

Impeding Factors in Completing a Doctoral Degree: Analysis of a Survey

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Abstract

This study aimed to investigate factors associated to success in completing a doctoral program, based on surveying staff members in one public university in Thailand. Initial data were obtained from the university database to select the targeted subjects of a survey. Questionnaires were provided to 700 subjects, focusing on relations with the supervisor and on difficulties experienced during the studies. Logistic regression was used to model the effects of multiple determinants on doctoral achievement, and to assess difficulties in doctoral studies. Linear regression was employed to model the association between such determinants and score assigned to the supervisor. Content analysis was employed to cluster reported types of problems. The results showed that country or region of doctoral study was the only factor significant to doctoral achievement. The difficulties in doctoral studies were classified into 8 groups; time, language, materials, research design, money and scholarship, data, supervisor availability, and academic efficiency of the supervisor. These findings provide insights for improving success rates in studies for the doctoral degree.

Keywords: doctoral study, impede completion, logistic regression, linear regression

■ Introduction

In most countries, the doctoral degree is the pinnacle of education. It is a basic requirement for an academic career, especially in institutions of higher education. The doctoral students' work has a dual nature, as it requires orientation both towards learning by study as well as taking the first steps in independent scientific research (Golde, 2000; Stubb, Pyhältö, & Lonka, 2012). Becoming a doctor can be viewed as a highly personal and unique experience (Lahenius & Martinsuo, 2011).

The factors influencing completion of a doctoral degree have been assessed in various host universities over the last few decades (Seagram, Gould, & Pyke, 1998; Wright & Cochrane, 2000; Rodwell & Neumann, 2008; Bain, Fedynich, & Knight, 2011; Castro, Cavazos, Garcia, & Castro, 2011; Wao & Onwuegbuzie, 2011). The factors that have been identified in various studies with the completion include gender, age at commencement, and field of study (Seagram et al., 1998; Schroeder & Mynatt, 1999; Heath, 2002; Mastekaasa, 2005; Wao, 2010; Bain et al., 2011), while Bain et al. (2011) suggested that such success depends

on self-esteem increased by earlier successes and on the academic care and nurture provided by the supervisor. Difficulties experienced in doctoral programs have been studied widely (Seagram et al., 1998; McAlpine, Jazvac-Martek, & Hopwood, 2009; Abiddin, 2006; Pyhältö, Toom, Stubb, & Lonka, 2012).

In these prior studies, the doctoral students' perceptions of typical challenges and problems in the doctoral process were explored in different contexts. The problem with doctoral processes study including generic skills; self-regulation; academic writing; issues related to developing an identity as a researcher (McAlpine et al., 2009; Pyhältö et al., 2012).

The problem with specific expertise related to constructing a theoretical framework; selecting research questions and methods (Seagram et al., 1998; Pyhältö et al., 2012). The study of Seagram et al. (1998) found that in the social science were more difficulties in dissertation topic selection and in conducting research than in the natural sciences. They also reported that women found dissertation topic selection easier than men. The resources were important to doctoral study progress including prob-

lems relating to the lack of funding or other resources; the lack of research instruments (McAlpine et al., 2009; Pyhältö et al., 2012).

McAlpine et al. (2009) also indicated that the Canadian postgraduate perceived difficulty in time issues, such as; lack of time or time management; choosing priorities in the work; slow progress or requiring extended time for completion; paid job and other competing non-PhD commitments; number of tasks or activities; time lost due to other interruptions.

Characteristics of student are also influence to doctoral success such as level of responsibility; level of motivation; negative feelings (disappointment, discouragement, fatigue, frustration, anxiety) and health (Abiddin, 2006; McAlpine et al., 2009).

