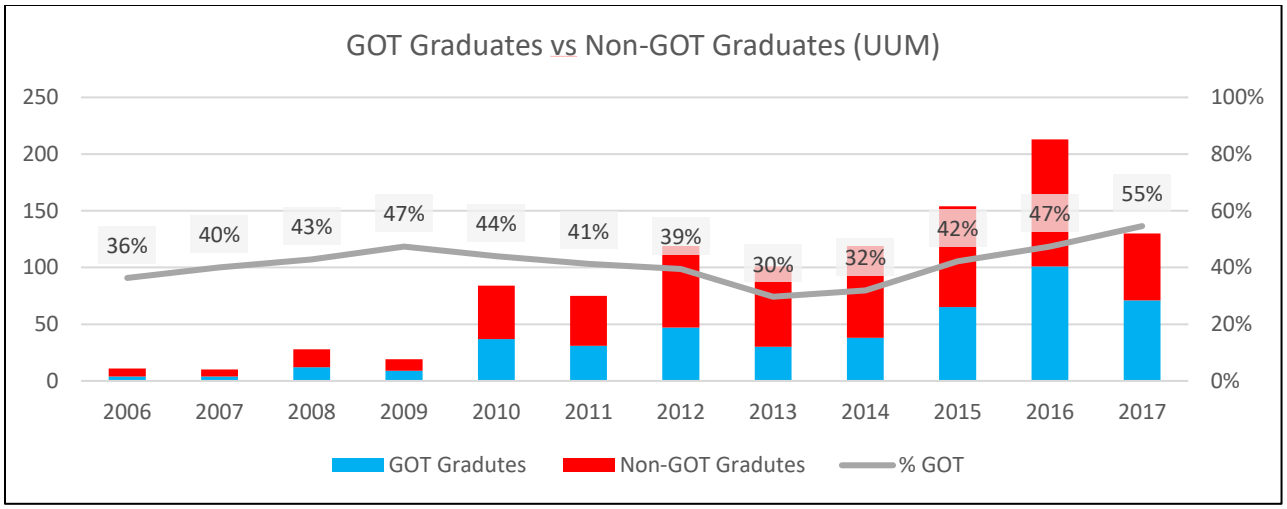

Figure 1.3: *Data of Graduates vs Non-graduates (UUM) between 2006-2017*
Source: Universiti Utara Malaysia

1.7 Definition of Key Terms for Dependent and Independent Variables

The variables in this current study are Graduate on Time (GOT), Personality type A/B, Motivation, Knowledge, Skills, and Abilities, and Knowledge Sharing Behavior. The other related variable's definitions were listed below.

Dependent Variable:

Graduate on Time (GOT)

A *graduate* is referring to someone who has successfully completed an accredited course of study and awarded by institutions. *Graduate on time* is the standard length for students to complete their studies. Accordingly, to PhD candidates, they were required to complete study, not more than 3 years for full- time enrollment and not more than 6 years for a part-timer. Following the regulation applied by UUM, full-time students have to complete their studies between 4 to 10 semesters and

part-time students shall complete within 6 to 14 semesters. This variable is measure according to students semester starting from 3rd semester and above to study the probability of students graduating on time.

Non-completion – Non-completion rates were only measured the proportion of students fail to complete their studies in respective time.

Independent Variable:

Personality Type A

According to Caracciolo et al., (1986); R. Rosenman (1990), type A person are more ambitiousness, impatience, competitiveness, aggressiveness and have increased likely for anger. A person with type A personality tends to have alertness, tenseness and emphatic as they speak and act fast and they keep challenges and wanting to achieve it (Joffe, 1996). Personality types A and B are measure based on the trait or characteristic someone possess that allows researchers to identify which attributes lead to graduate on time and non-graduate on time.

Personality Type B

On the contrary, type B is easy-going, more relaxed, and never rushed in doing things and they choose to do one thing in time. They enjoyed outdoor activities and pursuit achievement without creating mental pressures (Friedman, 1974).

Motivation

Motivation is what drives a person's actions, willingness and goals towards something. Motivation comes from the word motive which is described as a need that required satisfaction within a person. According to Albert Bandura (1977), *self-efficacy* is defined as an individual judgment about his or her competency to accomplish a given task. A person's level of self-efficacy is related to the individual's choice, effort and perseverance inactivity. Albert Bandura, Barbaranelli, Caprara, and Pastorelli (2001) describe self-efficacy as an individual belief in his or her ability to execute specific performance attainment. An individual with self-efficacy reflects their confidence in taking control of their own motivation, behavior and social environment. Self-efficacy is measure according to the subject perceived by the respondent in the areas of education and if someone is indicating a strong self-efficacy tend to form a stronger commitment to the activities that they involve. While, a person with low self-efficacy believe that challenging task is beyond their capabilities. This study measures the sources of self-efficacy among PhD students to determine their believe in completing study on time.

Knowledge, Skills, and Abilities (KSAO)

Knowledge is defined as theoretical and not practical. An individual should focus on understanding certain concepts such as the topic related to their field of study. While *skills* are the competence or expertise possessed by a person through hands-on experiences or practices. Although *abilities* often confused with skills, yet there is a subtle difference. Abilities are traits that a person inherent by using them in a task or situation. These variables are measure based on the nature of characteristic of interest to determine the capabilities students have in pursuing research program.

Knowledge Sharing Behavior

Knowledge sharing behaviour is an action of individuals in providing knowledge that can be accessible by others (Ipe, 2003; Paulin & Suneson, 2015). Similarly, Ryu, Ho, and Han (2003) and Wang and Noe (2010) view knowledge sharing as the behaviour of propagating someone's acquired knowledge with other people. Along with the same line, Hau, Kim, Lee, and Kim (2013), mentioned that knowledge sharing is a relevant way to convey information, ideas, expertise, and even suggestion to one and another. KSB is measure according to the influence of individual factor which have the ability to share and the willingness to share knowledge.

1.8 Organization of Theses

This current study is organized into five main chapters; Introduction, Literature Review, Methodology, Results and Discussion, and Conclusion and Recommendations.

Chapter 1 presents information about the background of the study, problem statement, research questions, research objectives, scope and limitations, definitions of key terms, and organizations of the thesis.

Chapter 2 focuses on revising relevant and related literature on postgraduate studies, academic performance, graduate on time (GOT), individual factors; type A/B personality, motivation, knowledge, skills, and abilities (KSAO), and knowledge sharing behaviour (KSB). This section is a review of empirical findings on relationships between individual factors and graduate on time.

Chapter 3 emphasizes the research methodology. The research conceptual framework and hypotheses are described in this chapter. Furthermore, this chapter explained the operationalization of the dependent and independent variables along with measurement instrument, research population, and design, sample size and method as well as the instrument for data collection. This section discusses the method used for data analysis and reliability testing were reported.

Chapter 4 listed all the statistical analysis of data collected consist of data screening and preparation. Subsequently, the results and table from conducting binary logistic regression using SPSS version 22 were analyzed and reported. Lastly, the final results of the hypotheses were disclosed.

Chapter 5 discusses the findings derived from the research objectives and hypotheses. Moreover, this chapter presents the implications of the findings in detail. In addition, this chapter explained the research limitations and provide suggest guidance for future research.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter explains the related literature review by other scholars in the field of graduating on time along with the predictor variable. The literature focuses on the effect of individual personality and behaviour on their performance towards graduating on time. This is followed by the discussion on the relationship between individual factors as the independent variables and graduate on time as the dependent variable. Furthermore, this section describes the supporting theories and model which underpin the conceptual framework. The final sections conclude the hypothesis development applied for this study.

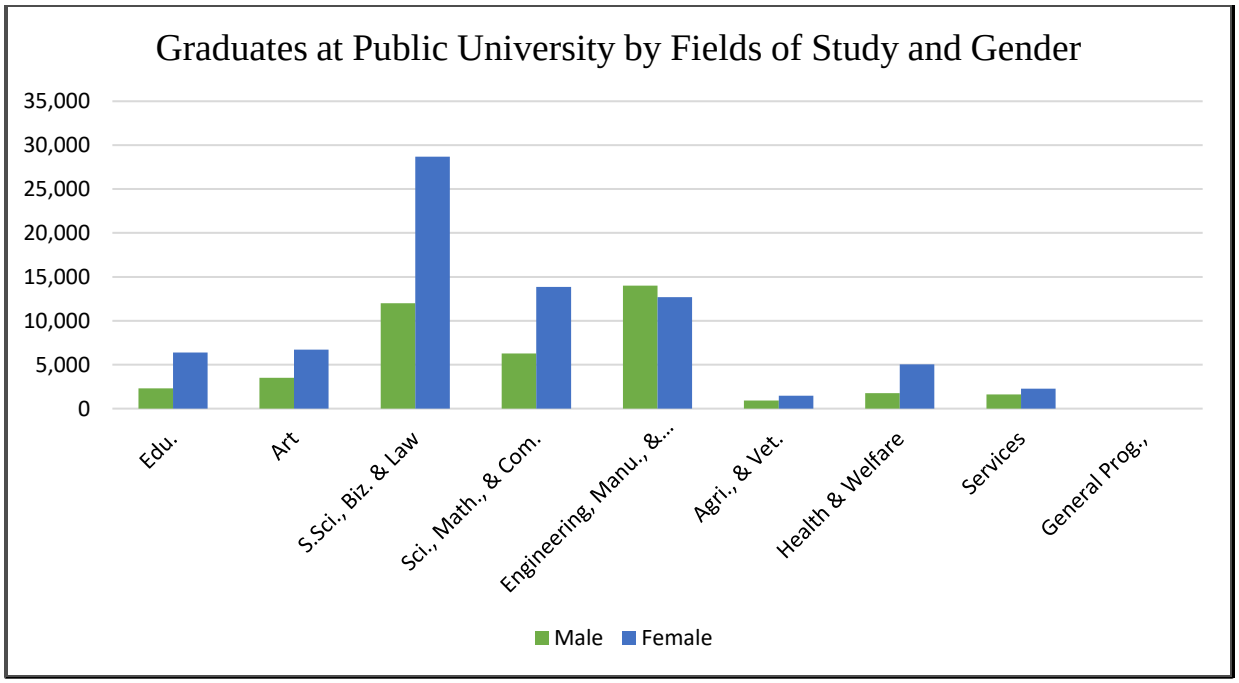

Figure 2.1: *Data as of 31st December 2017*
Source: Planning, Research and Policy Coordination Division, Higher Education Sector, MO

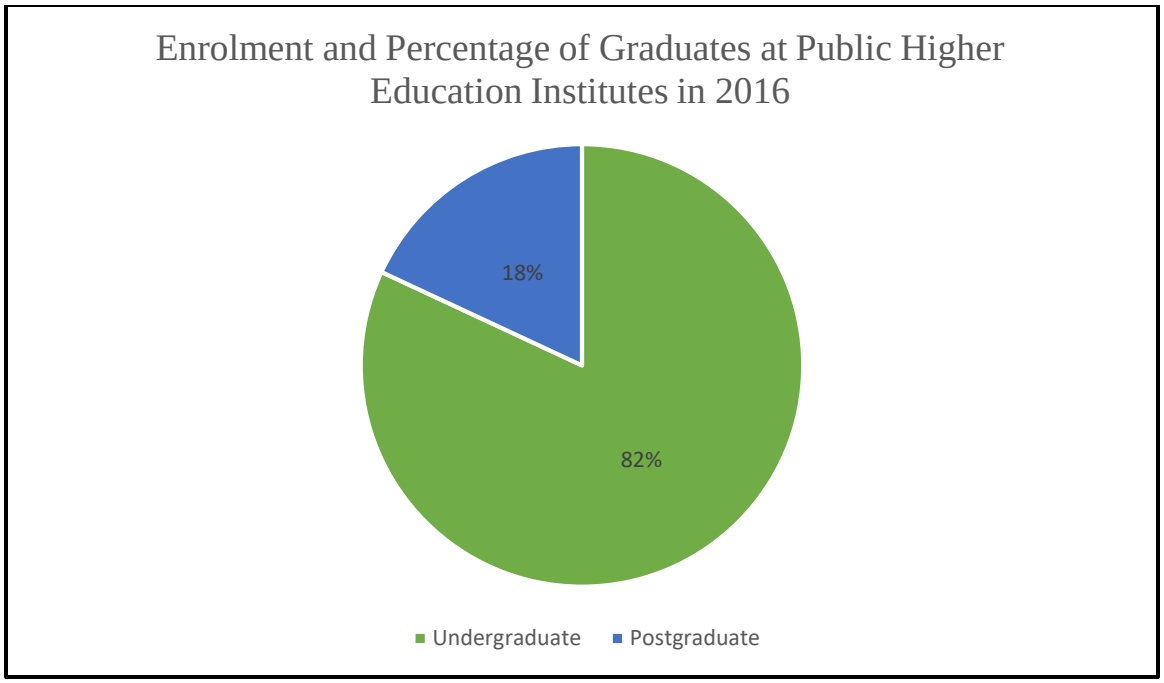

Figure 2.2: *Enrolment and Percentage of Graduates at Public Higher education in 2016*
Institutes Note:
1. Undergraduate includes; Postgraduate Diploma, Degree, Diploma, Matriculation, Professional, Pre-Diploma, Certificates & Pre-Session
2. Postgraduate includes; Masters and PhD.
3. Others
Source: Planning, Research and Policy Coordination Division, Ministry of Higher Education

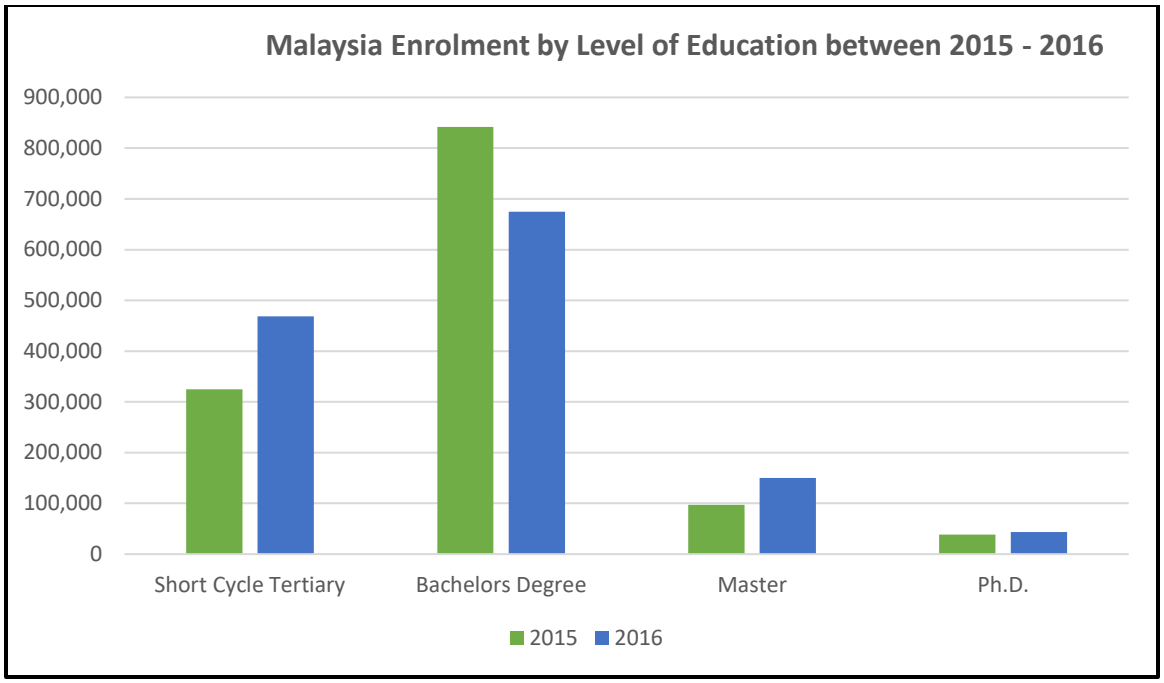

Figure 2.3: *Malaysia Enrolment by Level of Education between 2015 - 2016*
Source: UNESCO Institute for Statistic (UIS)

2.1 Type A and B personality and graduate on time (GOT)

The word "personality" came from Latin which called "persona" and the meaning is the mask. In addition, personality also includes a person's thoughts, social adaptation, feelings, and pattern of behaviour that influence one's own expectations., attitudes, values, and self-perceptions (Krauskopf & Saunders, 1994; Winne & Gittinger, 1973). Likewise, Klimstra, Luyckx, Germejis, and Meeus (2012) conducted studies that suggested the probability of a person's personality that affects their educational recognition. A more comprehensive description can be found through Fayez and Labib (2016) which indicate that personality is the combination of emotions, attitudes and interpersonal that react with others that results in human behaviour. It was reported in the literature that many theorists have arranged and measured personality traits from multiple viewpoints (Pelinkanten & Selahattinkanten, 2017). Thus, this current study investigates two

different personalities mainly Type A and B with its influence on the outcome of a PhD student's graduate on time (GOT).

Over the past two decades, type A and B personality behavioural pattern has been an interesting topic from worldwide researchers either by medical or psychological field. Up to now, far too little attention has been paid to personality traits type A and B yet this model of personality holds an important perception of human beliefs about how we behave. Cooper (1998) has mentioned a person's personality that can be identified by everyday language that full of words such as; aggressive, passive, shy, dominant, etc. These patterns of behaviour can be used to predict a person's action based on the situation. By using the descriptions, it will help in generalizing how a person's behave, think, and feel which characterized their types of personality. Similarly, Hussein (2014) pointed out that personality is regarded as a dynamic character by psychologies in which they find expression through a person's activities and conduct. Even though the behavior is visible in the outside, it is impossible to fully know whether personality is shaped by genetics or hereditary factors. Personality can be unpredictable since no-one actually knows how personality can change over time. A search of the literature revealed that past researchers have focused more on individual factors; financial problems and institutional factors as predictors of non-completion rates (Angulo-Ruiz & Pergelova, 2013; Steele, Fisman, & Davidson, 2013).

Nevertheless, several researchers have sought to examine the continuing effects of psychological factors on academic performance, there should be a need exists to ascertain the extent of the relationship between psychological factors and academic achievement that can eventually increase and stabilize the rates of graduation within the time period for PhD students. As mentioned by Rathus (2011), personality types are one of the psychological factors that serve

as the primary variable for the investigation of the outcome of graduate on time (GOT) and act as academic achievement in doctoral students.

As can be seen, conducting research on personality is intricate because there are many traits that include under the label of personality. Previous researchers often used the big-five personality theory to examine personality in an academic field, but this current research prefers personality type A and B as the predictor to determine the outcome of graduate on time among PhD students.

A systematic understanding of how type A and B personality contributes to graduate on time for PhD students should be taken seriously because it is important to be aware of the personality traits for it is an act of learning and attitudes towards their studies. Usually, research regarding personality types A and B originated in medical exploration and focused mainly on health outcomes, but now a number of studies have started paying attention between personality and academic achievement. R. Rosenman and Friedman (1981) classify personality characteristic known as Type A behavior pattern which associate with three specific personality characteristic namely; competitive towards achievement, sense of urgency, and using hostility to cope with upset situation (Fretwell, Lewis, & Hannay, 2013b; W. E. Watson, Minzenmayer, & Bowler, 2006). Moreover, individuals of type A personality demonstrate highly ambitious to achieve goals. They are described as impatience, work-oriented, always in a hurry, hardworking, and deeply involved in doing their tasks (Mahajan & Rastogi, 2011). In addition, individuals who possess type A personality are action-oriented and they struggle to achieve something in the least amount of time. They tend to set higher performance and career goal standards even it takes a longer time to achieve them (Nahavandi, Mizzi, & Malekzadeh, 1992; Peterson, 2018). A phenomenological review of research from two cardiologists, Dr Meyer Friedman and Ray Rosenman on type A and B behaviour pattern was a test on patients with severe coronary heart disease. The results defined

that a patient with type A behaviour tend to struggle to achieve more in less time when they involved in a chronic situation. This is consistence with the research from Matthews (1982) which describe type A behaviour consists of a characteristic such as the excessively fast-paced approach to achieve a goal in life, interrupting others to uphold their own opinion, impatience, enjoyed multi-tasking, and highly competitive. Consequently, type B is contrary because type B person is more relaxed, unhurried, and possess a satisfying style. But still type Bs person is motivated to achieve their goal, the way they approach their goal is different from type A person because they prefer to do it in a more methodical manner. As a result, several studies indicate that the extreme type A individual is more likely to develop coronary heart disease compared to type B (Haynes, Feinleib, & Kannel, 1980; R. H. Rosenman et al., 1975).

Some studies have classified Type A behaviour as in a state of agitation because they involve in a work that charge by the need for approval (Hallsten, Josephson, & Torgen, 2005; Langballe, Innstrand, Aasland, & Falkum, 2011). More positively, Goodman et al., (2011) and Sturman (1999) also described Type A behaviour as extraneous motivated behaviour in order to achieve from others. While type B personality reported the reverse as they express different coping styles. According to Muehlfeld, Doorn, and Witteloostuijn (2011) cited from Glass (1983), type B individual may be more ambitious and intelligence as they required slow but careful and put more attention while doing tasks. Besides, a type B individual treated as an easy-going and even-tempered and they can adjust in any environment easily (Radsepehr, Shareh, & Dehnabi, 2016).

