

# Developing a Psychometric Self- Assessment Tool “PG Scan” for Examining PhD Candidates’ Readiness

Hamimah Hashim & Siti Maftuhah Damio

Faculty of Education, Universiti Teknologi MARA (UiTM) Malaysia

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## Abstract

The Malaysian government and universities provide numerous scholarships for PhD candidates; unfortunately, an observable number of the recipients were unable to complete their studies due to various factors. To date, no specific instrument has been introduced for Doctoral candidates towards minimising the risks of abortive academic plans. Henceforth, the goals of this study are; i) to examine the factors in selecting suitable PhD candidates, ii) to develop an instrument to gauge the applicants' PhD readiness, and iii) to develop a proposed model of PhD readiness. Library research was conducted to examine the factors relating to instrument development. The present study is the preliminary stage of item and model development. The importance and originality of this study are manifested in the outputs of the research project with the establishment of a new comprehensive self- assessment tool to gauge PhD readiness and the PhD readiness model. The implications of the self- assessment tool and model fulfil the Twelfth Malaysian Plan and Sustainable Development Goals (SDG).

**Keywords:** Psychometric Self- Assessment Tool, PG Scan, Ph.D Candidates’ Readiness

## Introduction

Billions have been apportioned to the Ministry of Education by the Malaysian government in its annual budget throughout the years. This has placed the Ministry as among the top recipients of funds, totalling to RM52.6 billion from the national budget in 2021 (New Straits Times, 2021). With such enormous amount, the Ministry has allocated a surmountable sum towards academic scholarships annually; hence, the selection of PhD candidates is an exigent course of due diligence. It is envisaged that Doctoral candidates to complete their course of study within the duration of three years towards attaining the ‘Graduate on Time’ (GOT) expectancy. Delay in completion of the academic journey can be detrimental to the PhD students, universities and the government. Concerningly, in the worst-case scenario, termination during the Doctoral candidature period due to failure in meeting specific requirements could lead to mental pressure, loss of valuable time and wasted resources invested.

Once a candidate begins the Doctoral study, whether with or without a full scholarship, the tale of woe associated with a PhD life would somehow set its mark in the candidature track. Its trace leads to what could be a volatile academic journey which do not only entail for good

grades but relies on one's attitude. Library research of established literatures have recognized that the predictors of a successful PhD study are self-management, research knowledge, language skill, organizational commitment, openness and resilience. All factors mentioned are important to be cogitated for the item development in this particular study.

Apart from the six predictors mentioned, there are other issues that could affect PhD candidates throughout their academic journey. The first issue is; a thesis of a doctoral degree is usually supervised by two panel experts or more which may lead to several conflicting ideas and situations. The second evident issue would be that PhD candidates are adult learners who are bound to have their own set of existing commitments towards their jobs, families and children which will be further burgeoned by an academic obligation. The third issue would be the likelihood in the ascension of relationship conflicts between the PhD candidates with their families and supervisors, health struggles, and irregular personal attitudes. Hence, it is paramount for postgraduate students to have high standard supervision, adjustment programs, workshops and financial support (Jasvir & Nachatar, 2018). Therefore, it is pertinent to develop an instrument to gauge post-graduate applicants' readiness before they embark on a PhD study. Importantly, such instrument could help attenuate the number of future problematic post-graduate experiences because one in two PhD students would suffer psychological distress; and one out of three may risk of having a common psychiatric disorder (Leveque et al., 2017).

The selection process of PhD scholarship recipients has been solely administered through interviews. It is necessary to point out that the judgements and justifications made by the interviewers are not only very subjective but also based on open interpretations of the applicants' abilities. Therefore, the selection process can be a daunting procedure in the absence of a suitable and comprehensive instrument to gauge the PhD applicants' genuine abilities. Accordingly, the purposes of this research are to examine the factors of Ph.D readiness, to develop an instrument to gauge the applicants' readiness, and to generate a proposed PhD readiness model which are highly reliable and valid.