The important role of the supervisor is to coach, guide and mentor the postgraduate students in research from its design all the way to approved written output (Donald, Saroyan, & Denison, 1995; Wright, 2003; Wadesango & Machingambi, 2011). While the supervisor is responsible for guiding the student, managing the research project is the student's responsibility (Wadesango & Machingambi, 2011). The relationship of a doctoral student with the supervisor is of high interest, for it is among the important key factors affecting doctoral success (Over, Over, Meuwissen, & Lancaster, 1990; Seagram et al. 1998; Schroeder & Mynatt, 1999; Wright, 2003; Wadesango & Machingambi, 2011). The doctoral students' experiences have been studied, including the student's relationship with his or her supervisor; support or lack of it; the supervisor's responsibilities; and supervisory patterns (Wright, 2003; Abiddin, 2006; McAlpine et al., 2009; Pyhältö et al., 2012)

This current study focuses on the problems that university staff members experienced, not only relating to supervisors, but also regarding time, language, money and scholarship, data materials, and research methods. The outcome assessed in prior studies has usually been time to complete or time to degree (Rodwell & Neumann, 2008; jiranek, 2010; Wao & Onwuegbuzie, 2011).

In contrast, this study aimed to investigate the

doctoral degree completion rate, essentially success or failure, in a sample of one public university's staff members. The relationship between supervisor and doctoral student was of high interest. Also, we wanted to identify critical issues of concern to the subjects, in relation to the main problems encountered during their doctoral studies. These findings could have implications for further doctoral students, in their choices and preparation for their studies, benefiting from the experiences and guidelines reported that help avoid or reduce the risk of failure.

■ Methodology

Sample

The sample used in this study, the respondents to the questionnaire, were staff members who enrolled in a doctoral program in any institution from 1991 to 2011, and were currently employed by a public university in Thailand. They were contracted to serve this university again after completing their doctoral programmes. Altogether, there were 964 staff who had enrolled in doctoral studies. Of these, 547 persons got their degree, 153 persons did not complete, and 264 persons are currently studying. The 264 persons consequently were excluded because their outcomes were not known at time of the survey. Thus, there were 700 subjects included in this study.

A structured questionnaire was established for collecting information on the supervisor's gender, the opinions of the subject regarding the supervisor, recommendations of the same university for others to study, and problems that the doctoral students encountered during their doctoral studies. The questionnaires were sent out to the 700 staff members, with a letter explaining the purpose of the study. Individuals who did not respond were sent another request 3 months later. A total of 316 questionnaires were received as responses.

Data collection

Data on the doctoral completion (success or failure) and demographic factors (gender, country and field of doctoral study) were collected from the

university database. The host countries of the doctoral studies were grouped into Thailand, Australasia (Australia and New Zealand), Europe, America and Canada, and other Asia. The fields of study were grouped into four categories namely science, applied science and technology, social science, and health science.

Another data set was collected using questionnaires. The student-supervisor relationship (How well did your supervisor take care of your PhD work?) was rated on the scale 0-10, where 0 means the supervisor took very poor care of the student, and 10 means the supervisor was of the best kind.

An open-ended item concerned problems that the doctoral candidates encountered during their doctoral studies (What problems did you have during your PhD work?), and this was assessed using content analysis.

Data Analysis

The binary outcomes were doctoral completion, recommendations to further doctoral students, and difficulties while studying. Supervisor-score is a continuous outcome. The determinants considered are gender, country, and field of doctoral study

Logistic regression is used to model the association between a set of determinants and outcome. The model formulates the proportion of this outcome as an additive linear function of the determinants as follows:

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \sum_{i=1}^k \beta_i x_i \quad (1)$$

where p is the expected probability of adverse outcome (such as a doctoral completion), β_0 is the intercept, β_i are the regression coefficients, and x_i are explanatory variables.

Linear regression is used to model the relationship between a set of determinants and score for the supervisors' care of the advisee. The model is as follows:

$$y = \beta_0 + \sum_{i=1}^k \beta_i x_i \quad (2)$$

where y is the supervisor score, β_0 is the intercept, β_i are the regression coefficients, and x_i are explanatory variables.