It is noteworthy that type A and B behaviour is a global and multidimensional construct that has a great deal of research focusing on striving for achievement that represents overall relative of traits in one's environment (Day & Jreige, 2002; Judge, Rodell, Klinger, Simon, & Crawford, 2013). Given this evidence, it is tempting to assume that achievement motivation exists among

type A person's. Someone with achievement motivation would be in possession of energy to direct competence behaviour and they make an effort to complete studies on time. Shaheen, Jahangir, and Andaleeb (2011) reported that type A's do not relay on deadline to work on their full potential. On the contrary, Omonijo, Ojo, Rotimi, Omolola, and O.O.U (2014) and Scott (2015) argue that individuals with personality type A direct themselves with deadlines and would be frustrated with the smallest delay in getting a task done. Since type A person is hardworking and has the capacity to occupy multiple tasks, they might not have a problem finishing it on time. Even though Aliyu and Adeloye (1991) claims that person with personality type B possesses some of the traits in personality type A, Omonijo, Ojo, Rotimi, Omolola, and O.O.U (2014) argued otherwise by pointing out that personality type B have some behaviour patterns that are opposite to type A behavioural pattern. According to the authors, type B persons are more relaxed and rarely hurried in completing job demands. With a laid-back attitude, this argument has support Lombardo (2015) research claiming that type B is less stressed and expressive. Although it has been discussed, type B can be an achiever too but they are not as competitive as type A persons. Besides, Sameen and Burhan (2014) have mentioned that type B personality is more to the creative side and they do not get stressed easily merely by lack of achievement because they are not afraid to fail and they love to explore concepts and ideas.

What represents academic achievement and why should personality relate to it? Completion of education within the predetermined time is what students consider as academic achievement. Graduate on time (GOT) is the outcome of education when students achieve their educational goals. Admittedly, personality has been conceded as a prediction on how people learn and this current study have been constantly conducting research to find out the relationship between personality and graduate on time (GOT). The academic field is dictated by several factors

related to performing; capacity, opportunity, and willingness to perform (Kumari, 2014; Traag, Valk, Velden, & Vries, 2005). Capacity included knowledge and skills held by a person in order to perform, the opportunity to perform is influenced by environment and resources. While the willingness of a student to perform is based on motivation and personality traits (M. Blumberg & Pringle, 1982; Boxall & Purcell, 2011). In addition, Willingham, Pollack, and Lewis (2002) describe that willingness to perform is associated with the attitudes to study. This has been shown as one of the predictions of academic performance.

Behavioural and psychological responses to achievement in graduating on time differ between personality type A and B albeit the exact psychological mechanisms that influence personality traits is obscure. Currently, there is clarification regarding the underlying psychological mechanisms that straighten type A and B patterns. Therefore, it is desideratum to come up with empirical evidence for these personality types in order to overcome any obstacle that arises from within individuals that lead to their delay in achieving educational achievement (Siegel, 1984). Korotkov et al., (2011) conduct a study about this personality to find out whether type B person would be attracted more to preventive acts than type A and the result showed a positive relationship.

Surprisingly, a person with type A personality has an alternative in facing a new challenge, they work long and have a greater commitment to taking their responsibility (Derbis, 2012). A number of authors have recognized that type A personality is sufficiently correlated with academic achievement. Furthermore, the diversity of characteristics contains in type A personality resembles with big five personality trait which is conscientiousness. This is proven by Ghazi, Shahzada, and Ullah (2013); Hakimi, Hejazi, and Lavasani (2011); Poropat (2009), which compared personality type A and the component of conscientiousness and the results were positively correlated. In

addition, a positive result between academic achievement and conscientiousness has also been reported in the studies from (Al-Naggar, Osman, & Ismail, 2015) and Ambreen and Jan (2015). Earlier studies openly claimed that extraversion, one of the components in the five-factor personality model has practical resemblances with type B personality. As a matter of fact, several studies have revealed the negative correlation on one of the components in the five-factor model; extraversion with academic achievement (Deyoung, 2010; Rosander, 2013). Despite the argument, studies by (Ghazi et al., 2013) exposed a positive correlation between personality type B and academic achievement. On the other hand, a relationship of type A and B with graduate on time (GOT) could either be positive or negative in view of the fact that characteristics of type A personality; task-oriented, hardworking, and achievement-oriented then students' academic achievement will increase. In contrast, some characteristics of type A that appeared to be hostility, aggressive, and impatient then it would negatively correlate to GOT. While, type B personality have negative relationships with academic achievement if these characteristics; easy going, delay work, and do not have the desire to compete. Nevertheless, characteristics such as patient, high socialize person, satisfied with the present achievement would apparently increase the rates of academic achievement (Lateef, Dahar, & Yousuf, 2019).

Despite all the negative claiming about type A personality, there are also positive aspects of their behaviour pattern. For instance, an individual who identified as type A personality drives their competitiveness to perform well in their tasks and contribute to timely completion (Boyd, 1984; Rauch, Frese, Rauch, & Frese, 2007). This superlative performance showed by type A person establish evidence on their devotion towards the completion of a task. Moreover, it also comes to a sight that the health condition in type A personality is much related to their competitiveness and achievement-oriented (Harackiewicz, Barron, & Tauer, 2002; Spence, Pred,

& Helmreich, 1989). There are many perceptions describe the relatedness of student's academic achievement with alertness factors due to the rise of personality, psychological, environmental and sociological factors. Therefore, a number of studies investigate by psychologists indicate that personality factors play an important role in influencing student's academic performance (Kay, 2001).

This subject has relevance to the educational perspective that examines personality traits that cause impediments to the outcome of graduation on time. From a psychopathology point of view, a person with mental health was likely to decrease on academic achievement as they showed poor behavioural development. At this juncture, it is fundamental to consider why personality should be regarded to correspond with academic achievement when most measures of personality were not represented to predict the outcome of graduate on time for PhD students. A logical viewpoint posits that behavioural pattern and academic achievement exert reciprocal on one and another which negatively affect the rates of graduating on time and also give impact on individual development. Regardless of the explanation, this current research paves the way to a clear understanding of the existence of the relationship between personality traits and graduating on time as academic achievement for PhD students. The researcher hoped that this study will help generate relevant assessment, prevention as a better cure, and strategies to overcome the negative outcome of graduate on time.

2.2 Motivation – Self-efficacy (SE)

How to maintain student motivation that has been a long-standing matter with institutions and educators. It is stated that self-efficacy (SE) is an important component of student's academic motivation and this research investigate these relationships at the postgraduate level mainly PhD. In most cases, a person is motivated by doing something that they like or enjoy, engaging in something that inspired them, or even completing something that can satisfy their inner self. Howbeit, how is motivation influence students' performance? Motivation is a basic recipe for academic achievement. Internal and external factors of motivations can restore energy in people to continue taking interest in their job and put extra effort to achieve a goal. Dornyei (2008) indicates that motivation describes in detail why an individual decides what to do, how they do what they do, and the decision on how long they are prepared to undergo the activities. Simply put, "motivation is what drives you going, keeps you on track, and directs where you are going" (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013; Slavin, 2006). According to M. Alderman (2013), students with optimum motivation have an edge because they have maintained a goal-setting with adaptive attitudes.

How a person is considered to possess a high level of motivation? Motivation is reported as a process by means of an individual began to have a source of strength to achieve the goal-directed activity. It is viewed as an action through which a person's needs are set in motion (Alexander & Murphy, 1998). According to several studies, academic motivation cogitate student's level of determination such as interest and effort put in the subject matter seeing that it is viewed as a source of academic success (Alexander, 2005; Rakes & Dunn, 2010; Wylie, 1989).

Additionally, motivational beliefs are extremely important to the academic success of students in view of the fact that they help to identify the extent to which student's effort, consideration, value and even interest in doing a task is considering valuable. For instance, self-efficacy which contains a motivational element may affect how a person thinks, feel, and behave. Nevertheless, it may influence the effort when someone intended to create outcomes (Albert Bandura, 2010). This has been present in the previous research indicating student's performance problems are revealed to be related to their self-efficacy beliefs (Marcou, 2005; Stolk & Harari, 2014). Self-efficacy is an attempt to interpret and predict human behaviour in a different approach and conceptualize a person's traits such as being proactive, argentic, self-evaluative or self-regulatory (A Bandura, 1989). This current study focuses more on academic self-efficacy which reflects a student's awareness about competence to complete a task within the academic domain. Specifically, the researcher utilized student motivational orientation which links with academic self-efficacy that leads to a vigorous predictor of the outcome of graduate on time and this motivational element needs further investigation and focused more on PhD students.

According to (A Bandura, 1997), individuals with a high level of self-efficacy are remarkably steadfast and persevering in achieving their goals, in succession, they might perform better and results in graduate on time. For instance, an individual with a high sense of self-efficacy will see difficult tasks as a challenge and they overcome any obstacle that comes in performing the task. While an individual with a low sense of self-efficacy would find an easier way to achieve the goal and they avoid facing any challenged at all times. Similarly, Kurbanoglu (2003) and Mai (2016), alludes to self-efficacy as a belief in one's own ability in performing a task. Moreover, self-efficacy is beliefs to be a provider in the foundation of human motivation, well-being, and

individual accomplishment (Kurbanoglu, 2003) and influence the inclusiveness of human behaviour (Siu, Spector, Cooper, & Lu, 2005).

(A Bandura, 1997) self-efficacy beliefs:

I. The magnitude or to the extent of something refers to the level of beliefs and capabilities of a person on performing a particular behaviour.
II. Generality or a general statement refers to a person's self-efficacy beliefs that cover a wider area of behaviours and situations.
III. Strength is noted as the purpose of people's judgment that they can perform the behaviour.

Scholars posit that self-efficacy as an argentic motivational orientation that fuels determination within students when facing difficulties and encourages self-regulation (Albert Bandura et al., 2001). It is noteworthy that the educational journey comes with an experience of success or failure and these relate to elucidate of strong or weak emotion of self-efficacy as a predictive of performance for PhD students (Caprara, Vecchione, Alessandri, Gerbino, & Barbaranelli, 2011; Gore, 2006). This has proven several meta-analyses regarding self-efficacy that appeared to be the predictor of performance in different environments and populations (A Bandura & Locker, 2003; Albert Bandura, 2012; Multon et al., 1991). Additionally, a number of scholars have mentioned the linked between self-efficacy beliefs with academic performance (Honicke & Broadbent, 2016; Valentine, Dubois, & Cooper, 2004; Zajacova, Lynch, & Espenshade, 2005). A high level of academic performance is associated with the rise of confidence and likely enliven student's motivation in taking greater responsibilities to successfully complete

their tasks and graduate on time (Zimmerman & Kitsantas, 2005). Hence, Zimmerman and Kitsantas (2005) and Alderman (2013) stated in his study that self-confidence or self-efficacy for education and performance is important in order to achieve academic success.

Another aspect to highlight is the importance of self-efficacy, as stated by Bandura (1997). The hypothesis indicates that expectations towards self-efficacy dictate what conducive action to be taken in, how much effort will be enlarged and how long a person would commit when facing obstacles or failure. A person feeling is influenced by their level of self-efficacy, for example; persons with low self-efficacy also have low self-esteem and negative thoughts about their personal development. Thus, it is important for academic institutions to keep hold of their candidates who have strong self-efficacy because they will discern a difficult task as challenged and they are very committed to performing their tasks. Therefore, these present studies found that self-efficacy is affected student's academic performance. On the other hand, Cataldo, John, Chandran, Pati, and Shroye (2013); Li (2012); Turner, Chandler, and Heffer (2009); and Robbins, Pender, Ronis, Kazanis, and Pis (2004), stated that achievement motivation is another predictor for student's academic performance.

In a similar fashion, the achievement is derived from a high level of motivation and this has been argued by Atkinson and Feather (1966) that a person's perception of achievement came from a motivation of a need to achieve success and avoid failure. The way a person pursuit achievement divided into three types; (1) they have need to succeed (2) they interpret the probability of success (3) and they are fully aware of the value outcome (De Charms, 2013). A person's regard the probability for achievement triggered by both desires to achieve and fear of

failing. The consequences affect both are decided by individual behavior, whether to continue or not. For instance, a PhD student is a researcher who tends to find answers from their research investigation, if they have the desire to finish their thesis and graduate on predetermined time and avoid failure, they will definitely proceed in completing their task.

In addition, previous research has established correlations between self-efficacy and performance because they believe that self-efficacy lies within a person's which outstand their behavior according to situation or circumstances (Somech & Drach-Zahavy, 2000). A survey conducted by Irizarry (2002) and Pajares (2002) showed that self-efficacy beliefs allocate the basis for a person's accomplishment seeing that when an individual depends on their actions to achieve desired outcomes, it will encourage them to keep trying even when facing difficulties. Hence, it is reasonable that self-efficacy acts as a component in serving behavioral change, in such a way that even as a predictor of physical activity because the model of self-efficacy can function in various types of physical activity programs especially in children (Annesi, 2010).

In spite of the fact that a greater number of existing literatures supported the belief of relationships between self-efficacy and academic achievement, there are scholars who argued about this matter. A study from Lim (2001) showed that there is no significant relationship between self-efficacy beliefs and academic achievement in the area of adult academic outcomes. Similarly, Strelnieks (2003) found that some external factors such as gender and socioeconomic status could influence academic achievement rather than self-efficacy. The results obtained from the data could only show the prediction of female's academic performance and failed to see a male's academic performance. Aside from this finding, it was also indicated that students with higher economic

status are predicted to achieve academic achievement compared to having self-efficacy beliefs. Despite the fact that there are studies supporting the correlation between these variables, there still scholars that claimed the opposite. Therefore, further studies on these issues are required to illustrate a clearer comprehension between the two variables.

Educators had previously posited the existence of self-efficacy and academic achievement. Simply put, students believe that their academic competence plays an important role in increasing motivation to achieve (Husain, 2014). In accordance with Deci, Ryan, Deci, and Ryan (2009), a motivated person is based on how they moved to achieve something. As Nilsen (2009) and Charla and Crump (1995) stated, components of motivation is consist of enthusiasm, interest, and excitement towards education. However, self-determination theory stated otherwise that motivation accumulated from various types depending on the goals resulting from one's own action.

To further describe self-efficacy in academic settings, Altunsoy, Çimen, Ekici, Derya, and Gökmen (2010), expressed his finding by stating the definition of self-efficacy as a concept of beliefs which include capabilities to complete task provided. This belief is closely linked to PhD students as it assesses their behavior in completing research within a set time provided by the institutions. The information gathered can become the pillar for developing and maintaining motivation among PhD students to further engage themselves in a research field.

According to Hadi and Muhammad (2019), besides student's competence in research skills, motivation is also important in completing the research they entitled to finish. On looking closely

at the role of PhD students in related to their thoughts and beliefs regarding education intellectual and on what degree of enthusiasm of their beliefs in the aspiration they have established (McKenzie & Schweitzer, 2015; van Dinther, Dochy, & Segers, 2011).

2.3 Knowledge, Skills and Abilities

There were around 23,000 PhD holders in 2016 including public and private institutions. As noted by the Malaysian Education Blueprint 2015-2025, government plan to increase the number of PhD candidates by at least 75% especially in Accelerated Programme for Excellence Apex universities and research universities (RU) (Balakrishnan, 2019). The government aims to increase the number of skillful, knowledgeable, and innovative candidates aligned with nation aspiration in becoming a country with high-income status.

In meeting the objectives of identifying KSAO and KSB possess by students which can influence their studies completion, the researcher digs deeper into its root causes. According to B. Blumberg, Cooper, and Schindler (2008), the research process could start with a problem due to researcher investigation needs. Due to the inadequacy of knowledge and research skills, students face a problem with using the right assessment techniques and results in a delay of study. While knowledge sharing behavior refers to the intention of students to share knowledge. Fullwood, Rowley, and Delbridge (2013); Riege (2005), identify that academician's fears of receiving unfair recognition and afraid of knowledge property being stolen are some of the mentality minds that daunting students to share knowledge. Knowledge sharing is crucial to the success of a student's journey towards graduating. Effective knowledge sharing is necessary for students in order to cultivate good sharing behavior.

Widely considered that doctoral research program is much different from masters and undergraduate study, considering the need for them to be independent learning and put particular focus on analysis, writing skills and resolving problems. As stated by Masthoff (2017) a feasible way to decrease time needed to complete PhD studies is by ascertaining that PhD students are well-developed before they start their PhD journey. Schramm-Possinger and Powers (2015) study using qualitative method indicates that reading, review and understanding research articles and journals as well as communication and statistic skills are the main challenges faced by doctoral students. A systematic review of prospective observational studies from Mowbray and Halse (2010) showed that data collected through interview from several PhD students described how they equipped themselves with skills was essential to completed their PhD program. In other words, knowledge, skill, and ability play a pivotal role on PhD students as they need to master the skills on writing, communication, and all sorts of skills related to their research such as ability to find information and link the information together.

It is well known that PhD studies is the pinnacle of learning but an atypical question arise about the value and purpose of the PhD studies. This concern has been stated by C Halse (2007) and Jackson (2013) about how government and business leaders whine about PhD graduates has shortage of skills needed for labor markets, even opportunities in academic work is diminish while the number of PhD graduates increase. This particular issue has been topicality among stakeholders. Therefore, many academic institutions have come up with a strategy to improve their students. For instance, universities in the western countries have embedding skills training into doctoral programs with the goal of providing graduates for future improvements so that they can contribute to the economic development of the country (Lillis & Curry, 2013; Meek, Teichler, &

Kearney, 2009; Peters, 2007). There have been several attempts from institutions implementing skills training for research postgraduate to ensure graduates possess the skill needed for career development, this can be noticed from the example of UK Research Council and Humanities Research Board whereby they issued a skills training for research postgraduates.

From the systematic review of the literature, it is clear that a list of skills portrayed a set of expectations and with a dubious claimed whether they can be met so that PhD students can complete their studies within the time provided by the institutions (Craswell, 2007). This has been extensively discussed in literature by Borthwick and Wissler (2003); Mowbray and Halse (2010) and Neumann and Tan (2011) where they articulate the expectations on PhD graduates through lists of knowledge, skills and abilities such as research skills, technical skills, academic discipline knowledge, communication skills, the ability of writing, and have the capacity to be a motivated, innovative, and flexible individual.

On the contrary, Damian (2009) and S Kyvik and Olsen (2012) have not yet come with a consensus on what skills a PhD graduates should develop. As indicated by the research of European Universities Association (Damian, 2009), government and industrial sector are still in the state of ambiguity about the specified skills and research approaches needed for PhD candidates to ensure they reach the complementary capacities. Nevertheless, skilled PhD graduates have a pivotal role in contributing to economic growth (Usher, 2002). At this juncture, it is important to consider how knowledge, skills, and abilities of PhD students should be improved, in order to increase the graduation rates. A systematic review of the literature showed that there is no unanimity in regard of the meaning of '*skills*' as it includes exceptionally different synonyms of competencies, abilities, and qualities (Cumming, 2010; Gilbert, Balatti, Turner, & Whitehouse, 2004).

Despite the fact that research students need to have the ability to write, the problem of poor writing was also found within the level of PhD candidates (Luttrell, Bufkin, & Eastman, 2010; Pfeifer & Ferree, 2006). It is important if this problem is highlighted because students need to have writing skills in advance in order for them to describe their research and complete study without delay. Admittedly, lack of writing skills will be a hindrance to students to complete study in predetermined time because it will take some time for students to learn how to write correctly. For instance, a survey from workers with more than 10 years of professionals experience indicated that the need to write effectively was an important skill in their daily work (National Commission on Writing in America's Schools and Colleges, 2003). There are several causes that lead to students poor writing skills, some of it is because they are not exposed to long writing in college, students hesitate to attend writing-intensive class which results in absence confidence in their writing abilities (Plakhotnik & Ershova, 2017) and next is, students are terrified of making mistakes and think that they will not be able to find enough material to write on. Therefore, incorporated students with writing training and classes are necessary for academic institutions. The following topic presents an overview of what is academic writing.

There is a clear consensus among researchers about the important of KSAOs for postgraduate students as cited by Khatab and Meerah (2009); Murtonen and Lehtinen (2003) and Murtonen, Olkinuora, Tynjala, and Lehtinen (2008) which emphasize that students need to be competent in their professional field. This is also supported by the previous researchers such as Kardash (2000) and Powers and Enright (1987) in their study which identify research skills as a major part of research process. It was found that learning methodology and another related research field is not easily acquired by students as it is reported to be very difficult to conduct research methodology (Murtonen, 2005). Furthermore, previous study have also highlighted the important

of research skills and student should prepare early before entering postgraduate education (Gilmore & Feldon, 2010). This imply an understanding that students will experience difficulties during their research journey if they have insufficient preparations in research skills. Similarly, a review of studies by T. S. M. Meerah et al., (2012b), identify a variety of skills necessary for conducting research such as finding information skills, communication skills that include writing for thesis, technical skills, and skills in data analytical which required students to identify suitable analysis and statistic.

In comparison with Krapp and Prenzel (2011) and Roberts (2002) studies, they verify that research skills are a fundamental goal of science education for postgraduates level in some countries such as United States (US), Australia and the United Kingdom (UK). However, investigating skills development at the level of postgraduates educational is strictly limited because the common skills possessed by students could vary as they pursue graduate study as those skills can change over a period of time (D. F. Feldon et al., 2019; D. Feldon, Maher, & Timmerman, 2010). In line with the worldwide proliferation, the demand for resilient graduates is growing as to able to compete globally. Hence, academic institutions in Malaysia are perpetually challenged to develop graduates with the possession of 21st-century skills and abilities in order for them to succeed in the current worldwide knowledge-based society. This is consistent with the previous research which emphasis knowledge as a possible material that can boost economy, thus leading to the demand of more efficient, informed and creative human capital resulting in the increase of investment spending on education, training and R&D (Arokiasamy, 2012; Fong, Sidhu, & Fook, 2014; Othman, M. Hamzah, T. Singh, Abdul Wahab, & Ismail, 2011; Othman, Singh, Tin, & Sulaiman, 2012). Consequently, the 10th Malaysia Strategic Plan 2007-2020 are examples of a measure taken by the government to encounter the need for the skills of a 21st-century workforce.