The government and universities offer several forms of scholarships to support Postgraduate students in the duration of their studies but unfortunately, some ended up as futile attempts due to varied factors. To date, a specific instrument that could gauge and minimise abortive postgraduate studies remains unavailable for PhD candidates. Therefore, PG Scan is a pragmatic instrument which is developed by a group of researchers with the intention to scan postgraduate candidates' readiness level prior to their academic endeavour. PG Scan would be able to provide insights on the difficulties that doctoral candidates may encounter as identified in previous studies namely; relationship conflicts, children, supervisors, health status and personal attitude (Levecque et al., 2017). Importantly, the disparity of judgements made by the interviewers upon the candidates during the interview process could be improved with the development of the PG Scan.

### **Research Objectives**

The objectives of this study are as follow

- i) to examine the factors in selecting suitable Ph.D. candidates,
- ii) to develop an instrument to gauge the applicants' Ph.D. readiness (PG Scan)

- iii) to develop a proposed model of Ph.D. readiness (PG Scan)

### **Management / Organizational Commitment**

PhD candidates are mostly adult learners who would have multiple responsibilities and inevitably may get entangled with conflicts. Failure to manage oneself along with others which include family and friends, relationships, and resources could lead to negative consequences which can disrupt individual functionality. A study by Levecque et al (2017) established that one in two PhD students suffers psychosomatic problem and 32% are at risk of getting afflicted by a common psychiatric disorder especially depression. The research has postulated that the causes for the psychological afflictions are; i) work and organizational context; ii) work-family interface; iii) job demands and control; and iv) the supervisors' styles.

One of the aspects of managing others is to diagnose a student's relationship with the supervisors. The roles of the supervisors are important in giving and providing continuous support for PhD students. According to Umair et al (2017), the supervisors' support is significant in developing positive relationship between the supervisors and students. Essentially, the supervisors' support is positively related to PhD students' psychological state.

### **Research Knowledge/ Language Skill**

Besides the recurring problems previously mentioned, some PhD students may have limited research knowledge and skills which are important elements to potentially attain 'graduate on time' (GOT). Apart from research knowledge, the magnitude of language skills is valuable. A study by Talib (2018), posited that academic writing requires higher order thinking skills, effective writing skills that are necessary to prevent any forms of plagiarism, and the integrity of academic honesty. These are important for PhD students' survival throughout their candidature. It is further suggested for the development of an academic writing teaching module as a guideline for the candidates and to support them towards completing their studies.

### **Resilience/ Openness**

Based on the literature review, attitudes which include resilience and openness are indispensable in postgraduate studies and should be further explored. In Psychology, 'attitude' refers to a set of emotions, beliefs, and behaviour. Various elements of attitudes can be studied, but in this study, the focus is only on the two constructs of resilience and openness. Previous researchers have examined students' resilience level in public higher education setting and have identified that i) there is no significant difference level of resilience based on gender and program of study; ii) marital status shows significant difference between levels of resilience among international students based on marital status, and iii) there is significant correlation between the level of resilience with age. In their study, Master and PhD students were categorized with medium level and Bachelor students were categorized with low level resilience (Subhan et al., 2015). PhD applicants who are scholastically efficient and resilient have better perceptions of their postgraduate journey (Umair et. al., 2017).

There are many contributing factors to the success of a PhD journey. Despite the absence of any instruments which could comprehensively gauge significant factors that contribute towards a successful PhD completion, the reviewed literature is helpful in developing items

for the instrument. Thus, the formulation of the instrument is timely as it provides an additional approach of assessing and selecting potential PhD students and scholarship recipients.

The following Table is the proposed items based on the selected factors

Table 1

*Instrument development: PG Scan*

Part	Factors	Sub factors	Description of the items
	Management	<b>Goal-settings</b>	Items designed to measure <b>the development of an action plan designed to motivate and guide a person or group toward a goal.</b>
	Managing people	<b>Manage oneself</b> <b>Manage others</b> <b>Manage Relationship</b>	time management, managing people (oneself, others, relationships) and managing resources.
	Research Knowledge	<b>Planning the research</b> <b>Literature Review</b> <b>Data collection</b> <b>process</b> <b>Data analysis</b>	basic knowledge of doing/conducting research.
	Language Skills	<b>Reading skills</b> <b>Writing skills</b>	ability to use academic language proficiently in their writing;
	Organizational Commitment		refers to the relative strength of an individual's identification with and involvement in/ commitment to a particular organization
	openness		refers to a global personality trait that measures related concepts such as curiosity, intellectualism, imagination, and tolerance interests
	Resilience	<b>Commitment</b>	refers to personal trait that reflects a person's ability to cope with the ups and downs of life. It is reflected via how commitment, challenge, and control are addressed.