The problems encountered during doctoral studies from the open-ended questions, were grouped using content analysis, into eight groups. Logistic regression as shown in equation (1) was also used to separately model the association between a set of determinants and a problem groups.

All models were fitted using weighted sum contrasts (Venables & Ripley, 2002; Tongkumchum & McNeil, 2009). After fitting the model, the results were shown using confidence interval plots. The difference of each explanatory variable is compared to the overall proportion (mean) by computing 95% confidence intervals. The adjusted proportion (mean) and the confidence intervals are computed. The statistical analysis was performed using R.

Results

The 316 university staff members that responded to the questionnaire represented a 45.1% response rate. Figure 1 displays the ranges of completion rate separately for each category of each determinant assessed. The fitted logistic regression model was used to estimate 95% confidence interval for the percentage of doctoral completions, also shown by the category on the x axis. The overall doctoral completion rate (83.5%) is shown as the horizontal line, and the 95% confidence intervals of completion rates after adjusting for the other factors are shown as vertical lines for each factor level. If the confidence interval is completely above or below the mean line, this indicates that the factor level significantly affected the outcome after adjusting for the other factors. The crude successes rates are shown as blue dots, i.e., these are not adjusted for the bias from other factors in the model, but are subsample summary statistics. Country or region of doctoral study was statistically associated with doctoral completion, while gender and major

group of doctoral study were not significant. Studying in Europe, and USA and Canada were more likely to end in successful completion, whereas for studying

in Thailand was less likely to success. However, the completion rate for studies in Australasia or other Asia did not differ from the overall completion rate.

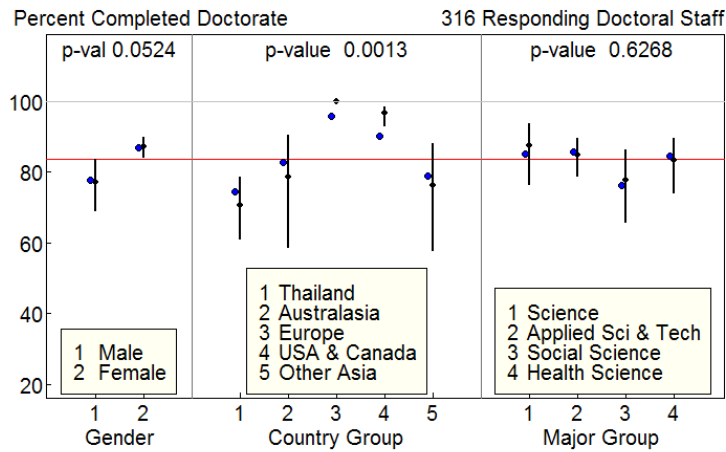


Figure 1 The completion rate for each factor level, with estimated 95% confidence intervals of the success rate in doctoral studies.

Recommendation to further doctoral student

The supervisors' gender and students' gender were combined into female supervisor gender with male student gender (F-m) and other. It was used as

a determinant together with demographic factors. The adjust percentage of recommendation for male student with female supervisor was lower than overall percentage of recommendation (Figure 2).

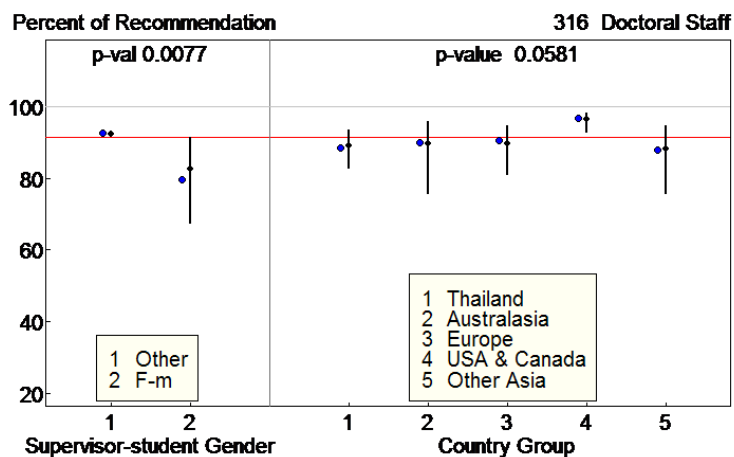


Figure 2 Recommendations to further students shown by relevant factor levels.