Given this statement, it is tempting to assume that higher educational institutions is encouraged to be the makers of newfound knowledge and disseminator of learning that shapes intellectual capital with an innovative potential (Kaur, 2007) required for the 21st century to contribute to the future success on the globalized economy.

In the same vein, the Ministry of Education, (2012) reports have stressed upon the problems faced by employers in hiring graduates among them are lack of in-depth knowledge, skills, and abilities demanded by the industry. Additionally, N. Ismail (2011) finding prove that soft skills such as analytical thinking, communication and computer skills are among the factors that ameliorate graduates. Hence, it is found that KSAOs is in dire need by graduates such as research skills as they are required to conduct investigation with the existing knowledge and at the same time graduate according to the time specified. In line with the increase of postgraduate students and the difficulty level of pursuing research studies, Kyllonen (2012) asserted that graduates should be equipped with various skills as it is critical for postgraduate performance in educational achievement and the outcomes of graduating on time. According to Weligamage et al., (2003) graduates need to master a specific skills such as knowledge skills that relate to the field studies. Students need to master the ability of applying theory into practices in any situations, thus having a skill to use appropriate technologies in conducting investigations is a must for research students. The scholar also mentioned about thinking skills which students need to exercise their critical judgment and adopt a problem-solving method in conducting a study. Moreover, personal skills and personal attributes required a student to possess the ability to plan their goals and the ethical behavior that students showed towards others. Consequently, knowledge, skills, and abilities play a very important component in the success of a research study. Hence, mastering it would save plenty of time for students to complete their studies within the timeframe.

Nevertheless, some students take a long time to start their theses and submit their dissertation which results in delay for completion. The key outcome for the doctoral program in particular is to establish an individual as a qualified researcher, i.e. has gained the knowledge and skills to perform and disseminate his or her work in a specific research area (Meerah et al., 2012a). This has been the subject of study in most research programs, given the fact that development of researchers contribute to economic healing and act as an advantage for the country (Dodani & Laporte, 2008; Heroux, Levesque, Taylor, Ulloa, & Janssen, 2016). The lack of preparations in knowledge and research skills before conducting a study could affect the completion time because students required an ample time to search and select information. Therefore, students should be equipped with research methodology along with the complete set of data analysis methods as well as the academic writing. Thus, it is important to identify the student readiness before pursuing their study in postgraduate education.

A review of literature was conducted to identify the development of research capacity. The research training and development findings provide information on the elements of research frameworks to be used in this study analysis. Furthermore, the analysis found that there were several components engaged in the research skills. A studies by Gilmore and Feldon (2010); Kardash (2000); Powers and Enright (1987) design their owned test to evaluate the skills and emphasize the importance of each of those skills to the students. Below is the construct selected to conduct this study and are defined operationally.

I. Knowledge seeking skills

It is the capacity to search for, use and assess information. According to the models design by Krikelas (1983) there are steps of information seeking; (1) requirement (2) searching

(3) discovered the information (4) utilize the information. Knowledge seeking starts when a person interprets the current knowledge to have less than necessary to deal with certain problem. The cycles cease when there is no perception exists.

II. Problem-solving ability

Problem-solving is the ability to recognize, identify, and evaluate problems, and from there create methods and measure then choose the best alternative for a specific context. An individual requires imaginative and innovative mind in order to tackle a problem as well as analytical skills to scrutinize the implications of a particular outcome. Besides that, rationale skills are also needed to measure one approach over another. Moreover, problem-solving involves evidence and logic, collection of data, critical analysis, observation and input, and empirical analysis.

III. Research approaches skills

It requires defining and developing appropriate research methods, recognizing the limitations and nature of the research design such as sample size and types of data.

IV. Statistical Analysis Skills

It is the ability to perform data collection techniques comprising the preparations and selection of a proper data collection methods or instruments. These skills can determine an effective process (Qualitative and Quantitative) for analyzing and manipulating data and to apply an appropriate technique tools to evaluate the validity of the research. However, one of the limitations of statistical techniques are data need to be fits with the assumptions behind a statistical analysis and only then it can draw and interpret relevant conclusion from the analysis results.

V. Communication skills

The ability to write and present the study and its findings is considered as communication skills. It is communicating the purpose and results of the research to others. It is also the ability to summarize information, clarify the intent, priorities, the research findings and accommodate the communication to the needs of a specific audience based on the knowledge level.

Since the primary objective of graduate school is to prepare graduate students to accept professional responsibilities, it is of paramount importance that they build up their research abilities to accomplish the task and graduate on time. According to Robert Wamala, Oonyu, and Ocaya (2011) oral communication skills, information seeking and methodological awareness was recorded as the most progress development during an academic period. In the meantime, report from Vermue and Fokkens-Bruinsma (2012) indicate a chart that identify the students believed about being able to finish their PhD successfully within the timeframe and 96% students stated that writing ability become a source of need for students to complete their studies. On the whole a critical review from Polziehn (2011) suggested several of abilities that graduate students can used to demonstrate their competencies;

I. Students need to possess a high ability of critical and creative thinking as they are required to gather information from various materials neither it is from observation, experiment or justification. In order to develop a significant extent of innovation, original vision, and risk taking, students are demand to analyze and resolve various natures that can nurture their creative thinking. This skills can conceptualize new ideas, products, resources, and

activities with the goal of improving the existing state of knowledge or innovatively adapting it to a particular purpose and can enable students to contribute novel ideas, evaluate the relevance and significance of ideas in different context, and they can even criticize current ideas, methods and framework.

II. The main aim of doctoral education is to include highly develop level of students in specific study fields which doctoral programs should take advantage of the opportunity to train doctoral students as a leader, realizing that many graduates will encounter leadership role especially in higher education and other sectors. A researcher need to be encourage and empower others to be productive as they need to articulate a goal, define challenges and approaches to facilitate a teamwork.

III. Research management is a skill that a researcher should acquire because it can help for the purpose of seeking new knowledge and adapt the knowledge for practical use. By possessing this skill, students can work efficiently even if many projects were involve including different stakeholders, timeline or objectives. This skill can be applied on any effective project management, where students be able to plan, prepare and manage the research activities.

Graduates studies is about developing people who are capable of asking important, complex and difficult questions. It is also about the acquisition of skills which takes the student throughout fostering a strong analytic mind (Walker, Golde, Jones, & Bueschel, 2009). Recommendations are made to lead graduate students in a path which will leave them with compelled exposure to the challenge in a global environment. Graduate students may encounter problems and difficulties from any dimensions of their research, therefore the reason for graduate a graduate students late

completion usually lie in a mixture of problems and the main considerations are related to students existing skills (Chiappetta-Swanson & Watt, 2011). In particular, a graduate program needs students to conduct many various types of task, and during the process students are required to have a range of skills in each stage. Overall, as these current studies point out, the lack of research skills could be a practical factor that hinder students to graduate on time.

2.4 Knowledge Sharing Behavior and Academic Achievement

Presently, most research on knowledge sharing behavior among students is carried out from the viewpoint of academic achievement, but rarely from the perspective of study completion. This paper discusses the perception of knowledge sharing activity among PhD students and the antecedents of participation in the behavior of sharing the knowledge which eventually led to the delay in preparing their thesis. In view of this current research, knowledge sharing behavior is one of the factors affecting the rates of graduate on time among PhD students in UUM. Despite the ubiquity, knowledge conforms to be the course of humanity which human used to explore the world. Knowledge could be everywhere and it can be abstract or realistic that can lead people to understand and solve problems (Sun et al., 2019). Knowledge development is simply about providing the right information or source of knowledge that are accessible at the right moment for the right people. Hence, the most critical step in this cycle is the behavior of exchanging knowledge (Pradeepika & Manjitsingh, 2016).

Universities are meant to be a place where scholars share their knowledge openly. Even though reality showed that nowadays exchanging information is barely present within universities. As Malaysia is in transition to build a knowledge-based society, higher education are now facing

ever-increasing demands from the faculty to share valuable knowledge and resources (Ramayah, Yeap, & Ignatius, 2013). The concept of information gains significant attention among scholars and practitioners, despite the fact that it was always an indispensable tool in institutions (Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005). A mentioned by Loh, Tang, Menkhoff, Chay, and Evers (2003) and Al-Kurdi, El-Haddadeh, and Eldabi (2018), the rise of knowledge in the markets has made universities recognize the important of knowledge management as a critical strategic tools to thrive and remain relevant in globalize economy. To further elaborate, knowledge sharing is the process happens when a person capture knowledge and transferred it to a recipient (Bircham-Connolly, Corner, & Bowden, 2005). Similarly, Bilgihan, Barreda, Okumus, and Nusair (2016); Sharratt and Usoro (2003) explained that there must be some process of exchange between the origin unit and the receiver before sharing to be occurred. In other words, sharing knowledge can be alluded as an exchange of knowledge between two parties in a reciprocal process which allows the knowledge to be reshaped and reasonable in the new context.

Originally, university is the ideal location to develop information (Cronin, 2001), as an institutions that generates information it is the perfect places to practice the method of knowledge management, as in general universities are meant to be the locations where scholars share knowledge openly. An ideal view of sharing knowledge within universities will be a position where academic recognize the importance of sharing knowledge behavior as a daily activity among academicians (Ridzuan & Hong, 2008; Santosh & Panda, 2016) however, the reality shows that exchanging information is uncommon in universities these days. Piwowar (2011); Seonghee and Boryung (2008) and Witherspoon, Bergner, Cockrell, and Stone (2013) expressed their concern whether academics emphasize individual academic achievement rather than sharing a common objective of university goals and priorities. This entails the understanding that students have the

propensity to actively limit their sharing of knowledge when they have specialized, valuable and important knowledge that the others do not have. In the end, holding knowledge and curious upon information is after all-natural human behaviour (C. Chiu, Hsu, & Wang, 2006; Prusak & Davenport, 1998). Due to the desire of self-preservation, people are reluctant to share their knowledge, since they view knowledge as a valuable resource that should be freely distributed. Moreover, in higher education institutions, academics often fail to grasp that effective scholar cooperation between faculty members would actually increase their viability to strive towards study completion rather than impeding the progress. It would also lead to the development of organizational capacities which are essential to the success of a university (Kogut & Zander, 1996).

In general, knowledge sharing behavior among students is divided into several parts; (1) assist knowledge through written proof including writing and publish books or articles, (2) exchanging knowledge about official interactions between or through teams during gatherings and workshops, (3) sharing knowledge through informal conversations, and (4) sharing knowledge within practicing communities (Bartol & Srivastava, 2002; Sheng Wang & Noe, 2010). In the same vein, Thomas, Wah, and Hans-Dieter (2011) studies have stressed upon the importance of building a road to an economy that based on societies of knowledge like Malaysia and Indonesia. To put it plainly, higher learning education institutions are placed in the highest ladder in generating knowledge among society. Consequently, universities greatest concern is to produce a quality student with analytical and problem-solving skills as well as interpersonal awareness, thus adding to the goal of a nation is to create knowledge-based behavior among society. Since knowledge sharing behavior was examined in these current studies, it is in regard with the act of individuals in a university which acquired knowledge by sharing or creating with others, hence this phenomenon becomes one of the influencing factors that delay student's graduation on time. One

of the initial steps that government has identified for reaching that goal is to amplify the performance of academic institutions by implementing an outstanding knowledge based system, which involves the successful creation, development, processing and distribution of information to the recipient of knowledge (Ghazali et al., 2007; Witherspoon et al., 2013). On the other hand, a studies from Chow, Deng, and Ho (2000) and S Wang, Noe, and Wang (2014) indicate that there are many employees in organizations that unwilling to share their knowledge and this happen because they are scared of losing their valuable knowledge. Regardless of the fact that most organizations has implement technology to assist knowledge sharing behavior, however the problem remain and still far from being successful (Alam, Abdullah, Ishak, & Zain, 2009). Due to these situation, Chang and Lin, (2015) and Mason and Pauleen (2003) stated that this depict a daunting challenge for most employees.

Even though knowledge sharing is crucial among society and it is believed to be one of the motivation boosters, several studies has not found any connection between motivation and the purpose of knowledge sharing (Svetlik, Stavrou-Costea, & Lin, 2007; Sheng Wang & Noe, 2010; Zhining Wang & Wang, 2012). While Kankanhalli, Tan, and Wei (2005) stated that people may share knowledge because they take pleasure in helping others and they might reluctant to share knowledge as if the possession is a sign of strength to them. A latter study by Mahendrawathi (2015) indicates that challenges arise in the behavior of sharing knowledge because people's are not fully aware of the process of expressing knowledge, this can be seen from the neighbor country such as Japan organizations which they succeed using skills that derived from knowledge gathered through sharing and experience (Laurillard, 2013). In order to encourage an openness of communicating with one another, learning opportunities should be implemented and facilitate everyone with a knowledge sharing attitude. Nowadays few people are actually concern about the

basic's skills of sharing information, it is communications skills which is also one of the subfactor that have been outlined from the above section. A study conducted by M. Ismail and Yusof (2011 and Trialih, Wei, Anugrah, Saide, and Anugrah (2017) reported that communication skills are one of the causes that influence knowledge sharing behavior. Thereby, scholars believe that the ability of individuals to share knowledge primarily rely on their communication skills either it is in verbal or written forms. Furthermore, Ma and Chan (2014) studies indicate that the concept of altruism derives from the pleasure in helping others and this explained that knowledge sharing can be driven by absolute altruism because of people desire to help others. Ideally, altruism is considered as an action taken by a person to encourage the welfare of others and act as a selfless behavior without any anticipation of benefits from the other party.

Although difference factors appear to be the causes of knowledge sharing behavior among students, however the information shared should be of good quality. The process of knowledge sharing consists of two facets in which knowledge is gathered or received and whether it is disseminated or donated (Alhady, Idris, Zakaria, Sawal, & Azmi, 2011). In the past few years, academic institutions have used various learning methods to improve the learning opportunity among students and it is known as collaborative practice (Majid & Chitra, 2013) however, these learning primarily depends on the attitude and actions of students towards exchanging knowledge with their peers. This is reflected by the positive attitudes that students possess towards knowledge sharing and they are likely to bring this action to their future work task. Until recently, most knowledge sharing studies focused primarily on organizations. Nevertheless, it has been noticed that understanding student's behavior of sharing knowledge is equally as important since they will part of the future workforce. Jer Yuen and Majid (2007); Ramayah et al., (2013) and Wei, Choy, Chew, and Yen (2012) reported that there are two main obstacle preventing students from sharing

their information with their peers is that they have no close relationships and the assumption that other students would outperform them. Similarly Chen, Koch, Chung, and Keong (2007) and Majid and Chitra (2013) also stated that academic rivalry was related with a reduction in knowledge sharing while positive attitude, trust and teamwork among students would resulted in more knowledge sharing. Likewise, Wei et al., (2012) has conducted a studies on undergraduate students about knowledge sharing behavior and reported that teamwork activities are more likely to raise the culture of knowledge sharing among students.

Despite the positive attitude shown by students towards knowledge sharing, several studies have also highlighted certain obstacles with sharing knowledge. On a similar note, Ong, Yeap, Tan, and Chong (2011) discovered that self-confidence and social attributes can also be the cause of knowledge sharing intention. S. Chiu (2010) also reported that students are less willing to share knowledge as it is deemed crucial to their academic success. Since postgraduate students are more expose to research area therefore, they are more likely to exchange knowledge among their peers. However, Yaghi, Barakat, Alfaweer, Shkokani, and Nassuora (2011) stress out the barriers to knowledge sharing is the lack of sharing behavior, less interaction opportunities, and students treat knowledge as some sort of power that cannot be exchange or shared with others. Meanwhile, there are also scholar that believes knowledge sharing is a process where people discuss and create new ideas with their peers that involved opinion and questions related to their task performance (Alam et al., 2009; C. Chang & Lin, 2015). It is essential to evaluate and understand people behavior on willingness of sharing knowledge from research and practicable perspective. As individuals do not always have the thoughtful of sharing knowledge and they might not be willing to share as much as the institutions would like them to. This statement supported by Bock, Zmud, Kim, and Lee (2005) which they claimed that the biggest challenges in knowledge management (KM) was

changing people's behavior. Reluctance to share or exchange knowledge has become a concern topic in tertiary education. Universities act as a platform that delivered explicit knowledge and there are numerous groups of experts and knowledgeable workforce that hold on tacit knowledge and coupled with experiences in their respective areas which is the place for exercising knowledge management system. However, it is regrettable because universities play the role of knowledge service providers but not many of them utilize knowledge to the fullest to enhance the efficiency of their performance.

Information sharing is the primary means by which individuals are required to re-adapt and rebuild information by expanding different perspectives and questioning one's perception while keeping peer's standpoint into consideration. The founder construction of information takes place as learners focus on, explain and describe newly shared experience , re-evaluate their insight with it and outsource it by turning internal systems into public process (Choi, Land, & Turgeon, 2005). Recent studies have spent considerable concern into finding determinants of knowledge sharing behavior among students community (H. Chang & Chuang, 2011; Goh & Sandhu, 2013; Hau et al., 2013). As information shared or exchange is considered an important determinants of learning process, it is highly advisable that educators and stakeholders put extra care and understandable attitudes towards the perception of knowledge sharing behavior and also the predicament that they encountered.

2.5 Knowledge Sharing Behavior among Postgraduate Students

There are a number of factors that lead to one's success or shortfall of graduating on time. These factors include a student's behavior with their fellow colleagues. This days knowledge

sharing has been a major strength in disseminate information, as it is widely seen as a significant contribution to community, organizational and individual performance (Rosaline & Kehinde, 2014), as the exchange of information is widely discussed practices in knowledge management. The process involves individuals mutual exchange of the knowledge that they hold while collaborate in creating new knowledge. As describe by Parekh (2009) and Wei, Choy, Chew, and Yen (2012), sharing knowledge includes learning, expanding, repeating, and understanding other's concepts, facts, views and resources on a particular basis. According to the student's level, sharing knowledge requires them to talk to colleagues and things get better, faster and more effective rather than stand alone in gathering information. While, at academic institutions level, sharing of knowledge encompasses method of collecting, arranging and transmitting knowledge-based information that exists within the organization and making it assessable to others as business plan but also in shifting attitudes and behaviors of workforce to encourage willingness and continuous of sharing knowledge (Cordoba, 2004; Tuan, 2014). Generally, universities stressed out that sharing information in regard of academic knowledge is paradoxically caused by peer-competition than by selfless sharing.

The assessment of knowledge is about seeing information as an advantage, however there are many factors that can influence knowledge seeking and sharing behavior during research process. Therefore, W. Wang and Hou (2015) viewed that there are other causes that influence individual to share knowledge with their colleagues and this deserved further observation and for the meanwhile academic institutions have not getting much attention. To understand people behavior towards knowledge sharing is important considering that awareness among group members and educational level is affected by the degree in which knowledge sharing takes place between students (Amayah, 2013; Cabrera & Cabrera, 2005). Today, tertiary students are equipped

with a cornucopia of knowledge which can assist them with their research investigation compared to the introduction of the era of information technology, particularly after the World Wide Web (WWW) explosion (Potelle & Rouet, 2003). Moreover, information exchanging between students through face-to-face meetings should not be ignored as these ultimately promote and develop mutual desired of collective learning and all party will have benefit in regards to cognitive gain and educational attainment (Chong, Teh, & Tan, 2014; Rafaeli & Ravid, 2003). Knowledge sharing continues to offer institutions the opportunity to improved productivity and keeping human capital and lead to personal developments. According to Tan and Noor (2013) and Yu (2002), knowledge sharing can assist individual to obtain new understanding in regard of their task and lead to personal recognition. A remarkable thing about knowledge sharing is it involves people willingness to convey information actively with colleagues also known as knowledge donation and the other party would be learning from them and collect all the knowledge provided.

Previous scholars attempted to examine the reason of why individuals are unwilling to share their knowledge and stated that organizations has managed to cultivate knowledge sharing attitude among employees by including knowledge about business strategy (Jones, Cline, & Ryan, 2006; Sheng Wang & Noe, 2010). This process of cultivating knowledge sharing behavior is crucial for institutions especially educational sector because it can broaden student's knowledge in addition fostering the culture of knowledge sharing behavior among them.

2.6 Research Framework

Research framework illustrates the formation of a research plan and helps the researcher to develop related research questions. In other words, the research framework delivers the underlying

structure which assists and explains the research problem existed in the study. Hence, this current research represents a conceptual framework which combines the researcher point of view and observations on the topic or issue of research. According to McGaghie, Bordage, and Shea (2001) conceptual framework 'pave the way' for a specific research question that drives investigation to the research problem. Whilst the context of problem statement in research caused a researcher to perform a study. This section provides a description that portrays a road map that helps the researcher to carry out the methodology to test the hypotheses. As mention by Sekaran and Bougie (2016), a research framework can be label as the main ground on what the entire research paper is established. This study was designed using a conceptual framework to perceive and explore the linkage between a dependent variable and independent variables. Based on the discussion in the literature review, individual factors act as an independent variable such as type A and B personality adapted from Friedman and Rosenman (1977); (Dhar & Jain, 2001), motivation was adapted from Atkinson and Feather (1966b); Albert Bandura (1977), knowledge skill and abilities was adapted from Kardash (2000); Powers and Enright (1987), and knowledge sharing behavior was adapted from Jer Yuen and Majid (2007), thus a conceptual framework for this study is developed as illustrated in Figure 1. The model focuses on academic performance (GOT) as the dependent variable.