In a quantitative study, it is pertinent to examine the robustness of the assessment tools. Therefore, Confirmatory Factor Analysis (CFA) will be carried out because this analysis will verify the actual number of items for each construct and validate the psychometric properties of the instruments by observing the fitness of the proposed measurement models. Moreover, tests of the overall measurement model via CFA will be conducted to obtain

discriminant validity of the constructs by observing the intercorrelations among the constructs.

In the final stage of the data collection, the hypothesized relationships are tested and validated via Structural Equation Modeling (SEM). It is recommended to follow a two-step procedure in running SEM (Anderson & Gerbing, 1988). The first step is the analysis of the measurement model via CFA, and then followed by the second step; the analysis of the structural model. For CFA and SEM, a covariance matrix will be analyzed, and a maximum likelihood estimation procedure will be used.

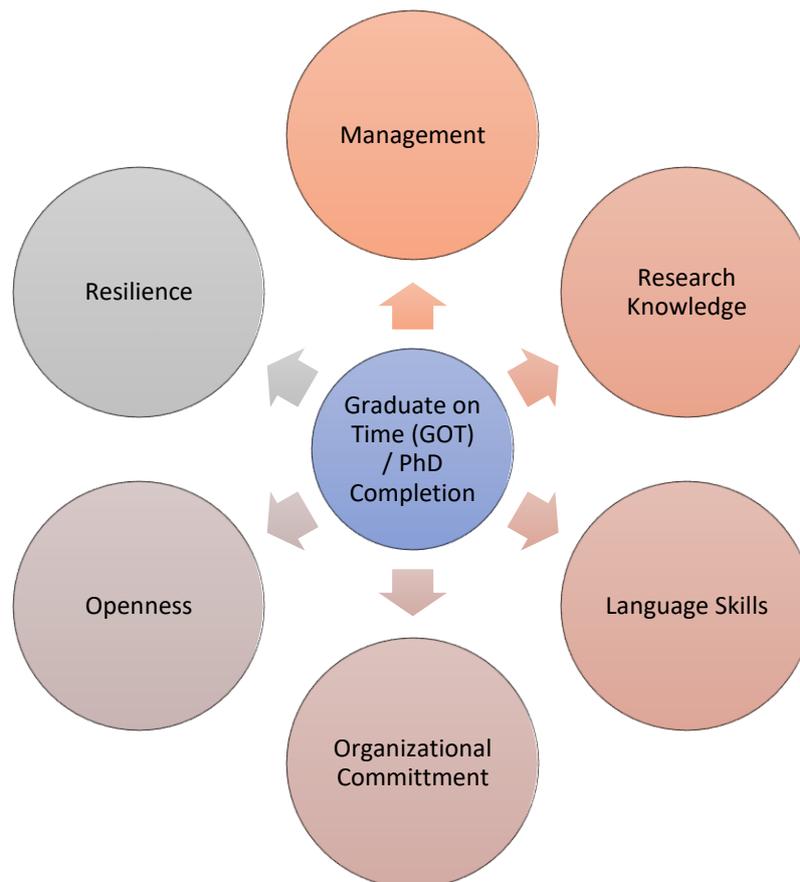


Figure 1: Proposed Model for PG Scan

Figure 1 illustrates the identified six contributing factors leading to a PhD completion based on the relevant literature. Among the factors discussed are significantly important to be examined as these factors will influence the degree towards the completion of a PhD attempt.

#### Relevance to the Government Policy

This research corresponds with the United Nation's Sustainable Development Goals (SDG). Malaysia has been integrating and implementing SDG to achieve its 2030 national development agenda. The main purpose of the SDG is to promote inclusive and equitable quality education and lifelong learning opportunities for all. This agenda is synchronized with the Twelfth Malaysia Plan 2021-2025 that aims to anchor growth on people. The instrument

constructed from this study will eventually suit the strategy of the plan which is to accelerate human capital development for an advanced nation.

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### **Corresponding Author**

PM Dr Siti Maftuhah Damio

Faculty of Education Universiti Teknologi MARA (UiTM)

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