Satisfaction with supervisor

In Figure 3, the left side shows the satisfaction score of 264 successful doctoral students with their supervisors, whereas the score of the 51 unsuccessful doctoral students with their supervisors is shown on the right.

On the left side, the overall mean satisfaction score with their supervisors was 8.37. Male students with female supervisor tended to have higher satisfac-

tion score than other gender combinations. Country of study was significant among successful students. The adjusted score was higher than overall percentage for studying in USA and Canada.

On the right side, the overall mean satisfaction of supervisors' scores given by the unsuccessful students was 7.64. Male students with female supervisor tended to have lower satisfaction score than other gender combinations. No significant was found.

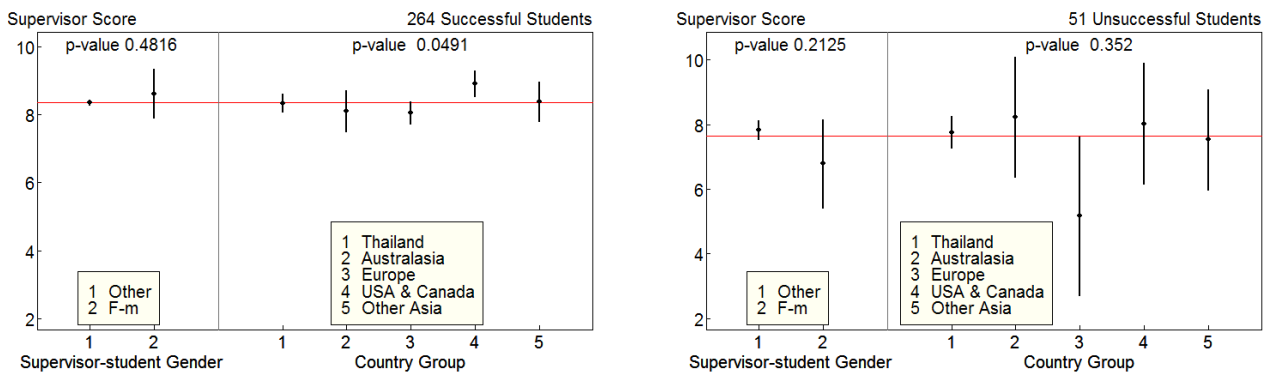


Figure 3 Satisfaction score regarding care provided by the supervisor.

Problems

Time

Among 316 staff who responded to the questionnaires, 68 (21.5%) persons mentioned about problems with time while they studied for the doctorate. Females encountered fewer time-related problems

than male although, this difference is not significant. Staff members who studied in other Asia were most likely to express concerns about time, significantly exceeding the overall mean, while those who studied in Europe encountered fewer problems with time than the overall percentage (Figure 4).

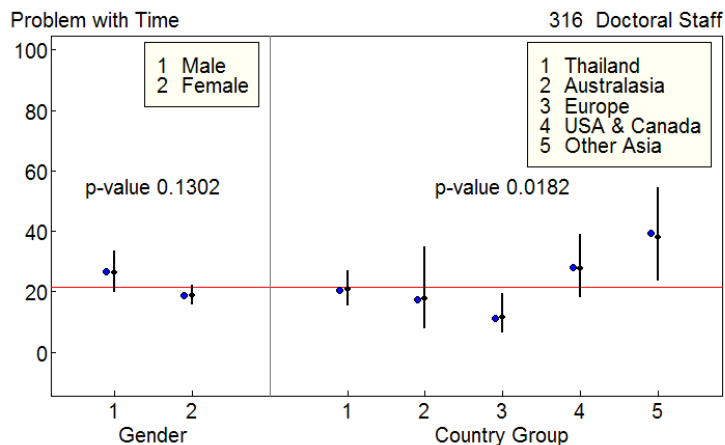


Figure 4 Estimated 95% confidence intervals for problems with time, shown by factor levels.