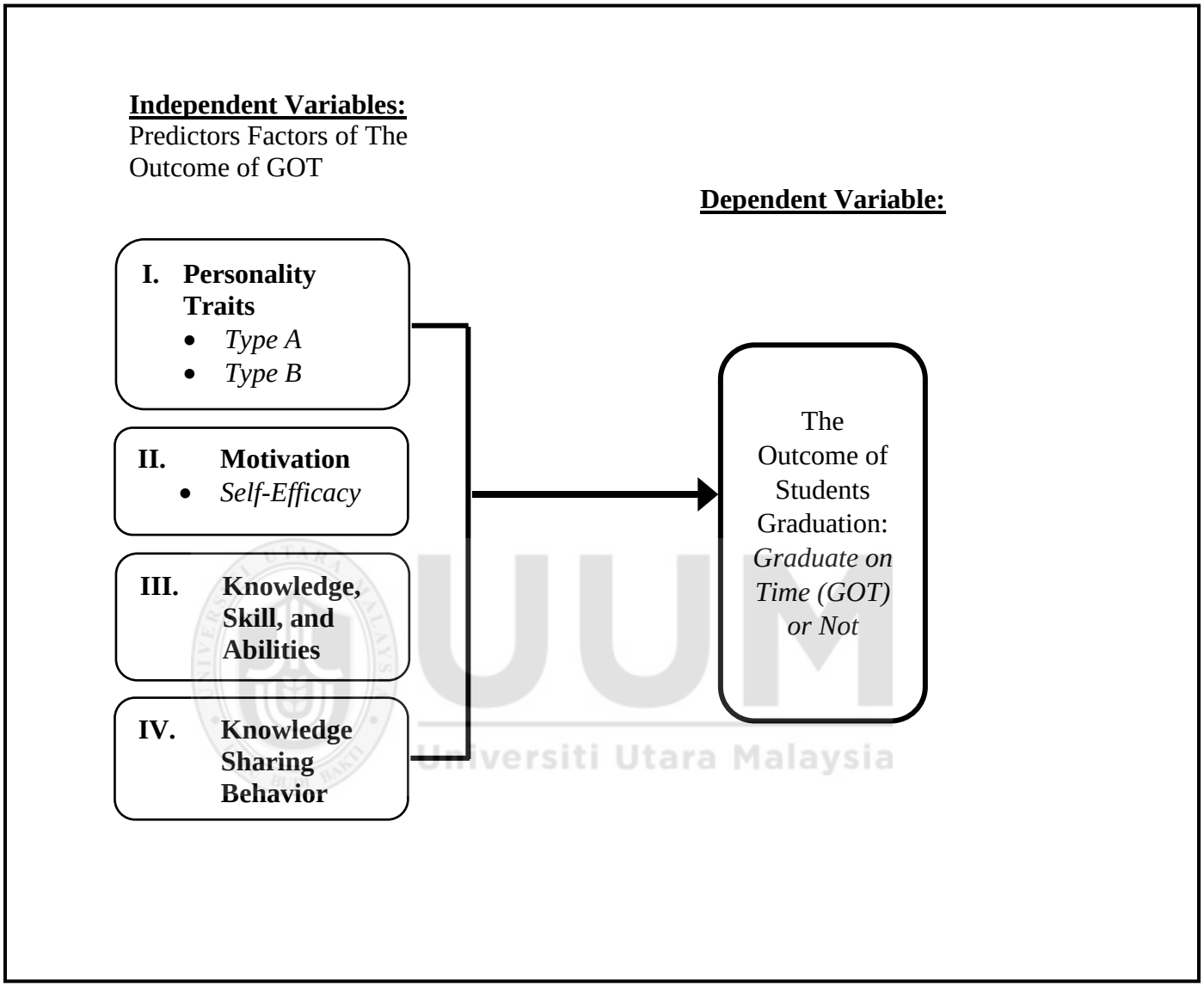

Figure 2.4
Research Framework

2.7 Hypotheses Development

Quantitative research comprises testing a hypothesis and reached a conclusion that either rejected or not rejected the null hypothesis (Rubin & Babbie, 2005). Meanwhile, Creswell (2002) explained that hypothesis act as predictions holds by the researcher about the relationship between variables. Hypothesis in this study presents a framework to examine the relationships between individual factors and the outcome of graduate on time.

2.7.1. Relationship between Personality Type A and B and the outcome of Graduate on Time (GOT)

Prior research has shown that many researchers constantly investigate the variables that can relate to personality and academic achievement. In fact, personality has been identified as a causing factor in how a person acquires knowledge (Lawrence, 1997). The results stated the importance of personality in predicting academic achievement as a graduate on time is considered as an achievement to students and institutions (Lateef et al., (2019). These findings were supported by Al-Naggar et al., (2015) who discovered that students with openness and conscientiousness personalities were found to be significantly associated with academic achievement. Studies by Ambreen and Jan (2015) and Fulmer, Spitzmuller, and Johnson (2009) focused on how personality characteristic is linked with our behaviour and lead to the results of our performance. Likewise, Trapmann, Hell, Hirn, and Schuler (2007) concluded that personality traits have the freedom and incremental influence on academic achievement. The outcome of graduate on time in any students

mainly portrayed through their own action and choices. Through a person personality types and behavior may also act as a determinant of how their academic success would exist.

Therefore, it is postulated that personality types have a significant impact on the outcome of graduate on time as formulated by the hypothesis bellowed:

H1: The student's personality types significantly influence the outcome of graduate on time.

2.7.2. Relationship between Motivation and the outcome of Graduate on Time (GOT)

Albert Bandura (1977) theory stated that motivation is considered as a person's beliefs in his or her own ability to perform any courses of action in order to achieve goals. Past studies by Ahmad (2013) determine that motivation formed a person believes about their capabilities in overcoming the obstacle that might prevent them from achieving their goal. These studies discovered that students with high self-efficacy lead to a greater goal compared to students with low self-efficacy. Duckworth, Peterson, and Matthews (2007) added that motivation is a reliable predictor of performance which does not transform according to time, environment or communities' differences. Past studies by Abouserie (1995) discovered that individual success or failure has a strong relationship with the levels of self-efficacy that lead to students involved in the performance. It is also argued in the literature that motivational element of self-efficacy appeared to be the prompt of academic performance (Chamorro-Premuzic & Furnham, 2003; Pritchard & Wilson, 2003; Ridgell & Lounsbury, 2004). Furthermore, Miller and Brickman (2004) reported that increase of academic performance may be associated with high confidence in one's own capacity and this encourages students to be accountable for their successful completion of studies. Hence, academic achievement seems to be a combination of the element of motivation which is

self-efficacy and it deserves further investigation in predicting the outcome of student's graduation.

Thus, it is postulated that the motivation of self-efficacy has a significant impact on the outcome of graduate on time as formulated by the hypothesis bellowed:

H2: Students motivation significantly influences the outcome of graduate on time.

2.7.3. Relationship between Knowledge, Skills Abilities (KSAO) and the outcome of Graduate on Time (GOT)

Despite many factors that can affect the completion of studies, current research suggests that KSAO's may influence degree completion among PhD students. A study by Lindsay (2015) presented a finding from interview conversations with Senior Tutors for Research (STR) and they mentioned about writing up a thesis as a step by step basis was a major impediment for PhD students. As writing up a thesis is typically the final phase that PhD students have to complete before *viva voice* and this stage required a highly focused attitude because there is no further data collection is needed during this stage. According to Lee and Aitchison (2009) the capacity of building up writing is crucial as it remains as a major element of doctorate education and struggles with writing thesis can be seen as a hinder to successful completion. Meerah et al., (2012) stated that lack of preparation in research knowledge and skills may be the reasons for the increase of failure in completing a doctoral degree. The main objectives for the doctoral program are to establish a student with competent abilities. In addition, they need to acquired knowledge and skills in conducting research in any field of research. It is an asset for a country to create a group of

researchers to embark a further journey of investigating a study and applied related knowledge and skills (Dodani & Laporte, 2008; Murtonen, 2005). Hence, it is hypothesized as below:

H3: Knowledge, Skills, and Abilities have significant influences on the outcome of graduate on time.

2.7.4. Relationship between Knowledge Sharing Behavior (KSB) and the outcome of Graduate on Time (GOT)

Cheng, Ho, and Lau (2009) explained that knowledge sharing is essential for knowledge enhancement particularly in knowledge-based institutions like universities. R. Scott, Mellow, and Woolis (2010) added that knowledge is one of the factors that can profoundly change the scope of higher education. Thus, a method that emphasizes thinking and leading are needed to ensure the success of higher education institutions (Moravec, 2008). Similarly, academicians are exposed to knowledge sharing with respect to their research and learning (R Fullwood & Rowley, 2013). H. Wang, Tseng, and Yen (2012) found that in universities knowledge is a source of competitive advantage that is why it is important to determine how students shared their knowledge. Another important consideration regarding knowledge sharing behaviour is how it can influence a person's attitudes, skills and capabilities needed to accomplish a goal (Collins & Clark, 2003). This current research focused on understanding the influenced of knowledge sharing behaviour between PhD students as it is important to identify how the level of knowledge influenced the extent of sharing knowledge between students. Cabrera and Cabrera (2005) indicates that the more institutions anticipate students to share, the higher the sharing promptitude it gets. Knowledge sharing practices have been proposed by many scholars to impart a great deal of knowledge in

organizations. However, few researchers relate knowledge sharing which influence student's behavior to graduate on time. Through empirical analysis, this study filling the gap of hypothesized that knowledge sharing behavior is one of the predictors that could influence Ph.D. student's graduation rates.

H4: Knowledge Sharing Behavior are significantly influencing the outcome of graduate on time.

2.8 Statement of Hypotheses

The hypotheses of this studies were formulated according to the research framework as shown in Figure 3.1. Forming of the hypotheses were expected to be correspond with the stated objectives of study. In this study, academic performance was examined as the dependent variable, while graduate on time were link to it as a fundamental base to see whether individual factors such as the type A/B personality, motivation, knowledge skills and abilities, and knowledge sharing behavior was the outcome of academic performance. Below is the hypothesis that had been establish for this study. This study postulates that the dependent variable of academic achievement was influenced by individual factors. Those four independent variables are important predictor to academic achievement since internal factor could be the cause that affect academic performance on which determine whether these factors have significant effect towards candidates graduating on the normal period of time.

2.8.1 Type A/B personality and GOT

H1: There is a significant positive relationship between the type A/B personality and academic Performance.

2.8.2 Motivation and GOT

H2: There is a significant positive relationship between Motivation and Academic Performance.

2.8.3 Knowledge, Skills, and Abilities and GOT

H3: There is a positive relationship between Knowledge, Skills, and Abilities and Academic Performance.

2.8.4 Knowledge Sharing Behavior and GOT

H4: There is a positive relationship between Knowledge Sharing Behavior and Academic Performance.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1 Introduction

Specifically, this chapter addresses a brief description of the methodologies and instrument that will be used to analyze the data. As mentioned by Collis and Hussey (2013), research may vary to different people, as it is no consensus exists on how to describe research. Therefore, it is essential to define the process and approach taken in this current study in detail. This chapter includes a research framework, propositions development, research design, operational definition, measurement of variables, and data collection including sampling, data collection procedures and techniques of data analysis. The rationale for each method chosen is provided at each stage of the research design.

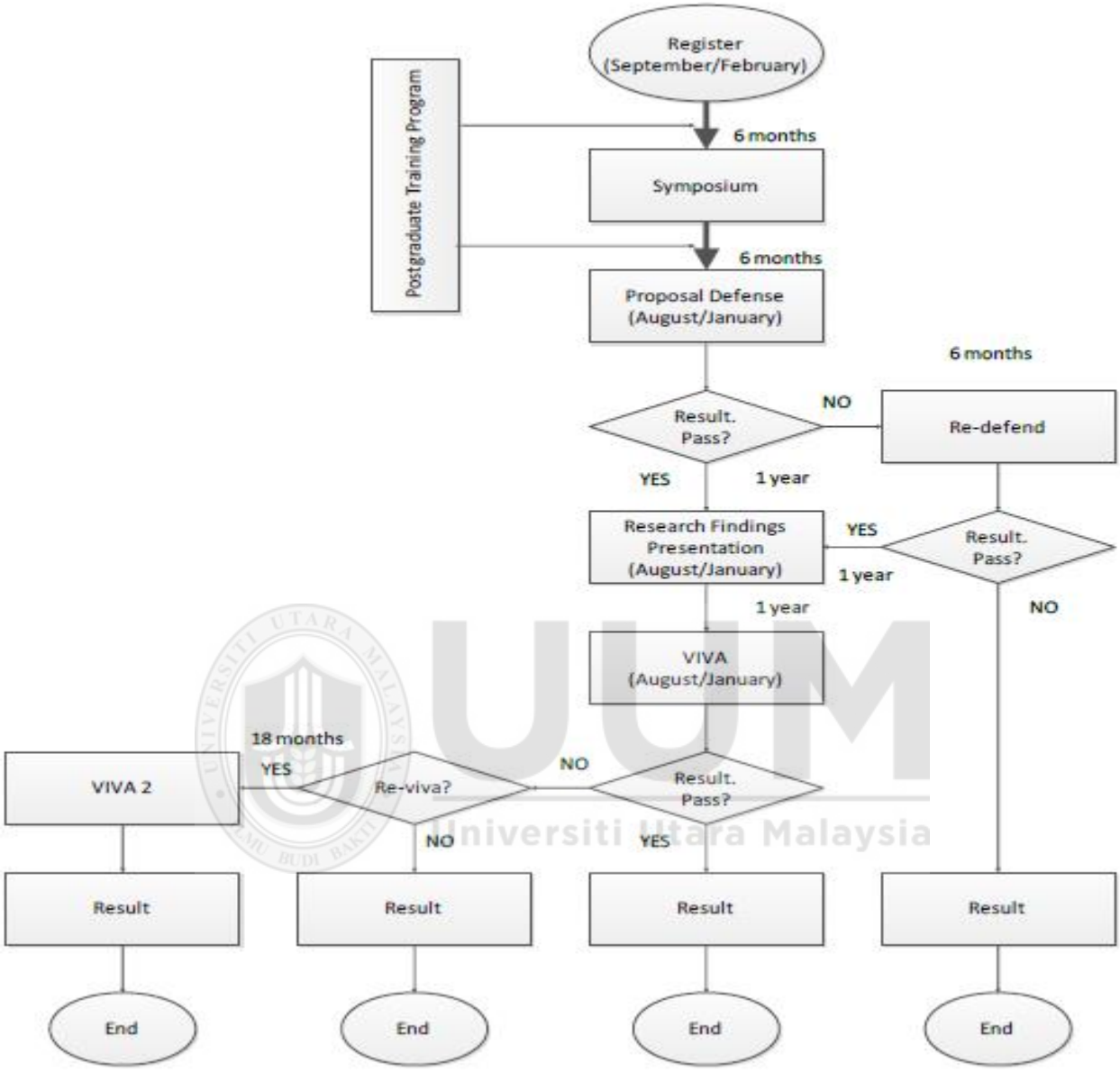

Figure 3.1: *Flowchart Guideline for PhD*
Source: University Utara Malaysia

As can be seen in the figure above, it is the flowchart of the Ph.D. guideline. Each section represents the terms and requirement that students need to adhere with and every section has different roles in the specific guideline for PhD candidates. The first section is registration, candidates must activate their status by registering every semester after enrol as a Ph.D. student. It should be mentioned that starting from 2018, every postgraduate student was subject to three semesters. Furthermore, students are required to register and pass two pre-requisite courses before continuing with their research. In relation to the subject offered, they are research methodology, academic writing or any other courses as determined by the supervisor and academic committee.

The second section indicates the presentation called symposium, whereby students are required to present their research work at several events organized by the faculty. Symposium usually held during the six months for full-time students and twelve-month for part-time students. The purpose of the symposium is to allocate an opportunity for students so that they can share their initial ideas as a preparation for their proposal defends in the 12 months. After that, proposal defend are compulsory for PhD students and they are required to defend their proposals to a committee. Subsequently, the reviewers would provide written comments and advice at the end of the session. The students command to make amendments based on the comments and advice given by the reviewers. If the case where candidates are required to repeat their proposal defence, they are given around 6 months to clarify and successfully re-defend their research proposal. It should be noted that failure to do so would result in termination. During the month of 24-36, candidates are urged to share their research findings and obtain feedback from the respondents as planning to proceed writing their thesis.

The last section would be the examination of the thesis which also called viva voce. In this section, students would be ready to present their full thesis and it is in the month of 36 for full time

and 60 for part-time. It can be estimated to present in the last semester or possibly earlier. After the end of the viva session, candidates are given time to make any necessary corrections or amendments according to the result granted by the examiner. The time given is based on the corrections that they entitled to do. For instance, minor corrections would be specified with three months period, while major corrections are given twelve months from the date they present. The end result is, students need to bind their full thesis and submit to school and wait for a letter of certification from the university before getting the award of a degree.

3.2 Research Design and Methodology

Research design is a leading strategy that places all the approaches and methods to collect and analyses the required information (Zikmund, 2000). As mentioned by Leedy and Ormrod (2001) the purpose of research design is to resolve the issues or problem in research and researchers can choose or combine any types of research design to apply in their investigation; quantitative, qualitative and mixed methods. While survey methodology was also described as a research design. According to Creswell and Creswell (2017) survey design supply a quantitative description, thoughts or opinions of a population by inspecting a sample from that population. Research design can overall address the research problem that constitutes for data collection, measurement and analysis of data. Furthermore, a general statement regarding the entire population derives from the sample results. This study aims to identify the influence of predictors variables which is individual factors towards the outcome of graduate on time among PhD students. Some analysts describe quantitative research as a tool to test hypotheses to discover the cause and effect of a research problem and comes up with a prediction and inference (Bernard, 2013; Neuman, 2014).

In this current study, a quantitative research method was used in this exploratory research because there are applicable measuring tools, several possibilities factor to generalize the problem, and the hypotheses could be examined to find out end result (F. Williams & Monge, 2001). Moreover, Leedy and Ormrod (2001) argued that quantitative is the most promising techniques whenever the researcher aims to explore or investigate a studies variable through prediction. Therefore, quantitative is seen as a pivotal technique in order to understand the underlying relationships between empirical observation and predictors variable. In order to examine the potential barriers that hinder completion on time of doctoral degree, a self-administered questionnaire was used as a form of data collection. The self-administered questionnaire technique was the primary means of collecting data for this study. Secondary data was derived from the list of PhD candidate enrolment data and their supervisor for the year of 2016 and it was collected from UUM Academic Affairs Department (HEA).

There are many factors that affect students from delaying or non-completion of their study on time. The researcher decides to conduct this current study in UUM aim PhD students. Several factors have been identified to give significant effects to the outcome of a PhD student's graduate on time. This current study used binary logistic regression model in SPSS to predict the probability of the occasion by connecting data to a logistic curve.

3.2.1 Research Methods

Previous studies have emphasized that survey research present a fast, cost-effective, accurate and qualified assessment and information about a specific population (Zikmund, Carr, Babin, & Griffin, 2013). Moreover, conducting research using a questionnaire compared to

observation, interview and secondary data is economical and easy mostly when collecting data from a large sample. Notwithstanding that interview has characteristics of the interviewer, but it still can influence the answer of respondents compared to when using a questionnaire. While observational research is a form of correlational research in which researchers inspect ongoing behaviour, the fact remains uncertain as observational may not give the best insight of definite behaviour because a person may behave differently when they realize that they are being observed.

3.2.2 Unit of Analysis

Unit of analysis is perceived as an essential feature in research as it is the main purpose to identify who is being investigated and what the study is about (Long, 2004). This current study selected PhD students as the unit of analysis from three main faculty of graduates school in UUM. A number of PhD students were chosen based on the population which covered the three graduates school. In the initial phase of this study, raw data were obtained from HEA which listed the number of the current PhD students and their respective supervisor. The data contained an existing list of PhD students in the year of 2016 with a total of 746 students.

3.3 Population and Sample

3.3.1 Population

Creswell (2002) describe the term population as a group of community of a particular place who have the same characteristic. The population of this current study consists of students who

developed a candidacy status for Doctor of Philosophy (Ph.D.) who are entering their 3rd years of enrolment in higher education institutions in University Utara Malaysia (UUM). The population targeted the class of postgraduates from the year of 2017. The institutions were selected for the current study to identify the outcome of graduate on time in Ph.D. students for various reasons. First and foremost is to improve the graduation rates of postgraduates as it is a priority for administration to increase the rates of degree completion. In response to the drop in doctoral completion rates, it has drawn attention which results in the issues of the outcome of completion among PhD candidates. The population is the overall number of people which a researcher decides to investigate in a research study (Sekaran & Bougie, 2013). In this current study, the target population is PhD students from three main graduates' school was chosen in UUM. University Utara Malaysia is located in northern Malaysia and known as management University. PhD students as the target population derived from three graduates school include OYAGSB, AHSGS, and GSGSG. The rationale grounds of taking such a sample is because PhD students take a longer time to conduct a study compare to any other program due to the fact that writing a full thesis is not an easy task. This has been explored by prior studies by Hamzah, Mahmuddin, Mohd Zain, and Mohaiddin (2012) that one of the major factors influence students to successfully complete PhD is lack of research skills resulting in a delay of time. There are multiple advantages of using PhD students as a sample to identify the outcome of graduate on time whether it really comes from one's own nature of personality traits. In the near future, a solution step can be devised and implemented in educational institutions. The data obtained from HEA with the list of PhD students in the year of 2016. The below table shows the total of PhD students in 2016 according to their eligibility status.