Language

There is no clear evidence that problems with language impacted success in achieving the doctorate. There were 70 students (22.2%) who expressed the view that they had problems with language. Students

in Australasia and Europe experienced more problems with language than the overall percentage, but students in the home country, Thailand, experienced fewer language related-problems than the overall percentage (Figure 5).

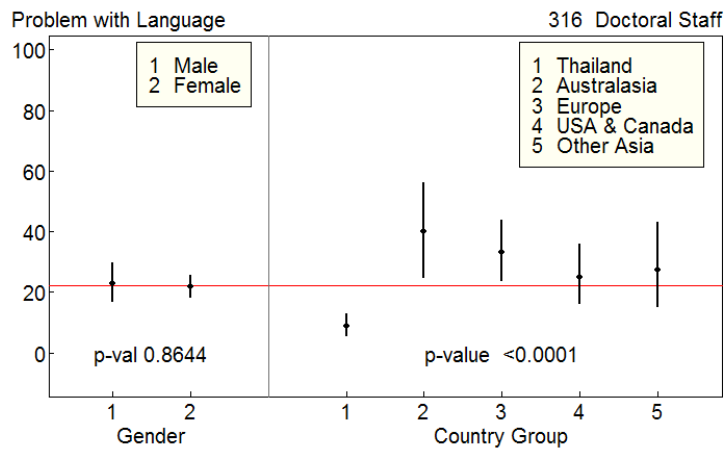


Figure 5 Estimated 95% confidence intervals for problems with language, shown by factor levels.

Materials

There is no doubt that student who studies for a doctorate experience a variety of common problems. However, 33 (10.4%) persons expressed problems with materials while they studied for the doctorate. Students in Thailand were more likely to encounter problems with materials. The frequency of such prob-

lems did not differ by gender. There were problems with using software, and with none or substandard technical instruments. Many students were engaged in building new instruments or experimental devices, and access to advanced instruments was limited or prohibitively expensive (Figure 6).

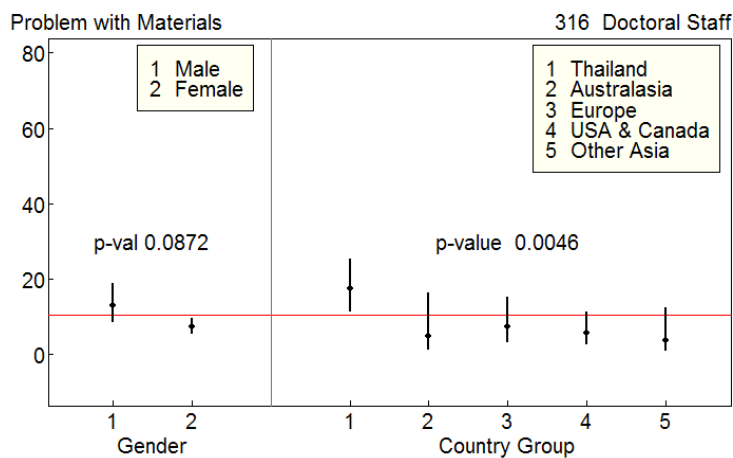


Figure 6 Estimates of 95% confidence interval for problems with materials, by factor levels.

Other problems

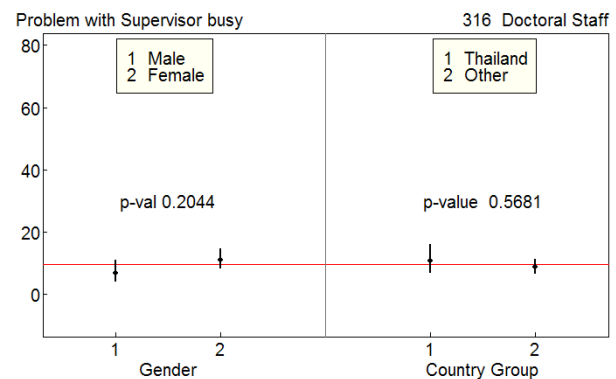
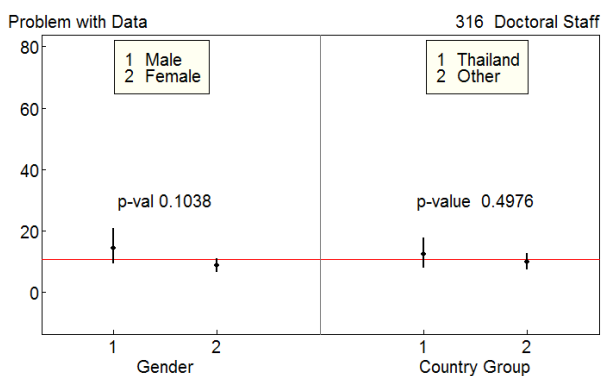
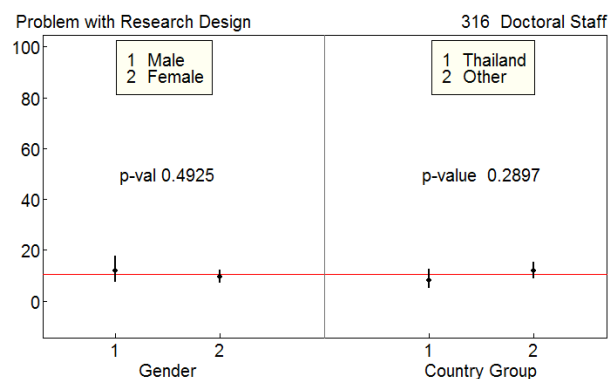
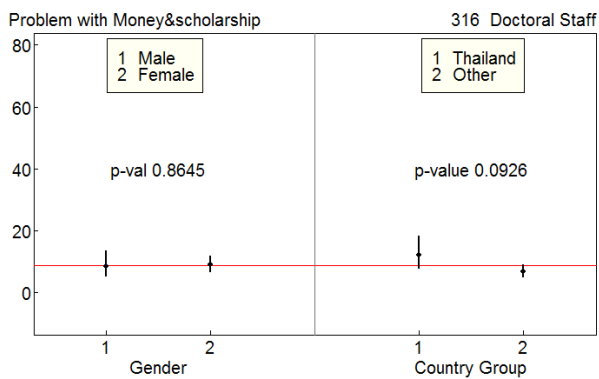
A small number of respondents expressed concerns about other problems during their studies (Figure 7). We contrasted studies in Thailand with studies elsewhere.

Only 28 students (8.9%) expressed problems with money and scholarship. These included lacking budget funds, having to pay for downloads, expensive chemicals, and budget limitations in collecting data. Thirty three students (10.4%) reported problems with the design of their research. They expressed difficulties with understanding the content of their research, with writing papers, with new topics, with original novel work, with lacking examples to follow, or with reviewing literature. The problem or theme of research was highlighted as a source of difficulties. Students carrying out qualitative studies experienced difficulties with collecting data.

There were 34 students (10.8%) who claimed they lacked data to study. They reported difficulties with finding data, lack of literature, incorrect data, no good teamwork in collecting data, no expertise in the field, faulty specimens, difficulties with finding specimens, data that was not up-to-date, inability to collect data, and incomplete data.

The problems attributed to the supervisor fell into two groups, namely students thought their supervisor was too busy, or they doubted the academic efficiency of the supervisor. Thirty students (9.5%) expressing problems relating to the supervisor was too busy, having no time to advise and support them. Often the supervisor had too many students, and it was hard to find time for thesis supervision.