Table 3.1:
Total of PhD students in 2016

Status	***Total***
Active	585
Not Active	151
Differ	10

Source: UUM Academic Affairs Department

3.3.2 Sampling Methods and Sampling Size

Sampling is used to determine the components from a population that has features or characteristic that could have generalized the population (Sekaran, 2005). According to Sekaran and Bougie (2010), in the context of the research study population is refers to a group of people being investigated in a study. Furthermore, Sekaran and Bougie (2016) described that population can be any group of people or task that deliver some beneficial amount of interest for a researcher to conclude. Thus, the ultimate aim for sampling is to design a plan that specifies the frame of the population comprises on how the sample was selected, size of the sample, and the appropriate method used to evaluate the sample. The sampling techniques were chosen to represent the population by using the appropriate method in terms of convenience, time and cost. Etikan, Musa, and Alkassim (2016) described two types of sampling, which is probability sampling and non-probability sampling methods. Probability sampling is a method that uses random selection to generalize result, while non-probability sampling is arbitrary and not random. Probability sampling has a complete population whereby respondents have an equal chance of being selected and it can be done randomly and are less costly plus it is time-consuming. Meanwhile, non-probability

sampling does not have full excess to population list, therefore respondent is not selected randomly. It is convenient to conduct non-probability sampling and also less costly. This current survey applied a set of self-administered questionnaires and used a systematic sampling method throughout the investigation. Systematic sampling belongs to the group of probability sampling method where the components are chosen from a target population by selecting a random starting point. Systematic sampling is seen as the most efficient sampling method in term of variance compared to other design (Bellhouse, 1988). As mentioned earlier, a systematic sampling technique turns out to be more convenient and at the same time ensures that each unit has an equal probability of representing the sample. During the investigation, the researcher selected the first unit of respondents randomly and the remaining was selected accordingly. The reason for choosing systematic sampling it is easier to draw sample and time-consuming. Besides, the sample is evenly spread among the population.

The sample size in this research was based on Krejcie and Morgan (1970) theory, to choose the correct amount of sample to symbolize the character of the population. Krejcie and Morgan (1970), have produced a table for determining sample size and a total of 250 respondents was selected from a total of 746 PhD students at UUM. However, 91 respondents are rejected which derived from 1st and 2nd semester students to identify the results of GOT and NOT GOT. The selected sample size was deemed acceptable and sufficient for such population. The population consist of three main colleges in UUM; Othman Yeop Abdullah Graduate School of Business (OYA), Ghazali Shafie Graduate School of Government (GSGSG), and Awang Had Salleh Graduate School (AHSGS).

Two Semester (Per year)

Doctoral Program		Minimum (Semester)	Maximum (Year)
Mixed Mode	Full Time	5	10
	Part-Time	7	14
Research Program	Full Time	4	10
	Part-Time	6	14

Three Semester (Per year)

Doctoral Program		Minimum (Semester)	Maximum (Year)
Mixed Mode	Full Time	5	15
Research Mode	Part Time	8	21

Table 3.2:
Table of Sample Size

N	**S**	**N**	**S**	**N**	**S**	**N**	**S**	**N**	**S**
10	10	150	108	700	248	1800	317	4000	351
20	19	200	132	800	260	2000	322	5000	357
30	28	250	152	900	269	2200	327	10000	373
40	36	300	169	1000	278	2400	331	20000	379
50	44	400	196	1200	291	2600	335	30000	380
75	63	500	217	1400	302	2800	338	40000	381
100	80	600	234	1600	310	3000	341	50000	382

Source: (Krejcie & Morgan, 1970)

Table 3.3:
Number of Respondents

Semester	Respondents (N)	Rejected	Percentage (%)
1st – 2nd Semester	-	91	-
3rd Semester	64	-	40%
4th Semester	35	-	22%
5th Semester	30	-	19%
6th Semester	10	-	6%
7th semester	10	-	6%
8th semester	4	-	3%
9th Semester	6	-	4%
10th Semester	-	-	-
Total	159	91	100%

Percentage (%) N = 746

Table 3 summarizes the total number of respondents, the number of rejected respondents and percentage. As stated above, the population sample for this study was PhD students throughout the IPTA (UUM) from three main graduates' school. However, for the purpose of the study, the sample size was reduced to 159 respondents after cutting down 91 respondents derived from 1st and 2nd-semester students. Therefore, the number of respondents taken comes from students in the 3rd semester and above.

3.4 Source of data

This current research engages with both primary and secondary data. As stated by Sekaran and Bougie (2010), primary data is obtained from first gain information latter specified by the researcher to draft the objective of the study. While the secondary data is compiled from previously exited sources such as journal, articles, books, newspaper, thesis, report, magazine etc. Furthermore, secondary data is time-consuming as it can reduce time spent on collecting data particularly in the case of larger quantitative data because it would be impractical for any researcher to collect on their own. On the contrary, primary data are collected by the researcher from a group of questionnaires to acquire information from PhD students in UUM.

3.5 Operational Definition

M. Cooper (2008) defines operational definition as a variable stated in terms of definite testing criteria or action, determine what must be counted, measured, or converge to our senses. On the other hand, conceptual definition describes the meaning of conceptual construct which have a basis of theory behind the study. The definition is an important aspect which describes the meaning of something that enables someone to understand the purpose used in defining the terms. The meaning showed that the researcher applies to define the process by which a circumstance or construct is measured (Runyon, Haber, Pittenger, & Coleman, 1996). Next, are the operational definition applied in this research including phrase and words that represent an item.

3.5.1. Type A/B personality

3.5.1.1 Conceptual Definition

Friedman and Rosenman (1977) proposed to type A/B personality after finding out that individuals can be categorized into two types. Individuals with type A personality considered to have behaviour such as time urgency, competitive, tense and a perfectionist (W.Watson & Minzenmayer, 2006). On the contrary, type Bs personality is more relaxed and have the ability to enjoy leisure time and dislike hostility (Fretwell, Lewis, & Hannay, 2013a).

3.5.1.2 Operational Definition

Type A/B Behavioral Pattern Scale (ABBPS) was used to measure a person's with personality type A/B behaviour pattern. This scale was developed and illustrate the purpose of measuring behaviour pattern by Dhar and Jain (2001) in the Indian context. As opposed to other scales, this scale is divided into two parts – question for type A and B personality are provided separately. This is because a person could score high in type A or B but it does not mean that he/she does not belong in either of the personality types. Under those circumstances, there is a possibility that a person could have to type A characteristic but at the same time possess some of the characteristics of type B personality. Simply put, a person could have a mixture of type A and B personality types.

- Factors of Type A Behavior pattern

a) Tense – Perceive as time urgency and according to Gersick (1989) individual awareness on time within allotted time helps pace them on meeting a deadline.

b) Impatience – Unwilling to wait and impatience is a critical feature of ensuring progress is continued (Garcia, 2000).

c) Achievement-oriented – The need to achieve and accomplish goals. According to Matos, Lens, and Vansteenkiste (2007) achievement goal considered a scheme used to approach and rate one's performance in the academic context. In academic institutions, achievement goal is the most important platform to form a concept in student's motivation to study (Diseth, 2015).

d) Domineering & Workaholic – Have the sense of power and tendency of doing something all the time. According to Johnson, Leedom, and Muhtadie (2012) individual who possess high dominance traits are more likely to engage in dominance act in everything they do. While workaholic is defined as 'addiction, compulsive and uncontrollable needs to work continually (Oates, 1971). The terms include work holism, addiction to work, and extreme overwork have been used substitutable (Andreassen, Griffiths, Gjertsen, & Krossbakken, 2013).

- Factors of type B behaviour pattern

a) Complacent – The absence of ambition for improvement lead by perceptions that one qualified performance is 'acceptable' (Mannion & Braithwaite, 2012).

b) Easy-going – A person who is not easily worried or upset and have the ability to work with a relaxed state of mind. According to Frijda (2009) mood is the suitable choice for affective states that are about everything in general.

c) Non-assertive – Non-assertive behaviour has the characteristic of not expressing what they feel. For instance, non-assertive persons often let others violate their life. People choose to

be non-assertive to avoid tension or conflict. According to Beagrie (2006) assertiveness is the ability to stand on your own feet, have the courage to state your view and stop others from taking advantage over you but rather opposite for non-assertive individual.

d) Relaxed – A person with relaxed attitudes have the tendency to do a task with comfort and not in a hurry.

e) Patient – The ability to wait tolerantly without becoming annoyed and can work with ease.

Table 3.4:
Questionnaire Items

Independent Variable (IV)	***Factor Name***	***Number of Items***	***Items***
Type A Personality	Impatient	1, 3, and 16	• I feel impatience when I don't have any work in hand. • I prefer to finish the tasks at hand as soon as possible. • I do not express all that I feel.
	Tenseness	14 and 18	• I have always been struggling to achieve more in less time. • I enjoy doing two or more things simultaneously.
	Restlessness	15 and 17	• I have never found time sufficient for

			the task at hand. • I always feel rushed
	Achievement Orientation	19	• I am never late if I have an appointment.
	Domineering	12	• I prefer to move around rapidly when I am not doing anything.
	Workaholic	20	• I have very few interests outside my work.
Type B Personality	Patience	2 and 4	• I never feel rushed. • I am open in expressing my feelings.
	Complacent	5, 6, 8, and 10	• I prefer to sit at one place when I am not doing anything. • I prefer to complete the tasks at hand slowly. • I take appointment casually. • I relax whenever I want to do so
	Easygoing	7 and 13	• I have many interests outside my work. • I prefer to concentrate on

			one task at a time.
	Non-assertive	9	• Leisure time is welcome after a spell of work.
	Relaxed	11	• I do not work under time pressure.

3.5.2 Motivation (Self-efficacy)

3.5.2.1 Conceptual Definition

Motivation is described as the inner power or energy that drive a person towards performing, action, and achieving. Motivation bolsters a personal ambition and helps increase initiative towards direction, courage, and persistence in following one's goals (Sasson, n.d., para. 1).

3.5.2.2 Operational Definition

Motivation self-efficacy is defined by psychologist A Bandura (1989) which means a person's sense of efficacy that belief in their own ability to accomplish a task in any specific situations. Self-efficacy was measured using a tool of a questionnaire and the items were based on the three-factor structure of the self-efficacy inventory mainly self-confidence, failure-anxiety, and challenge seeking. Another achievement motivation question consists of two-subscales which is motivation to achieve success (MS) and motivation to avoid

failure (MF). To estimate the nature of motivation, researcher used motivation for Ph.D. studies scale and the scale consist of good psychometric properties (Litalien, Guay, & Morin, 2015). It is also inspired by two other question; academic motivation scale (J., R, M., & G, 1989) and self-efficacy.

Table 3.5:
Questionnaire Items

Independent Variable (IV)	***Factor Name***	***Item Question***
Motivation (Self-Efficacy)	***Self-efficacy:*** Self-efficacy refers to one's personal beliefs that he or she could successfully perform a given task (Albert Bandura, 1977). Self-efficacy could be influenced by experience, persuasion or emotional arousal. ***Achievement Motivation:*** A person's perception or expectation for achievement probably came from two types of motives; a need to achieve success and to avoid failure (Atkinson & Feather, 1966a). The effect of the decision made by a person will show whether to try to achieve or not to. For instance, if the person has the need to achieve success stronger than the fear of facing failure, he or she will proceed to complete the task.	• I prefer to choose relatively difficult tasks or work. • I am ambitious and I believe that I can achieve a great deal. • I lack confidence in doing challenging work. • I can easily cope with any problem in a crisis. • No matter how difficult things are, I can be successful as long as I can try my best. • The harder a task, the more interested I am in it and the harder I work. • I never give up when facing a problem, always trying out ideas until I resolve it. • Taking risk is necessary for fulfilling my research.

		• I am usually satisfied with my own choices and decisions. • I worry that I might not be able to adapt to future work demands. • I like unfamiliar and difficult tasks, even risky ones. • I feel happy when I complete a difficult task. • I worry about failure when I deal with the task that I think is difficult. • I feel anxious when I think that I have an unfamiliar and difficult task. • I like to start a task immediately even if I have much time. • I feel anxious when I do the task that seems to be very difficult. • I will be attracted by the opportunity that tests my abilities. • I feel anxious when I don't think I am competent for the task. • I prefer to work unremittingly on unexpectable problems. • I dislike the task that examines my abilities.

3.5.3 Knowledge, Skills and Abilities

3.5.3.1 Conceptual Definition

The major achievement for the doctoral program is to develop a competent researcher which gain knowledge and skills of conducting and publicize their research in any particular field. This has been the main goal of research programs as it is an important resource to the country as researcher embark further research in the use and application of knowledge (Murtonen, 2005; Sveiby, 2001).

3.5.3.2 Operational Definition

Kardash (2000) and Powers and Enright (1987) defined items to measure the influence of knowledge, skill, and abilities in PhD student performances towards GOT. 10 items assessed the influence of variable as adopted from Kardash, (2000); Powers & Enright, 1987). The items investigate the degree of influence by knowledge, skill, and abilities on PhD student performance. All the items for this variable assessed an opportunity for participants to employ their knowledge and skill on their research. These items were implemented to capture the abilities and skills of respondents including communication skill and research skill.

Table 3.6:
Questionnaire Items

Independent Variable (IV)	***Factor Name***	***Item Question***
Knowledge, Skills, and Abilities (KSAOs)	1. Communication skill 2. Methodological knowledge 3. Time management 4. Critical thinking 5. Reading and writing skill 6. Finding information 7. Organizing ideas	• I have the capacity to communicate effectively with others orally. • I have the knowledge of research methodologies and capacity to interpret findings. • I have the capacity to find, evaluate, and use information. • I have the ability to work with numbers and graph. • I have the capacity to communicate effectively with others in writing. • I have the ability to use knowledge and skills to prepare solutions to unfamiliar problems. • I can communicate effectively with others by using ICT's or multimedia. • I have the capacity to interact and collaborate with others effectively. • I am continually conscious that time is my most critical resource. • In seeking satisfaction through my work, I tend to

		have a creative approach to solve problem-solving.

3.5.4 Knowledge sharing Behavior

3.5.4.1 Conceptual definition

Knowledge sharing behaviour is the process of implying knowledge between individuals or groups of people. Connelly and Kevin Kelloway (2003) described knowledge sharing behaviour as a set of behaviour's which engage in a process of exchanging information or assist others with the knowledge they possess.

3.5.4.2 Operational definition

The questionnaire consists of questions related to knowledge sharing behaviour. This variable is to determine whether student habit of knowledge sharing behaviour influence their performance in completing studies. This variable measured 10 items derived from previous studies namely Jer Yuen and Majid (2007) study.

Table 3.7:
Questionnaire Items

Independent Variable (IV)	***Factor Name***	***Item Question***
Knowledge Sharing Behavior	1. The general attitude towards knowledge. 2. Preferred sources for the study-related task. 3. Types of knowledge share and channel preferred. 4. Different study-related situation.	• I feel that it is important to share knowledge with other students for the benefit of all. • I am afraid of mismatch might offend others. • Students should voluntarily share their knowledge with peers. • Students have the mindset that sharing knowledge is a type of plagiarism. • It is better to avoid sharing information with peers whenever possible. • Learning from each other is a very important motivator for knowledge sharing. • I preferred the internet as a source of knowledge sharing for study-related tasks. • I would assist other students in the database search, software and library use. • I preferred face to face as a channel to share knowledge. I only share when people share their knowledge.

3.6 Instrument Development

Sekaran and Bougie (2016) defined measurement as a task of numbers that symbolize the characteristics or features of a subject matter that depends on a specific set of principles. This current research applied a set of questionnaires that used as a predictable measure to identify any correlating variables. This researcher employs survey questionnaire in collecting, analyzing, and interpreting the views of primary data from the target population. Questionnaire method is used because it is a positivist research method whereby it includes a low level of involvement for the researcher and a high number of respondents who answered the question. The questionnaire used a five-point Likert-Type scale ranging from strongly disagree (1) to strongly agree (5). The

questionnaire was divided into five sections to suit the nature of this study and to express agreement and disagreement.

The first section of the questionnaire comprises of questions about background and demographics to identify the respondent profile. This study determines the respondent's gender, age, current year of study, current enrollment status, faculty of study, and progress of the study. Thus, it is counted as 6 items. Section B focused on the Type A and Type B Personality question. To measure the personality pattern among PhD students, Type A and B behavioural Pattern Scale (ABBPS), compose and certified by Upindher Dhar is used. This scale combines two parts of scale to measure Type A and Type B behaviour patterns to avoid bias among respondents. Since this question are related to behaviour patterns, the researcher tries to promote an honest answer and avert response bias to inflate the reliability of the questionnaire. Researchers stay vigilant in making the question clear and understandable so that respondents answer the question truthfully and honestly. But there is a possibility the respondent be more oriented towards a particular type but they answered differently. To be certain one's character, the question items for Type A and B are combined to measure the personality types the respondents have. The scale constituted 20 items with 10 items in Type A and 10 items in Type B. Motivation (self-efficacy) as the second variable formed 20 items of question which was adopted from C. Wang (2004) and Ye and Hagtvet (1992) that covered Self-efficacy Inventory (SEI) and Achievement Motivation Scale (AMS) as the research measurement. In order to make the items more suitable to reflect the doctoral learning process, several items have been modified. Furthermore, 10 items assessed the influence of KSAOs variable as adopted from Kardash (2000) and Powers and Enright (1987). The last section consists of KSB questions, which comprise 10 items derived from Jer Yuen and Majid (2007) research study. The table below illustrates the structure of this research instrument.

Table 3.8:
Description of Research Instrument

Sections	***Variables***	***Number of Items***	***Reference***	***Scale***
Section A	• Gender • Age • Current Semester • Enrolment Status • Faculty • Progress of Study	-	-	Five-point Likert Scale (1-5: Strongly Disagree – Strongly Agree)
Section B	Type A/B Personality	20	(Dhar & Jain, 2001)	
	Motivation	20	(C. Wang, 2004; Ye & Hagtvet, 1992)	
	KSAOs	10	(Kardash, 2000; Powers & Enright, 1987)	
	KSB	10	(Jer Yuen & Majid, 2007)	

3.7 Reliability Test

According to Lune and Berg (2016) and Polit, Beck, and Hungler (1997) reliability deal with the degree of consistency or precision with which an instrument measures the attribute. The reliability of both forms was decided by calculating the reliability coefficient for a sample of 159 respondents. The reliability coefficient of form A was found .5 and for form B, it was also found to be .5. Reliability test is the level or extent of an assessment tool to create stable and constant results. Reliability is much related to coherent of a measure. According to Carmines and Zeller (1974), reliability have the interest to the extent which measurement used to investigate phenomenon offered a stable and consistent result. This is supported by Huck (2007) as they

interpret the importance of testing reliability as it pointing out the consistency throughout the component of a measuring instrument. A measure is considered to have high internal consistency of reliability when the items of a scale correspond to each other and estimate the same construct (Robinson, 2010). Generally, Cronbach Alpha coefficient is commonly used as the internal consistency measurement. Cronbach Alpha is regarded as the most suitable measure to evaluate reliability when using the Likert scales (Whitley, 2002). There is no consensus over the rules for internal consistency coefficient, however, scholars have come to terms on a minimum of .70 of Cronbach Alpha coefficient. To be more precise, table 4 illustrates the result of Cronbach Alpha in each variable which presented in the next chapter.

3.8 Data Collection

Rahu (2013) defines that quantitative research depends on the collection of data in the present study, and ensure the accuracy of the data collection questionnaire to obtain consistency and efficiency of the data collected. Therefore, this study intends to examine the influence of individual factors with student performances that lead to delaying in graduation (GOT). The complementary approach was implemented by using both secondary data and primary data. Secondary data were used for this study which identified previous studies, articles, statistic, conference, books, website, and other available resources. The researcher emphasized on four individual factors that influence student performance towards GOT. While primary data was collected from three main colleges that manage postgraduate students. PhD students represent the target population and are given a questionnaire to be answered. The total population of PhD student at UUM is around 746 and 250 students were picked using the method of systematic sampling.

Data collection was carried out over a duration of 3 weeks and researchers used Google form to distribute the questionnaire and also distribute the questionnaire directly by hand to the respondent and personally collected by the researcher. In order to ensure a high rate of return, the researcher tried to collect the questionnaire as soon as the respondents finish answering the question.

3.9 Data Analysis and Technique

This current research used Statistical Package for the Social Sciences (SPSS) version 22 to investigate the relationships between variables. SPSS software is taking into account as the most suitable tools to analyze statistical data as it can manipulate and decipher survey data. SPSS provides fundamental data preparation, management, alteration, and mapping capabilities and not to mentioned descriptive and inferential techniques. For instance, ANOVA, t-test, correlation analysis, linear and ordinal regression. SPSS functions can be expanded to 'Advanced Statistic' such as ANCOVA, MANOVA, MANCOVA, logistic and nonlinear regression.

In a nutshell, statistical discipline frequently used two theories which are statistical analysis theory and correlational statistical theory (Tabachnick, Fidell, & Ullman, 2007). Both statistics divide their classification test between parametric and non-parametric techniques (Pallant, 2015). In regard with the statistical test, the researchers utilize multivariate analysis which involves analyzing more than one variable at a time with causal ad effect analysis (Joseph Hair, Anderson, Babin, & Black, 2018). There are several steps implemented in the analysis process. First, the data gathered was examined using descriptive statistic to identify the frequencies, mean, median, variance and standard deviation of each variable. It was conducted to clarify the characteristic of each sample. Next, the researcher conducts reliability test, correlation coefficient

and binary logistic regression to find out the outcome of graduate on time among PhD students. Correlation analysis was also tested in this current research in order to measure the connection between variables. Finally, is binary logistic regression analysis to identify the relationship between a dichotomous variable and a group of predictor variables. This technique was used to measure the relationships between variables that contain both categorical and continuous variables require a binary outcome (Wuensch, 2014).

3.9.1 Binary Logistic Regression

According to D. H. Jr, Lemeshow, and Sturdivant (2013) logistic regression models are often used to examine the relationships between response variable and explanatory variables. The current study sought to investigate the relationship between four group of dependent variables and their ability to predict the outcomes of graduate on time. The four groups of variables mainly include student personality trait and characteristic (Personality type A and B, Motivation, Knowledge, Skills and Abilities and Knowledge Sharing Behavior). By analyzing the ability of the variables in predicting the outcome of graduate on time among doctoral candidates would be in the service of institutions as it can inform them on what extend does a person characteristic could influence the outcome of doctoral completion. Logistic regression analysis was chosen because it can be used to examine several independent variables and the strength of influence that they possess on a binary dependent variable (Creswell, 2002). Binary Logistic Regression is applied in research when the dependent variable which is graduate on time is dichotomous; graduate on time versus not graduate on time and using binary logistic regression is particularly appropriate as suggested by D. H. Jr, Lemeshow, and Sturdivant (2013). Besides, binary logistic regression also presented the predicted probabilities of graduate on time in association with the

independent variables. The binary logistic regression model was built on data collected according to their semester status. The fact that discriminant analysis involves the distribution of independent variables in the specimen followed by a normal distribution and the end result will not be achieved if utilize by both continuous and categorical variables. Therefore, binary logistic regression is recommended when these variables are applied. In addition, Starkweather and Moske (2011) further explained that logistic regression does not need independent variables to be linearly correlated, nor does it need to be parallel variance for each group, plus it can limit the rigorous procedure of statistical analysis.

3.9.2 Assumptions and Limitations of Binary Logistic Regression

In order to interpret a reliable result of the predictor group towards graduate on time for PhD students, a preliminary analysis was conducted to monitor the assumptions of logistic regression were met to obtain an accurate outcome.

1) Free from Multicollinearity

   One of the limitations of logistic regression is, sensitive to variables that possess a very high correlation with each other. In a case that input variables have high multicollinearity then the implications on the regression model becomes less precise. Therefore, it is best to observe the collinearity between independent variables in the model to avoid errors in regression estimation. To gain certainty on these issues, a standard approach is to calculate tolerance for each variable. According to Menard (2010) a higher tolerance value showed

that multicollinearity exists between the variables. The study suggests that a tolerance less than .2 is worrisome. Therefore, it is suggested that the relationship among independent variables in the model be observed to discharge it from multicollinearity. Results of multicollinearity were presented in the next chapter.

2) Binary Logistic Regression Model

To examine the relationship between a dichotomous dependent variable and the predictor independent variables, a binary logistic regression model is used to portray the result. This model will show the probability of occurrence of an event with a numerical value of 0.5, which indicate probabilities higher than the value is classified as a graduate on time while cases below than the value is classified as not graduate on time. The graduation prediction status is coded as (1) for graduate on time and (2) for students that did not graduate on time in the SPSS software.

Model Design

Below is the following output model that used to calculate the prediction:

X^1 = Type A/B Personality
X^2 = Motivation
X^3 = Knowledge, Skills, and Abilities
X^4 = Knowledge Sharing Behavior

Z = Probability that the students will/will not graduate on time (GOT)

As stated earlier, a numerical value needs to be assessed in order to categorize the students as GOT or not GOT and it is implied as *P(Y=1).* Thus, students that belong to *P(Y=1)* is either have higher or equals to 0.5 are classified as able to GOT whereas students *P(Y=1)* have less than 0.5 value been sorted as not possible to GOT.

$$P\ (Yi = 1) \begin{cases} > 0.5, \textit{ Graduate on Time (GOT)} \\ \leq 0.5, \textit{ Not Graduate on Time} \end{cases}$$

3.10 Summary

This chapter has clarified research framework, hypotheses development, research design and methodology, population and sampling, operational definition, research instrument, and data analysis. It is very important for the researcher to put further details on the adopted methods to make sure the investigation is carried out smoothly. Data collection is an important process used to identify the relevance in a study. Consequently, SPSS was utilized as a tool that allowed the researcher to distinguish the correlation between variables. In conclusion, this chapter comprises all the methods and analysis used to indicate whether this study has accomplished the objective of the research or otherwise. The results of the study will be described in the next chapter.

CHAPTER 4

DATA ANALYSIS

4.1 Introduction

This chapter shows the discussion on data analysis and the outcome of the results. The objective is to interpret and display the research in an analytical method. All the analysis and finding were presented below.

4.2 Response Rate

In this section, the resulting outcome of the data collected was analyzed and presented. The current study has a total of 250 questionnaires based on the table of Krejcie and Morgan (1970) distributed to the Postgraduate Student (PhD) in University of Utara Malaysia. In an effort to obtain a high response rate, researcher circulates the questionnaires to each department of postgraduate study as well as through Google form. Therefore, the results of these efforts, 91 questionnaires were excluded from the analysis and this represents a response rate of 36%. To be precise, a total of ninety-one respondents were excluded from the analysis due to incompleteness and vagueness. This provides a 64% response rate and reflected as ample for the analysis in this research. According to Sekaran and Bougie (2010), a response rate level of 30% is adequate enough for surveys.

Table 4.1:
Response Level of the Survey

Response	***Frequency / Rate***
No. of distributed Questionnaire	250
Retain Questionnaire	159
Usable	159
Excluded Questionnaire	91
Response Rate	64%

Source: The Researcher

4.3 Assessment of Internal Reliability

According to B. Blumberg et al., (2008) reliability indicate a measurement that delivers consistent results with equal values. Reliability also measures consistency, repeatability, precision and trustworthiness of research (Chakrabartty, 2013). Reliability refers to the extent to which it is error-free (without bias) and thus ensures a consistent measurement in the observed scores. Therefore, Cronbach's alpha coefficient applied in the present study to examine the inter-item flexibility of the measurement items. Previous studies have reported that the Cronbach's alpha values should be higher than 0.70 (JF Hair, Black, Babin, & Anderson, 2014). According to George and Mallery (2003), if the value of reliability is higher than 0.9 it is regarded as excellent. While $\alpha > .8$ means good, $\alpha > .7$ is Acceptable, $\alpha > .6$ shows doubtful, $\alpha > .5$ is Poor, and $\alpha < .5$ is Unacceptable. The table below presents the value of Cronbach's alpha adapted from (Gliem & Gliem, 2003).

Table 4.2:
Cronbach's alpha coefficient

Reliability coefficient's range	Result
$\alpha > 0.9$	excellent
$\alpha > 0.8$	good
$\alpha > 0.7$	acceptable
$\alpha > 0.6$	questionable
$\alpha > 0.5$	poor
$\alpha < 0.5$	unacceptable

Source: Adapted from Gliem & Gliem, (2003)

Table 4.3:
Cronbach's Alpha Reliability Test

Variables	Responses	Number of Items	Cronbach's Alpha
Motivation	159	20	.715
Knowledge, Skills, and Abilities	159	10	.879
Knowledge Sharing Behavior	159	6	.715
Type A Personality	159	10	.504
Type B Personality	159	10	.500

The result displayed in the table above shows that motivation, knowledge, skills and abilities, and knowledge sharing behavior has a high-reliability coefficient of .715, .879, and .715 respectively. However, the reliability coefficient of type A/B personality has been found to be .54 and .50 by Dhar and Jain (2001). The current study also found the same level of reliability test.

4.4 Pearson Correlation

Table 4.4:
Pearson Product-moment Correlation

Scale	*1*	*2*	*3*	*4*
Total AB	-	.395	.182	.382
		.000	.022	.000
Total MT	.395	-	.431	.458
	.000		.000	.000
Total KSAO	.182	.431	-	.154
	.022	.000		.052
Total KSB	.382	.458	.154	-
	.000	.000	.052	

***p < .0.05 (2-tailed)*

Table 2 provides the inter-correlations among the four measures of individual factors. In this result, the p-value for the correlation between Motivation and Knowledge Sharing Behavior are both less than .0.05, which indicates that the correlation coefficients are significant. The p-value between KSAO and KSB is .052, while Type A/B and KSAO is .022. Due to the higher level of p-value which is greater than the significant level of 0.05, there is not enough evidence to suggest that the correlational observe does exist between the variables.

4.5 Demographic Characteristic

The findings show that male is the largest groups which represent 62.3% compares to female with 37.7%. Based on the ***age group*** range from 31-40 is the highest with the total of 32.1%, followed by 41-50 with 30.8%, 20-30 with 28.3% and the least is the last age group of above 50 with only 8.8%.

As for the ***current year of study***, the highest group is student in their 3rd (third) year with 40.3% followed by the second highest is 4th (fourth) year students with 22%, then 5th (fifth) year students with 18.9%, while 6th (six) and 7th (seven) year students with 6.3%, 9th (nine) year students with 3.8%, and lastly is 8th (eight) with 2.5%.

The table below illustrates the total percentage of ***current enrollment status*** among PhD students with the highest in the group of full-time students followed by part-time students with 74.2% and 25.8% respectively. While ***faculty of the study*** indicates the first group is the highest with 60.4% namely Othman Yeop Abdullah Graduate School of Business (OYAGSB), second is Awang Had Salleh Graduate School (AHSGS) with 20.8% and the least is Ghazali Shafie Graduate School (GSGSG) with 18.9%.

It can be seen from the data in table 1 that the ***progress of the study*** showed the highest group is *proposal defence* (PD) with 26.4% from 42 respondents. Second highest with 39 respondents choose *thesis submitted* (TS) with a total of 24.5%. While there are 37 respondents who've *submitted their proposal* (PS) with 23.3%. A percentage of 15.1% was chosen to submit intention to submit a proposal by 21 respondents. There are 16 respondents were intended to *submitted for viva* (SV) and the least is *submit intention to submit proposal* with 6% respectively.

Table 4.5:
Demographics Characteristic of the Respondents

Demographic Variable	***Category***	***Frequency***	***Percent***
Gender	Female	60	37.7%
	Male	99	62.3%
Age	20 – 30	45	28.3%
	31 – 40	51	32.1%
	41 – 50	49	30.8%
	>50	14	8.8%
Current Year of Studies	3rd year	64	40.3%
	4th year	35	22.0%
	5th year	30	18.9%
	6th year	10	6.3%
	7th year	10	6.3%
	8th year	4	2.5%
	9th year	6	3.8%
Current Enrollment Status	Full time	118	74.2%
	Part-time	41	25.8%
Faculty of Study	OYAGSB	96	60.4%
	AHSGS	33	20.8%
	GSGSG	30	18.9%
Progress of Study	SISP	1	6%
	PS	37	23.3%
	PD	42	26.4%
	SIST	24	15.1%
	TS	39	24.5%
	SV	16	10.1%

4.6 Descriptive Analysis

4.6.1 Type A/B Personality

In the output presented below, a total of 159 respondents from the total A/B personality indicates type A with a mean of 33.52 and standard deviation of 19.12. While type B illustrates a mean with 31.32 and 4.4 standard deviation.

In table 6 below shows the result of respondents on each item. The items for Type A and B tested separately. From Type A items, the highest mean is "I prefer to finish the tasks at hand as soon as possible." [M = 4.16; SD = .871], and the least is "I prefer to move around rapidly when I am not doing anything." [M = 2.92; SD = 1.1]. From Type B items, "Leisure time is welcome after a spell of work." [M = 4.07; SD = .942] is the highest mean showed from the table below. While the least is "I prefer to complete the tasks at hand slowly." [M = 2.52; SD = 1.1].

Table 4.6:
Descriptive Statistic of Type A/B Personality

Items	Mean	Std. Deviation
I feel impatient when I don't have any work in hand.	3.33	1.1
I prefer to move around rapidly when I am not doing anything.	2.92	1.1
I prefer to finish the tasks at hand as soon as possible.	4.16	.871
I enjoy doing two or more things simultaneously.	3.29	1.0
I have never found time sufficient for the task at hand.	3.07	.922
I do not express all that I feel.	3.13	1.0
I always feel rushed.	3.19	1.0

I have always been struggling to achieve more in less time.	3.45	1.1
I am never late if I have an appointment.	3.81	.917
I am never late if I have an appointment.	3.17	1.1
I do not work under time pressure.	2.83	1.0
I never feel rushed.	2.79	.970
I prefer to concentrate on one task at a time.	3.42	1.0
I am open to expressing my feelings.	3.10	.995
I prefer to sit in one place when I am not doing anything.	3.22	1.0
I prefer to complete the tasks at hand slowly.	2.52	1.0
I have much interests outside my work.	3.21	1.0
I take appointment casually.	2.69	1.0
Leisure time is welcome after a spell of work.	4.07	.942
I relax whenever I want to do so.	3.47	1.0

4.6.2 Motivation

In the output presented below, a total of 159 respondents from the total of Motivation indicates a mean of 72.42 and standard deviation of 6.9.

Table 7 shows the result of respondents on each item. The items with the highest mean are “I feel happy when I complete a difficult task.” [M = 4.50; SD = .625], compared to the least item “I lack confidence in doing challenging work.” [M = 2.35; SD = 1.0]

Table 4.7:
Descriptive Statistic of Motivation

Items	Mean	Std. Deviation
I prefer to choose relatively difficult tasks or work.	3.15	.953
I am ambitious and I believe that I can achieve a great deal.	3.93	.850
I lack confidence in doing challenging work.	2.36	1.08
I can easily cope with any problem in a crisis.	3.56	.855
No matter how difficult things are, I can be successful as long as I can try my best.	4.20	.724
The harder a task, the more interested I am in it and the harder I work.	3.91	.807
I never give up when facing a problem, always trying out ideas until I resolve it.	4.17	.724
Taking risk is necessary for fulfilling my research.	4.07	.784
I am usually satisfied with my own choices and decisions.	3.73	.860
I worry that I might not be able to adapt to future work demands.	3.04	1.08
I like unfamiliar and difficult tasks, even risky ones.	3.23	.902
I feel happy when I complete a difficult task.	4.48	.634
I worry about failure when I deal with the task that I think is difficult.	3.59	.984
I feel anxious when I think that I have an unfamiliar and difficult task.	3.37	.891
I like to start a task immediately even if I have much time.	4.12	.743
I feel anxious when I do the task that seems to be very difficult.	3.45	.931

I will be attracted by the opportunity that tests my abilities.	3.77	.669
I feel anxious when I don't think I am competent for the task.	3.50	.874
I prefer to work unremittingly on un-expectable problems.	3.73	.825
I dislike the task that examines my abilities.	2.61	.930

4.6.3 Knowledge, Skills, and Abilities (KSAO'S)

In the output presented below, a total of 159 respondents from the total of Knowledge, Skills and Abilities (KSAO'S) indicates a mean of 40.62 and standard deviation of 5.31.

The table below shows the result of respondents on each item. The items with the highest mean are "I am continually conscious that time is my most critical resource." [M = 4.23; SD = .638], followed by "I have the capacity to interact and collaborate with others effectively." [M = 4.21; SD = .630]. The least fall on the item of "I have the knowledge of research methodologies and capacity to interpret findings." [M = 3.93; SD = .901].

Table 4.8:
Descriptive Statistic of Knowledge, Skills, and Abilities (KSAO'S)

Items	Mean	Std. Deviation
I have the capacity to communicate effectively with others orally.	4.10	.837
I have the knowledge of research methodologies and capacity to interpret findings.	3.89	.897
I have the capacity to find, evaluate and use information.	4.01	.735
I have the ability to work with numbers and graph.	3.91	.851
I have the capacity to communicate effectively with others in writing.	4.01	.826
I have the ability to use knowledge and skills to prepare solutions to unfamiliar problems.	3.93	.776
I can communicate effectively with others by using ICTs or multimedia.	3.98	.808
I have the capacity to interact and collaborate with others effectively.	4.16	.633
I am continually conscious that time is my most critical resource.	4.14	.716
In seeking satisfaction through my work, I tend to have a creative approach to solve problem-solving.	4.01	.72

4.6.4 Knowledge Sharing Behavior (KSB)

In the output presented below, a total of 159 respondents from the total of Knowledge Sharing Behavior (KSB) indicates a mean of 24.67 and a standard deviation of 8.6.

Table 9 present the result of respondents on each item. The items with the highest mean is “I feel that it is important to share knowledge with other students for the benefit of all.” [M = 4.38; SD = .718], followed by “Learning from each other is a very important motivator for knowledge sharing” and “I would assist other students in a database search, software and library use.” [M = 4.30; SD = .663] and [M = 4.30; SD = .674]. While “I am afraid of mismatch might offend others” indicates the least value with [M = 3.46; SD = .998].

“I have the capacity to interact and collaborate with others effectively.” [M = 4.16; SD = .633], followed by “I am continually conscious that time is my most critical resource.” [M = 4.14; SD = .716], and the least is “I have the knowledge of research methodologies and capacity to interpret findings.” [M = 3.89; SD = .897].

Table 4.9:
Descriptive Statistic of Knowledge Sharing Behavior

Items	Mean	Std. Deviation
I feel that it is important to share knowledge with other students for the benefit of all.	4.38	.718
I am afraid of mismatch might offend others.	3.46	.998
Students should voluntarily share their knowledge with peers.	4.30	.786
Learning from each other is a very important motivator for knowledge sharing.	4.30	.663
I would assist other students in a database search, software and library use.	4.16	.674
I preferred face to face as a channel to share knowledge.	4.07	.667

4.7 Normality

Table 4.10:
Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total AB	.118	159	.000	.950	159	.000

The above table presents the results from two well-known test normality, namely Kolmogorov-Smirnov[a] and Shapiro-Wilk. Table 10 provides an individual factor of type A/B personality as the independent variable. The sig. value of the Kolmogorov-Smirnov[a] and Shapiro-Wilk test is less than 0.05, the data has significantly deviated from a normal distribution.

4.8 Binary Logistic Regression

Table 4.11:
Logistic Regression Predicting likelihood of Reporting Graduate on Time

	B	***S.E***	***Wald***	***df***	***p***	***Odds Ratio***	***95.0% C.I for Odds Ratio***	
							Lower	**Upper**
Total AB	-.02	.03	.55	1	.46	.97	.92	1.04
Total Mt	-.03	.03	1.02	1	.31	.97	.91	1.03
Total KSAO	.01	.04	0.11	1	.74	1.01	.94	1.09
Total KSB	.01	.05	0.07	1	.79	1.01	.91	1.09

Table 1 presents an overview of a direct logistic regression to assess the impact of a number of factors on the likelihood that respondents would face an obstacle of GOT or NOT GOT. The model contained four independent variables (type A/B personality, motivation, knowledge, skills and abilities, and knowledge sharing behaviour. The full model shows an outcome of x^2 (4, N = 159) = 2.403, $p < .662$ indicating that the model is not statistically significant. The model as a whole explained between .015 % (Cox and Snell R Square) and .021% (Nagelkerke R Squared) of the variance in the outcome (GOT or NOT GOT), and correctly classified 69.8% of cases. As shown in table 1, only two of the independent variables made a unique statistically significant contribution to the model (type A/B personality and motivation). The strongest predictor of reporting an outcome of GOT or NOT GOT was KSAO and KSB recording an odds ratio of 1.01. This indicated that respondents who possess either of the two types of the above factors were more likely to be the factor of influencing graduate on time (GOT). The odds ratio of .97 for type A/B personality and motivation was less than 1, indicating that respondents with either type A or B personality and with or without motivation were .97 likely to face the outcome of GOT or NOT GOT.

Table 4.12:
Summaries the Outcome of Tested Hypotheses

Hypotheses	Statement	Finding
1	Type A/B personality significantly affects the outcome of graduating on time (GOT).	Not supported
2	Motivation significantly affects the outcome of graduating on time (GOT).	Not supported

3	Knowledge, Skills and Abilities significantly affect the outcome of graduating on time (GOT).	Supported
4	Knowledge Sharing Behavior significantly affects the outcome of graduating on time (GOT).	Supported

4.9 Data Screening

In this section, the researchers carried out data screening to ensure data is clean from outliers or any violation of assumption (JF Hair, Black, Babin, & Anderson, 2013). The reason why data should be screened is to make sure it is reliable, useable, and valid for analysis causal theory. Hence, below are the steps of analysis included in this section.