In 39 cases (12.3%) the academic efficiency of the supervisors was considered poor. These cases included supervisors who were not experts in the field of study, or who provided unclear and inconsistent advice and suggestions.



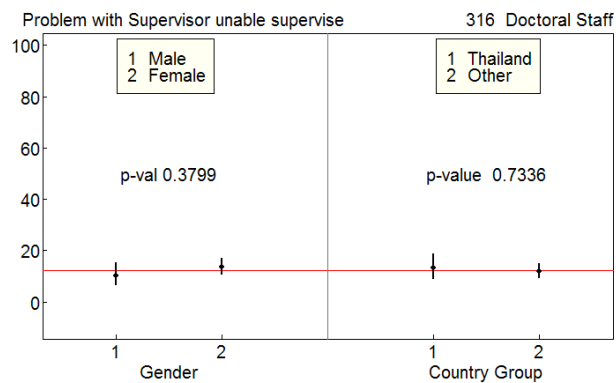


Figure 7 Estimated 95% confidence intervals for frequencies of other problems reported in the survey.

Discussion

The findings from this study show that the country of doctoral study was found to be associated with doctoral achievement. The questionnaire responses about problems the university staff had encountered during their studies for doctoral degree fell into 8 categories. Although the sampling was relatively small and the response rate not particularly high, the results can impact later doctoral studies. Many responses indicated common difficulties during the studies, but these did not necessarily impact achieving the doctoral degree. The supervisors' score given by their doctoral students was not associated with success in achieving the degree. In Thailand, problems regarding time were common, but this might refer also part-time studies, which could be addressed in a further study. The problems experienced with materials did not predict success or failure. Often, despite such problems the subjects were successful in gaining their degrees. This finding is similar to those in several prior studies (McAlpine et al., 2009; Abiddin & Ismail, 2011; Pyhältö et al., 2012).

Many students expressed the view that they had problems with the study language. Language was occasionally a problem also for students who stayed in their native Thailand for studies, because English was used to communicate, and to write papers and theses, especially in an international program. Similar to international students who studied abroad, English language skills such as writing ability, understanding and speaking English adequately were a source of

stress (Wan, Chapman, & Biggs, 1992; Adrian-Taylor, Noels, & Tischler, 2007). English language is the dominant international language in Thailand, but Thai people communicate by using Thai language in their daily lives, so their proficiency in English is not necessarily well developed. Language problems were not only common with the English language, but also with French, German, Chinese, and Japanese, among others. Thai students lacked confidence in their mastery of appropriate academic language, or in reaching proper standards in the native language (Wang & Li, 2008). Time issues were a frequent category of problems for the doctoral students. This finding agrees with McAlpine et al. (2009). Frequently the students did not get enough time with their supervisors, because they were too busy to be effective in their advisory roles for having too many other students to supervise, for heavy classroom lecture obligations, and for various meeting. This finding agrees with the study by Wadesango and Machingambi (2011). Most students in this study were satisfied with the care given by the supervisors, similar to the Australian PhD candidates in the study by Heath (2002).

The most frequently cited cause for delays in completing the doctoral studies was the lack of adequate mentoring or advising (Valero, 2001; Abiddin & Ismail, 2011). Students indicated that supervisors had too many other students to supervise or to attend, heavy lecturing obligations as well as attending to administrative obligations (Wadesango & Machingambi, 2011).

Conclusions

This study surveyed staff members of one university who had enrolled in a doctoral program, whose outcome in terms of degree received or not was already known. The subjects in this study were in general confident in their abilities to deal with difficulties. Accessibility of the advisor, who is typically professionally active and perhaps overburdened, was perceived as a frequent key problem during the studies. A limitation of a survey study like this, especially due the low response rate is that types of problems that were not reported might still exist.

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