4.9.1 Missing Data

In statistical analysis, 'missing data or 'missing value' happen when no 'data-value' is kept for the variable to be observed. Missing data can occur due to non-response either it is no information provided at all or few items is left without answering it. As stated by JF Hair et al., (2013); Sekaran and Bougie (2003) and Singh (2007) missing data can be deal in various ways and they suggest a treatment to manage missing data in a case analysis. Before conducting the analysis technique, verifying the quality of data was made to ensure that missing data was managed

properly. The initial steps in data cleaning was to inspect the random versus non-random missing data. Random missing data is unavoidable because it is quite common for individuals to miss or prefer not to answer certain questions provided by the researcher. Whereas non-random missing data can appear when individuals are not able to complete the questions due to time constraint. While in this case, missing data was found from six respondents to which they answered randomly and non-randomly. The most commonly methods to remove missing data is to erase any questionnaire that do not hold a complete information. However, the outcome of applying this method could result in smaller sample size, howbeit only a few cases that have less than 5% of missing data from the total sample can be deleted and considered as an efficient method (Tabachnick & Fidell, 2013).

4.9.2 Multicollinearity

Multicollinearity was developed when two or more independent variables are practically measured in the same behavior. The multivariate coefficients values take places between 0 and 1 which indicates the value of 1 prediction are correct and the value of 0 showed no linear combination of the variable. Multicollinearity may affect the coefficients and p-values but it does not necessarily influence the prediction or the capabilities of the statistic. As the research goal is to predict the outcome of graduate on time of PhD students based on their own personality traits, the need to understand the role of each variable is unnecessary because the researcher is not required to reduce severe multicollinearity. As written by Kutner, Nachtsheim, Neter, and Li (2005) in Applied Linear Statistical Models, if all or any predictor variables are correlated among

themselves does not generally hinder the ability to obtain a good fit of statistical nor affect the inferences on mean, responses or predictions of a new observation.

Table 4.13:
Multicollinearity in Regression

Model	***Collinearity Statistic***	
	Tolerance	***VIF***
Total AB	.784	1.275
Total Motivation	.656	1.525
Total KSAO	.840	1.191
Total KSB	.753	1.328

The interpretations of the Variance Inflation Factor (VIF) reflect the interpretations of the coefficient of multiple determination. If the VIF = 1, the predictor variable is not correlated with any other of the independent variables. As may be seen above, all the predictor variable is not correlated to each other and showed a VIF = 1 for all the independent variables. Multicollinearity is broadly clear guide whereby it is considered to be potentially problematic when VIF is greater than 5 and it becomes serious trouble when it is greater than 10. The output above shows the highest VIF is 1.5, which indicates non-multicollinearity.

4.10 Summary

This section presents the justification for using Logistic Regression to predict the outcome of this study. According to Pituch Keenan A. et. al. (2009), binary logistic regression is an appropriate statistical analysis when the direction of research is to determine if a set of independent variables (IV) forecast a dichotomous dependent variable. For this current research question, the independent variables are type A/B personality, motivation, knowledge, skills and abilities, and knowledge sharing behaviour. The dependent variable consists of two-level which the outcome of graduating on time or not graduating on time. Logistic regression allowed the evaluation of the odds of participation in one of the two outcome groups based on the consolidation of predictor variable values. This analysis involves the overall model of significance using χ^2 omnibus test of model coefficients. While the Nagelkerke R^2 examined the per cent of variance regarded for by the independent variable (IV). Exp (β) in charge of predicting the probabilities of an occasion occurring. This chapter provides all the data analysis and has determined whether the present study was reliable enough compared to the previous studies. There 2 out of 4 hypotheses that are supported which is KSAO and KSB. Based on the discussion above, the two objectives of this study have been accomplished. Therefore, knowledge, skills and abilities and knowledge sharing behaviour have a significant relationship with graduating on time.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This final chapter explains the results obtained from the present research which tested the relationships of academic performance on graduating on time with individual factors (the type A/B personality, Motivation, Knowledge, skills and abilities, and knowledge sharing behaviour) among PhD students in University Utara Malaysia. The latter part covers the discussion on the obtained results as well as the implications and suggestions to improve the quality and image of the university on graduation rates. Finally, the limitations of this study were explains followed by the conclusion.

5.2 Overview of the Research

This section presents the recapitulation of the study mainly to determine the factors influencing academic performance in terms of graduate on time among postgraduate students (PhD) in University Utara Malaysia. Evaluating the factors influencing the academic performance of PhD candidates that eventually lead to not graduating on time is necessary to prepare for future prevention. Studying those factors and their relationships between variables provide an avenue to enhance academic performance and reciprocally increase graduation rates among postgraduate students (PhD).

Previous studies explore the factors influencing PhD student's completion and reveal that personal traits contribute to the difficulties of PhD completion (Tluczek, 1996; Wyman, 2013). Hence, four of the suggested factors found to be contributed towards academic performance (GOT) among PhD students, namely type A/B personality, motivation, knowledge, skills, and abilities, and knowledge sharing behaviour. There are four (4) research objectives developed by the researcher as stated in chapter one before implementing this study. Below are the research objectives carry out by the researcher:

1) To examine the relationship between type A and B personality and Graduate on Time (GOT) among PhD students.
2) To examine the relationship between motivations and rates of Graduate on Time (GOT).
3) To examine the knowledge, skills, and abilities possess by students and the outcome of Graduate on Time (GOT).
4) To examine the thoughts of students in knowledge sharing behaviour (KSB) towards the outcome of Graduate on Time (GOT).

5.3 Discussion

In this section, results of each objective will be reported and a possible explanation of the significant findings will be presented as follows:

5.3.1 The relationship between Type A/B personality and Graduate on Time (GOT)

The result of this current study has revealed that personality type A and B is not positively significant. It means that whatever personality one has, it does not affect whether the student will graduate on time or not. Each personality types have its own unique qualities that either can contribute to a person success or failure. Such traits can be differ depending on the individuals, for instance, individual having type A and type B may not demonstrate distinct tendency for either of the types. In discussing the relation between personality types and consequential outcomes, it is not personality effect are large but it is completely disaggregated level of analysis but personality effects are ubiquitous which influence people all the time (Carver & Connor-Smith, 2010; Ozer & Benet-Martinez, 2006). Even though there has been a lot of literature reveals on the effect of personality traits, this research indicates that the outcome of graduate on time is not associate with personality factors. However, this is not to say that personality types are not useful in prediction. This is supported by the study from Chamorro-Premuzic and Furnham (2014); Furnham, Zhang, and Chamorro-Premuzic (2005) which found a negative relationship between personality traits and achievement at higher education. Furthermore, Bratko, Chamorro-Premuzic, and Saks (2006); Ivcevic and Brackett (2014) also mentioned that there is no relationship has been reported between

those two variables. Based on the findings, it demonstrates that regardless of what personality types a person possesses, it will not affect them from completing studies.

5.3.2 The relationship between Motivation and Graduate on Time (GOT)

Previous studies have consistently presented motivation as a salient predictor of academic achievement and persistence in doctoral education. (Hegarty, 2011; O'Meara, Knudsen, & Jones, 2013; Onwuegbuzie, Rosli, Ingram, & Frels, 2014). However, this current research indicate that motivation have no significant relationship with GOT. It means that although students have high motivation level the outcome of GOT still increase. This is because the strength of motivation to undertake postgraduate research may vary between people. This implies that what is inherent in one person may not be of interest to another. There are several reasons that cause students motivation to weakens along with struggling with the context of higher education, for instance; a bad relationship between supervisor and students, competing with peers, family problems and other internal and external factors (Thunborg, Bron, & Edstrom, 2013). Besides that, motivation declining also happen prior or during studies, where desire that leads a person to behave is not at the optimum level. This is supported by Sozer (2013) in their studies, as the reason for motivation disrupted could be listed as the absence of sufficient grounds to overcome obstacles students face, lost purpose and difficulty in determining priorities. Based on the finding it is found that motivation is not significantly related to GOT as motivation level may vary depending on the individual problems which they face internally or externally.

5.3.3 The relationship between Knowledge, Skills, and Abilities (KSAO'S) and Graduate on Time (GOT)

The relationship between Knowledge, Skills, and Abilities (KSAO'S) and GOT was supported with significant relationships. The result explains that KSAO possesses a positive outcome which can lead to higher academic performance and decrease the rates of not GOT. KSA play an important part in completing studies. As these skills can be modified, it can also be used as an indicator on how student would perform academically in their course of study. The findings of this current study showed that the score of KSA is $P > .01$ which indicated that respondents who possess the above factors were more likely to have potential to graduate on time (GOT). In regard, it is clearly determined that one of the major predictors facing students are the lack of hands-on skills in the research process. This has been supported by Ismail (2010) that have identified through their research that KSA is linked with GOT. KSA is not easily acquired by the students and there is been reported that it is difficult to conduct methodology process, that is why it is important for postgraduates to prepare and develop their research skills prior conducting research process. The current study presented a strength with KSAO as a predictor variable. This justifies S. Ismail and Talip (2010) findings which allege that knowledge and skills should be acquired before conducting research. Hence, students need to prepare themselves by acquiring research skills prior to embarking their research journey. Discussion regarding knowledge, skills, and abilities have dominated research in recent years, verify that learning outcomes of the methodology are compulsory in order to be able to understand research.

5.3.4 The relationship between Knowledge Sharing Behavior (KSB) and Graduate on Time (GOT)

The next variable, knowledge sharing behavior asserted a positive relationship between GOT. The ability of an individual to share knowledge with each other, particularly regarding academic knowledge is classified as one of the contributing factors to graduate on time (GOT). Prior research substantiates the belief that sharing knowledge helps a person to build up knowledge because it encourages them to generate new knowledge (Fernie, Green, Weller, & Newcombe, 2003). The result revealed that KSB recording an odds ratio of $P > .01$ indicate that a strong determinant of knowledge sharing behavior among PhD students will have potential to GOT. The result is consistent with the hypotheses which concluded that KSB can be linked to GOT. This finding is similar to Aslam, Siddiqi, Shahzad, and Bajwa (2016) which proved the positive relationship between the variables. Universities are breeding grounds for professional behaviors, hence the issue of how knowledge sharing behaviors can be encouraged is as relevant between the outcome of GOT. Similarly, Ramayah, Yeap, and Ignatius (2013) support that new knowledge market is expanding and growing rapidly, thus opening up awareness to universities to make sure knowledge becomes a vital weapon to thrive and develop young minds to share knowledge and their usefulness with each other. When the student feels that knowledge is something to be shared, they will be more connected and work diligently to achieve a successful academic performance and increase the rates of graduating on time. A possible motivator for any action of sharing information in university could be critical in knowledge management field. There is a dearth of studies that aim to highlight the possible impact of KSB on students completing studies. By investigating how and why students share knowledge among their networks is important for

universities as it can help them in developing information sharing platform (Aslam, Shahzad, Syed, & Ramish, 2013). However, other previous studies have shown that knowledge sharing is hardly present these days especially in universities (Ridzuan & Hong, 2008). The instinct of self-preservation is what makes a person unwilling to share knowledge. They perceive knowledge as a treasured that cannot be shared freely. The result of such thinking making many academicians fail to realize that in actual fact, collaboration among course mate would increase in academic performance which eventually decrease the rates of not graduating on time. This current finding suggests that university authorities as well as faculty members to design courses that provide opportunities for students to share information among their peers which may lead to and overall improved in graduation rates. Facilities such as discussion rooms or online knowledge sharing platforms from campus can give student the opportunities to share and expose their knowledge and communication skills.

5.4 Implications

This section consists of practical implications, which provide an overview of the current research in a way to improve or solving a specific concern as related to the area of study.

5.4.1 Practical implications

This study explains the impact of type A/B personality, motivation, knowledge, skills and abilities, and knowledge sharing behavior on graduate on time. This study can be an indicator or guidance for academic institutions in order to help students with good performance practices. The

issues of graduate on time among doctoral candidates have been the main focused for the past years. Hence, Stock, Finegan, and Slegfried (2009) mention that the ultimate goal of PhD programs is to produce a candidate with high capabilities and be able to graduate within a specified time. Previous studies have reported that five years would be the target time for PhD completion as it has been used as a benchmark in their study by (R Wamala, Ocaya, & Oonyu, 2012).

In addition, this study present and contributes relevant remedy and knowledge for universities as its regards to student's performance which also have an impact on the overall performance of the university. This study offers the possibility of identifying factors associated with success and not graduate on time among PhD students thus allowed the researcher to shape an effective action.

Majority of the studies focus on several factors suggested by Ampaw and Jaeger (2011) such as gender and marital status but some factors have no significant impact on graduate on time for doctoral candidates. According to S Hakimi, Hejazi, and Lavasani (2011), gender differences in personality traits show no significant differences among participants as cited by McCrae, Jr, and Terracciano (2002). In this regard, future researchers should focus on various area of research, for example like ethnicities, nationality, or even current employment. This might enrich the area of the population regarding of its demographic characteristic. This study suggests that personality is a strong predictor of graduate on time. Personality type A/B testing could be introduced at the time of student admission to generalize a person's preferred or usual way of thinking and behaving which characterize an individual. Thus, university management such as PhD student's supervisor can recognize a personality type a learner possess and can use it in guiding a development process. If we design a programed that leads towards balancing then the personality characterization would serve usefully.

Additionally, motivation is one of the key considerations in determining graduate on time among PhD students. This research has essentially a wider direction on how motivational predicts self-efficacy. Apparently, there is a need to increase developmental on how student's own motivation be influenced by the use of various cognitive and metacognitive strategies. Nevertheless, there are not many researchers who carry out the investigation on how a student can monitor, improve and control their own motivation in achieving their goal (Wolters, Denton, York, & Francis, 2014). This would be an effective scope of area for future research.

Moreover, Rambe and Mlambo (2014); K. Shariff, Ramli, Nurhazani, and Abidin (2015); Ssegawa and Rwelamila (2009) has mentioned on their research that lack of hand-on skills on research is the major reasons for student's attrition. In order to keep students taking responsibility for their own learning, it is crucial for university to develop student's awareness about the importance of improving their skills. It is vital in helping them to identify any skills gaps that might occur, and keep encouraging them into the systematical direction. Students with personal development planning would be beneficial if they actively engage with the process with the help of their supervisor. There are many different ways in which skills can be developed, for instant provide research students with practical strategies by taking control of their own writing and embedded writing practices to cultivate the skills within them.

Finally, the ability to share knowledge is considered as one of the contributing factors of graduate on time (GOT). Despite the importance of knowledge sharing but there is a reason that students choose not to share their knowledge voluntarily. According to Z. Wang and Wang (2012), the fearful of decreasing their personal values and feeling uncertainty about how others will use the knowledge are the few reasons people reluctant to share knowledge. By far, knowledge is

considered more valuable to information or data. Prior research advocates that knowledge sharing can be augmented by increasing student's self-efficacy through guidance or education.

5.5 Limitations of the study

In regards of the obstacles encountered in this study, research was delimited by the selection of respondents. Only students starting from 3rd semester and above of upperclassmen including full-time and part-time students that enrolled at UUM during the time the survey were conducted are considered in the sample. This is because freshman is in their early stage of study and the expectation on their graduation is vague. The purpose of quantitative research methods is the potential to generalize findings from a larger population, however some aspects of this research methodology limit its generalizability especially the selection of research respondent.

The sample was drawn from a systematic sampling at public university UUM. This type of non-random data collection method could reduce predictive validity of the study. There is a possibility that perhaps the type of student who attends the target university vary from the larger population. Moreover, respondent provided feedback by filling the questionnaire themselves. Meanwhile, the nature aspect of self-report give rise to possibility of validity concerns. The self-administered questionnaire distributed by mailed and given in person, it is considered as a limitation because respondents are likely to have been exposed to intentional distortions or falsification information.

Apart from that, the method used to collect data was a longitudinal research design. This design was used to collect data from a population over multiple session, or over an extended period of time. However, a longitudinal design is more expensive and time-consuming and often difficult

to get a volunteer for the study due to their increased time commitment. In terms of respondent, researchers have limited data as it only collected in UUM whereby larger sample could improve the finding results.

Besides there are many variables that could affected GOT but this study only focuses on certain variables which is individual factors. According to Mairesse, Walker, Mehl, and Moore (2007); Schwartz et al., (2013) conducting an investigation on the prediction of human behavior is a complex problem and psychologist believe that a person's personality may affect various aspects such as performance. In addition, there is a lack of reliable data required by this research as it is a significant hindrance in finding a trend and meaningful relationship between the variables. For instance, research on personality type A and B are mostly found in medical field as it used to identify patient traits and their illnesses, it is quite difficult to find a secondary data that cover those personality in academic area.

Finally, limitation occurs when a new reform of semester for postgraduate students implemented from year 2017/2018 session with two-semester per year to three semesters per year. Data were collected before the implementation take place, so researchers will have difficulties to recollect new data. As the changes unfold, the researcher will still continue to use previous data collection in order to obtain results for the current study.

5.6 Suggestion for Future Study

This research suggests some potential opportunities for the use of future research. Despite all the limitations above, the researcher hoped that findings from this current study will illustrate a wider direction for further study in this area of research. Firstly, future research should expand

the collection of data not only for PhD but all postgraduate students including masters. With a larger population, the researcher will be able to explore more factor that contributes to graduate on time.

Secondly, future research might consider using dyadic adjustment scale. Interpersonal relationships between supervisor-students are considered as one-to-one linkages which are called as dyadic relationships. Dyads are ubiquitous because they involve relationships but they are the least studied by researchers (Schrieshelm, Castro, & Zhou, 2001). Dyadic Adjustment Scale (DAS) are widely used in clinical practice mostly to identify couple problems. Future research can use Dyadic to explain and test relationships between two members, for instance; supervisor-students, students-course mate, management-students, etc. Every dyad member has varied in their impression and could possibly demonstrate some degree of similarities. Therefore, any observations from both members can yield other factors that the previous study have not found.

In addition, a future researcher can apply predictive models to estimate the time taken for students to graduate. As for Ojha et al., (2017) they have applied three predictive models; Deepe Boltzmann Machines (DBMs), Support Vector Machines (SVMs) and Gaussian Processes (GPs) for undergraduate students. In the future, the researcher can conduct a study by using this prediction model on postgraduate students especially for those who involve with doing full research because it takes times to collect data and carried out the results. Even though the result of research finding presents a non-significant value, but there is no conclusive evidence. On this matter, institutions should focus more on supporting and providing services to postgraduate students to ensure that they receive sufficient education needed for their research. This can also help them in maximizing and developing their abilities and can inspire them in turning into an innovative and creative workforce. Nowadays, student's judgment on the

resource and support from institutions have become more important in developing the students-oriented centre.

The next approach is related to graduate progress, growth and development. Researchers suggest that institutions should implement or improve if this idea exists. Institutions should create a direct website such as blog-space or chat room that could assist students with discussion and sharing valuable information. As a postgraduate student, writing and defending research proposal is compulsory. Therefore, interactive website which can facilitate student interaction can help them to obtain peer learning, academic discourse and progress, developmental assessment, as well as a critical view.

Effective guidance and support should be catered for students in assisting their ability and needs. Mutual responsibilities should stand from both sides; institutions and students. During postgraduate studies, students have to survive independently and institutions should play a vital role in supporting them. With a proper resource, the process of obtaining knowledge would be more convenient. University should pay more attention to the progress of postgraduate students because their needs come from different phases. To illustrate the outline process, there are elements to be taken to improve graduation rates among PhD students as pointed out by this study. Focusing on an individual as a whole either by status or personality can help drive the process. In addition, a process based on detailed data pertaining to PhD candidates should be monitored closely within predetermined years provided by institutions. Nevertheless, forming a team of Postgraduate Research (PGR) from among research students that are committed to achieving success and graduate on time can help sort out some actions that can improve student success and graduation rates.

In conclusion, before applying or implementing any changes the excavations on the roots of the problem must be acknowledged. It is important for stakeholders to understand that the process and action are taken may not have a measurable effect in a short time. Likewise, everyone is involved in a long haul and failure to take part in improving graduation rates will be the reason why the issue remained the same and results have generally been so feeble.

5.7 Conclusion

The researcher hopes that the findings obtain from this current study would contribute to the understanding of each predictor that influence academic performance especially in the context of graduate on time. Generally speaking, this study evaluates individual factors as a crucial factor to predict the outcome of graduate on time. Most studies focus on the characteristic of student's that causes success. According to DeBrock, Hendricks, and Koenker (1996); Leeds, Allmen, and Matheson (2018) assumptions, unprepared students find university is more difficult thus less likely to graduate on time. Hence, the university and any other academic institutions have the obligation to prepare an urgency plan to hinder the increasing rates of students that are potentially not graduating on time as the proverb saying prevention is better than cure.

Good practices enable students to be active learners and simply apply their experiences to a real-world situation. Cooperation among students is more valuable when it involves team effort, this where knowledge sharing behavior can be implemented. The root of the problem of GOT is the time taken in completing a task. There is no replacement for time in completing a task if a person uses their time well than assignment could be finished promptly.

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APPENDIX A: QUESTIONNAIRE

The Potential of Individual Factor Towards Graduate on Time (GOT) among PhD Students in University Utara Malaysia (UUM)

Respected participant,

Thank you for agreeing to take part in my research studies which is being conducted as a partial fulfillment for the requirement of Master in Human Resource Management (MHRM) at University Utara Malaysia.

The purpose of this research is to determine the influence of Individual Factor towards Graduate on Time (GOT) among PhD students. Below is the question to analyze about the factor influencing GOT which is, Type A and B personality, Motivation, Knowledge Skill and Abilities (KSAs), and Knowledge Sharing Behavior (KSB).

This questionnaire is in four (4) sections; the first section consist of demographic information and the rest is the independent variable questions. This study is conducted to identified whether individual factor influence a delay in PhD completion.

Your participation in this study will help in explaining these factors in detail. This study will also propose guidelines to University Management as to take in account about student's individual factor to ensure they achieve GOT. Your participation in this questionnaire is voluntary and your information will be treated as CONFIDENTIAL and your identity will be kept as ANONYMOUS. Your honesty and sincerity are required in answering the question and there is no right or wrong answer.

Your time and cooperation are highly appreciated. Thank you.

Sincerely,

Nor Farah Ain Binti Mohamed Azman

(Master of Human Resource Management)
School of Business Management (SBM) College of Business
Universiti Utara Malaysia

Section A

Please tick (√) the appropriate box provided and answer the question in the space available

1. Gender

☐ Male ☐ Female

2. Age

☐ 20 – 30 ☐ 41 - 50

☐ 31 – 40 ☐ > 50

3. Current year of studies

Semester	
Semester 1	
Semester 2	
Semester 3	
Semester 4	
Semester 5	
Semester 6	
Semester 7	
Semester 8	
Semester 9	
Semester 10 or above	

4. Current Enrollment Status

☐ Full Time

☐ Part Time

5. Faculty of Study

☐ Othman Yeop Abdullah Graduate School of Business (OYA)

☐ Awang Had Salleh Graduate School (AHSGS)

☐ Ghazali Shafie Graduate School of Government (GSGSG)

6. Progress of Study: If you are currently working on your thesis, what stage are you in now?

Submit Intent to Submit Proposal	
Proposal Submitted	
Proposal Defense	
Submit Intent to Submit Thesis	
Thesis Submitted	
Submitted for Viva	

Section B:

*Below are statements about **Type A and B Personality**. Please indicate your level of agreement for each statement by tick (√) the appropriate answer.*

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

No	Question	Answer				
		1	2	3	4	5
1.	I feel impatient when I don't have any work in hand.					
2.	I never feel rushed.					
3.	I prefer to finish the tasks at hand as soon as possible.					
4.	I am open in expressing my feelings.					
5.	I prefer to sit at one place when I am not doing anything.					
6.	I prefer to complete the tasks at hand slowly.					
7.	I have many interest outside my work.					
8.	I take appointment casually.					
9.	Leisure time is welcome after a spell of work.					
10.	I relax whenever I want to do so.					

11.	I do not work under time pressure.					
12.	I prefer to move around rapidly when I am not doing anything.					
13.	I prefer to concentrate on one task at a time.					
14.	I enjoy doing two or more things simultaneously.					
15.	I have never found time sufficient for the task at hand.					
16.	I do not express all that I feel.					
17.	I always feel rushed.					
18.	I have always been struggling to achieve more in less time.					
19.	I am never late if I have appointment.					
20.	I have very few interests outside my work.					

Section C:

*Below are statements about **Motivation**. Please indicate your level of agreement for each statement by tick (√) the appropriate answer.*

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

No	Question	Answer				
		1	2	3	4	5
1.	I prefer to choose relatively difficult tasks or work.					
2.	I am ambitious and I believe that I can achieve a great deal.					
3.	I lack confidence in doing challenging work.					
4.	I can easily cope with any problem in a crisis.					
5.	No matter how difficult things are, I can be successful as long as I can try my best.					
6.	The harder a task, the more interested I am in it and the harder I work.					
7.	I never give up when facing a problem, always trying out ideas until I resolve it.					
8.	Taking risk is necessary for fulfilling my research.					
9.	I am usually satisfied with my own choices and decisions.					

10.	I worry that I might not be able to adapt to the future work demands.					
11.	I like unfamiliar and difficult tasks, even risky ones.					
12.	I feel happy when I complete a difficult task.					
13.	I worry about failure when I deal with the task that I think are difficult.					
14.	I feel anxious when I think that I have an unfamiliar and difficult task.					
15.	I like to start a task immediately even if I have much time.					
16.	I feel anxious when I do the task that seems to be very difficult.					
17.	I will be attracted by the opportunity that test my abilities.					
18.	I feel anxious when I don't think I am competent for the task.					
19.	I prefer to work unremittingly on unexpectable problems.					
20.	I dislike the task that examine my abilities.					

Section D:

Below are statements about ***Knowledge, Skill and Abilities****. Please indicate your level of agreement for each statement by tick (√) the appropriate answer.*

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

No	Question	Answer				
		1	2	3	4	5
1.	I have the capacity to communicate effectively with others orally.					
2.	I have the knowledge of research methodologies and capacity to interpret findings.					
3.	I have the capacity to find, evaluate and use information.					
4.	I have the ability to work with numbers and graph.					
5.	I have the capacity to communicate effectively with others in writing.					
6.	I have the ability to use knowledge and skills to prepare solutions to unfamiliar problems.					
7.	I can communicate effectively with others by using ICTs or multimedia.					
8.	I have the capacity to interact and collaborate with others effectively.					
9.	I am continually conscious that time is my most critical resource.					
10.	In seeking satisfaction through my work, I tend to have a creative approach to solve problem solving.					

Section E:

*Below are statements about **Knowledge Sharing Behavior**. Please indicate your level of agreement for each statement by tick (√) the appropriate answer.*

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

No	Question	Answer				
		1	2	3	4	5
1.	I feel that it is important to share knowledge with other students for the benefit of all.					
2.	I am afraid of mismatch might offend others.					
3.	Students should voluntarily share their knowledge with peers.					
4.	Students have the mindset that sharing knowledge is a type of plagiarism.					
5.	It is better to avoid sharing information with peers whenever possible.					
6.	Learning from each other is a very important motivator for knowledge sharing.					
7.	I preferred internet as a source of knowledge sharing for study related tasks.					
8.	I would assist other students in database search, software and library use.					
9.	I preferred face to face as a channel to share knowledge.					

10.	I only share when people share their knowledge.					

THE END

THANK YOU

APPENDIX B: DESCRIPTIVE STATISTIC

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	99	62.3	62.3	62.3
	Female	60	37.7	37.7	100.0
	Total	159	100.0	100.0	

Current Enrollment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full Time	118	74.2	74.2	74.2
	Part Time	41	25.8	25.8	100.0
	Total	159	100.0	100.0	

Faculty of Study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OYA	96	60.4	60.4	60.4
	AHSGS	33	20.8	20.8	81.1
	GSGSG	30	18.9	18.9	100.0
	Total	159	100.0	100.0	

Progress of Study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SISP	1	.6	.6	.6
	PS	37	23.3	23.3	23.9
	PD	42	26.4	26.4	50.3
	SIST	24	15.1	15.1	65.4
	TS	39	24.5	24.5	89.9
	SV	16	10.1	10.1	100.0
	Total	159	100.0	100.0	

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
TotalAB	159	49	87	64.84	5.975	.822	.192	1.975	.383
TotalMt	159	48	93	72.42	6.854	-.109	.192	1.582	.383
TotalKSAO	159	18	50	40.62	5.318	-.685	.192	1.534	.383
TotalKSB	159	19	48	36.24	3.816	-.044	.192	2.885	.383
Valid N (listwise)	159								

APPENDIX C: PEARSON CORRELATION

Correlations

		TotalAB	TotalMt	TotalKSAO	TotalKSB
TotalAB	Pearson Correlation	1	.395**	.182*	.382**
	Sig. (2-tailed)		.000	.022	.000
	N	159	159	159	159
TotalMt	Pearson Correlation	.395**	1	.431**	.458**
	Sig. (2-tailed)	.000		.000	.000
	N	159	159	159	159
TotalKSAO	Pearson Correlation	.182*	.431**	1	.154
	Sig. (2-tailed)	.022	.000		.052
	N	159	159	159	159
TotalKSB	Pearson Correlation	.382**	.458**	.154	1
	Sig. (2-tailed)	.000	.000	.052	
	N	159	159	159	159

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX D: CRONBACH'S ALPHA COEFFICIENT

a) Personality Type A and B

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.504	.515	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ab1	30.19	15.508	.263	.246	.459
ab2	30.60	17.204	.066	.052	.526
ab3	29.36	16.459	.270	.278	.462
ab4	30.23	16.737	.156	.132	.494
ab5	30.45	15.604	.367	.194	.433
ab6	30.40	16.228	.233	.242	.470
ab7	30.33	15.527	.325	.193	.441
ab8	30.07	15.204	.313	.259	.442
ab9	29.72	16.660	.217	.112	.476
ab10	30.35	18.318	-.034	.031	.552

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.500	.495	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ab11	28.49	15.859	.224	.130	.469
ab12	28.53	15.947	.249	.117	.462
ab13	27.90	15.775	.234	.192	.466
ab14	28.22	16.628	.147	.111	.492
ab15	28.10	16.635	.143	.086	.494
ab16	28.81	14.386	.411	.302	.404
ab17	28.11	15.729	.232	.135	.466
ab18	28.63	15.399	.301	.290	.444
ab19	27.25	17.633	.037	.113	.522
ab20	27.85	16.863	.107	.088	.505

b) Motivation

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.742	20

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
mt1	69.33	42.312	.302	.316	.702
mt2	68.44	41.134	.460	.437	.687
mt3	70.07	48.166	-.157	.376	.751
mt4	68.81	42.436	.341	.452	.698
mt5	68.20	42.972	.336	.559	.700
mt6	68.50	41.783	.408	.550	.693
mt7	68.19	41.850	.519	.668	.687
mt8	68.35	42.987	.326	.502	.700
mt9	68.64	42.436	.360	.390	.697
mt10	69.29	42.283	.252	.415	.708
mt11	69.12	43.676	.211	.294	.710
mt12	67.92	43.379	.390	.404	.698
mt13	68.88	42.372	.267	.490	.706
mt14	69.03	45.157	.084	.617	.722
mt15	68.18	43.416	.336	.230	.700
mt16	69.02	42.614	.292	.535	.703
mt17	68.65	42.546	.450	.429	.693
mt18	68.93	44.002	.198	.355	.711
mt19	68.62	43.363	.258	.253	.706
mt20	69.73	41.819	.334	.304	.699

c) Knowledge, Skills, and Abilities (KSAs)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.879	.882	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ksao1	36.53	22.782	.543	.557	.873
ksao2	36.69	22.128	.630	.586	.866
ksao3	36.59	22.813	.679	.528	.862
ksao4	36.59	23.813	.494	.407	.876
ksao5	36.52	22.682	.653	.547	.863
ksao6	36.64	22.750	.698	.585	.860
ksao7	36.64	23.233	.594	.397	.868
ksao8	36.40	24.457	.549	.395	.871
ksao9	36.38	24.225	.580	.485	.869
ksao10	36.57	23.234	.678	.586	.862

d) Knowledge Sharing Behavior (KSB)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.739	6

Item-Total Statistics

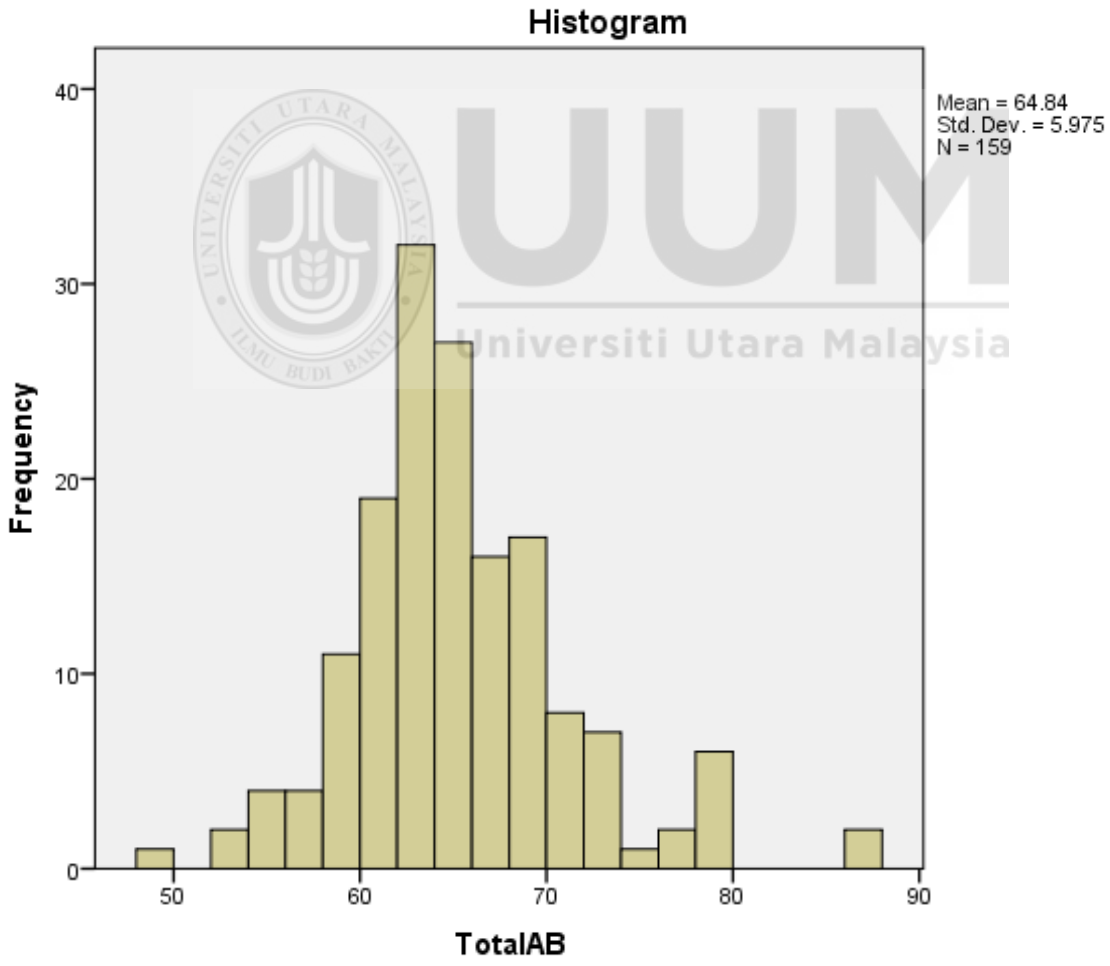
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ksb1	20.30	5.855	.635	.477	.620
ksb2	21.21	6.296	.256	.083	.759
ksb3	20.37	6.197	.450	.369	.675
ksb6	20.37	6.501	.483	.318	.668
ksb8	20.51	6.239	.559	.365	.646
ksb9	20.60	6.684	.420	.284	.685

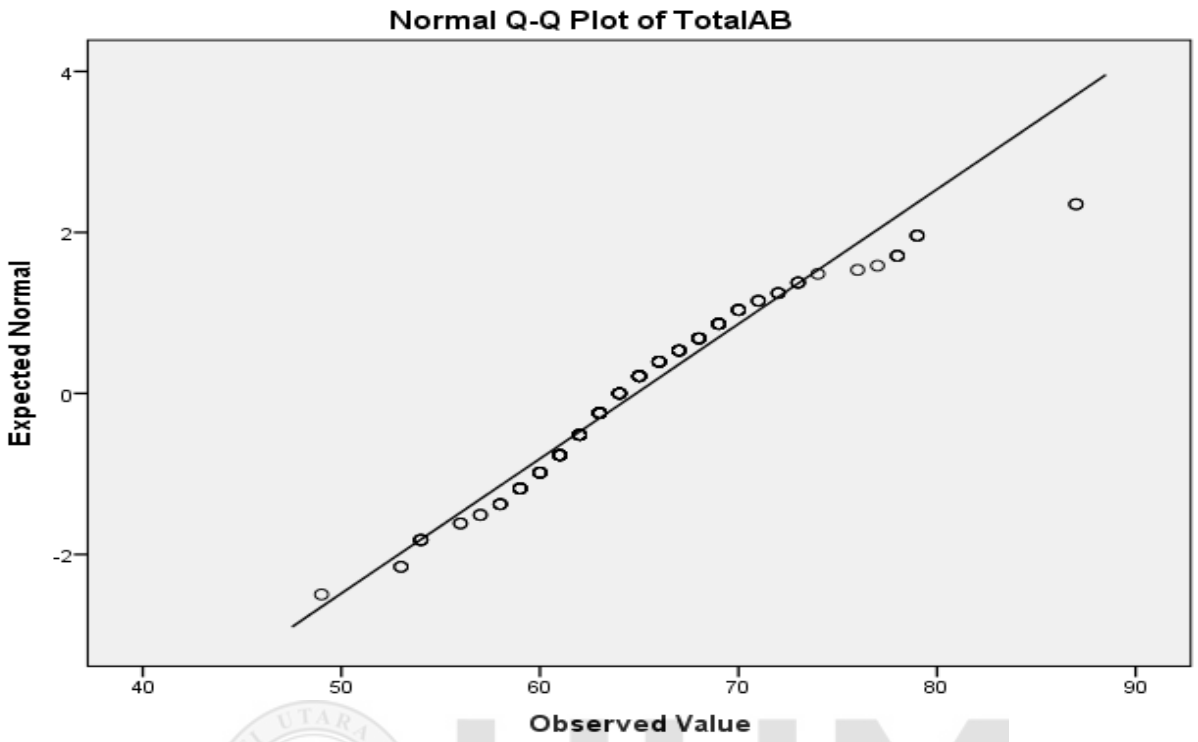
APPENDIX E: NORMALITY TEST

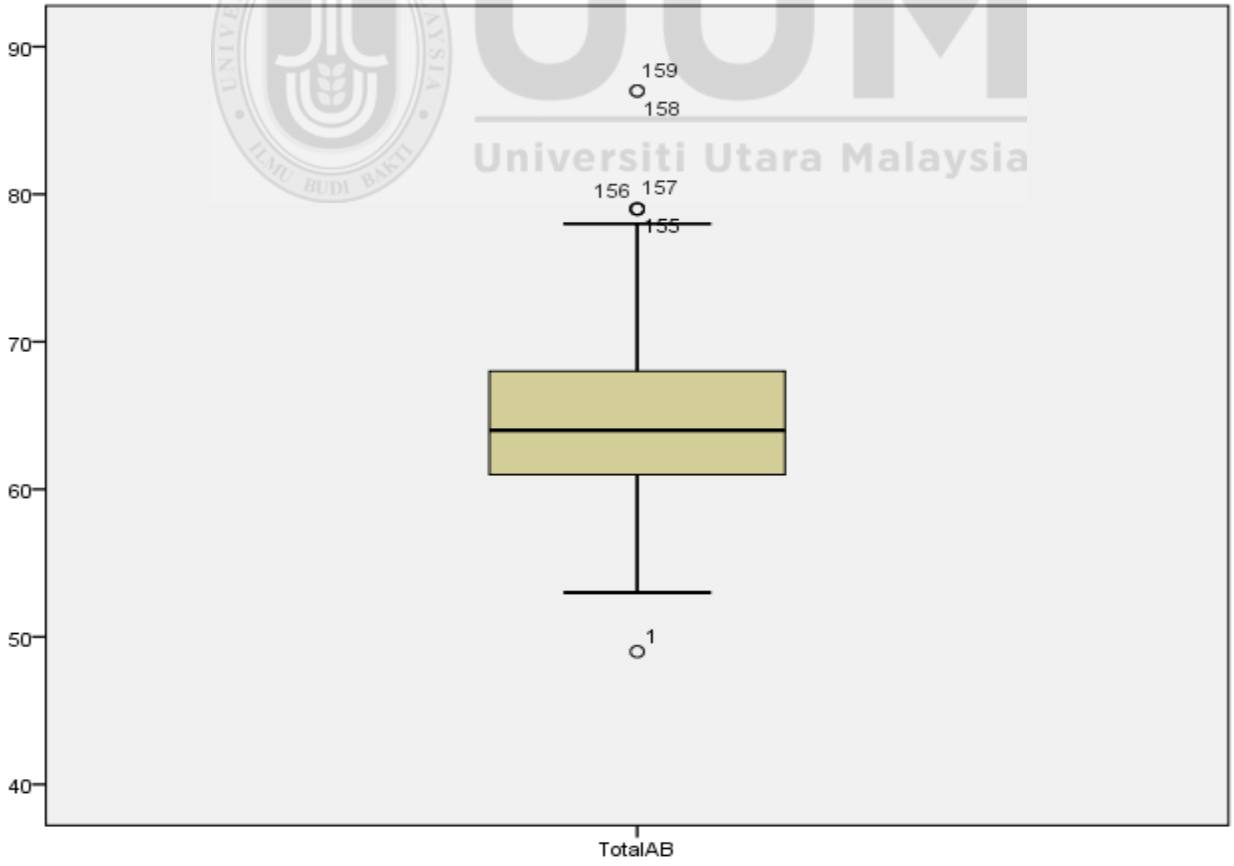
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TotalAB	.118	159	.000	.950	159	.000

a. Lilliefors Significance Correction







APPENDIX F: MULTICOLLINEARITY

Coefficients [a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Total AB personality	.784	1.275
	Total Motivation	.656	1.525
	Total Ksao's	.840	1.191
	Total Knowledge Sharing Behavior	.753	1.328

a. Dependent Variable: Progress of Study

APPENDIX G: BINARY LOGISTIC REGRESSION

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	TotalAB	-.024	.033	.554	1	.457	.976	.916	1.040
	TotalMt	-.033	.033	1.018	1	.313	.968	.908	1.031
	TotalKSAO	.012	.037	.109	1	.742	1.012	.941	1.089
	TotalKSB	.014	.054	.070	1	.791	1.014	.912	1.128
	Constant	3.782	2.417	2.450	1	.118	43.925		

a. Variable(s) entered on step 1: TotalAB, TotalMt, TotalKSAO, TotalKSB.