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SAUDI MATHEMATICS STUDENTS' EXPERIENCES AND CHALLENGES WITH THEIR DOCTORAL SUPERVISORS IN UK UNIVERSITIES

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ABSTRACT

Aim/Purpose	The purpose of this study is to identify the challenges Saudi doctoral students studying in UK universities face with their supervisors, shed light on their experiences, and examine the extent to which these experiences impact their ability to complete their thesis. Furthermore, the aim is to examine the aspects of supervision the students found to be effective during their studies.
Background	The overall intention of this article is to provide more information about the experiences and challenges Saudi mathematics students face with their doctoral supervisors in UK universities. Therefore, overcoming these difficulties will enhance the academic success rates of Saudi students, and will help them to complete their studies on time when studying at UK universities.
Methodology	This was a multi method project resulting in the collection of both qualitative and quantitative data. It started with a questionnaire, which was administered to 300 Saudi doctoral students, 32 of whom subsequently agreed to be interviewed. The sample was randomly selected from doctoral students who were specializing in curricula and methods of teaching mathematics and other related areas.
Contribution	This study added information to the literature on Saudi mathematics students' experiences and challenges with their doctoral supervisors in UK universities. This also represents the first study to be context on this subject within Saudi Arabia.
Findings	There are some positive and negative challenges experienced between doctoral students and their supervisors, which are comprised of four main dimensions: team supervision, the supervisory relationship, the elements of effective supervision in their current supervisors, and supervisors' written feedback. Additionally, based on their experiences, the students stated the specific elements of supervision that were effective, including general knowledge of the research area and research methods, receiving continued support from the supervisory team, and the establishment of regular and realistic deadlines, friendliness, approachability and

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	flexibility, the provision of detailed feedback on students' work, joint meetings with both first and second supervisors, constructive criticism, and sufficient interest in their research.
Recommendations for Practitioners	The stakeholders in Saudi Arabia should take advantage of the answers given by the participants to help those and future students. Furthermore, this study invites doctoral students to solve the challenges they face with their supervisors immediately, in order to be able to complete their thesis on time. Additionally, it is important that university and departmental administrative bodies consider tracking their study paths to better assist students. Furthermore, universities should be clear regarding the different roles and responsibilities of the students and their supervisors before the candidates commence their studies.
Recommendation for Researchers	Further research is needed to explore supervisors' views and experiences, as well as staff supporting and coordinating doctoral programs who may have a more holistic view of the supervisory process.
Impact on Society	The study participants' experiences of their doctoral studies could be highly beneficial for comprehending the problems that confront them when studying, which will enable better assistance to be provided.
Future Research	Future studies could be extended to other areas of the education field. Furthermore, particular measures can be implemented to enhance supervision, which could be associated with satisfaction levels and/or the performance of students.
Keywords	doctoral students, supervisors, UK universities, experiences and challenges

INTRODUCTION

When studying in a PhD program, the student's research supervisor is a key individual throughout the study process; as a result, it is important that the supervisor and student establish a functioning working relationship (Bair & Hawoth, 2004; Murphy et al., 2007; Shariff et al., 2014; Tahir et al., 2012). According to Sambrook et al. (2008), "the purpose of supervision is to steer, guide, and support students through the process of conducting a doctorate" (p. 72). Thus, supervision quality represents one of the most important problems that can prevent students, from completing PhD programs successfully in Higher Education Institutions (HEIs) around the world (Latona & Browne, 2001; Petersen, 2007; Wright, 2003). Research has demonstrated that academic support is conducive to completing a degree in a timely, and satisfactory manner (Devos et al., 2015; Johnston et al., 2016; Maher et al., 2004; Overall et al., 2011). By contrast, insufficient or scant academic support could lead to a delay in completing a degree, a failure to meet expectations, or even dropout (Devos et al., 2015; Maher et al., 2004; Van de Schoot et al., 2013). Arguably, high-standard supervision plays an important role in completing a doctoral degree in a timely manner and in producing high-quality scientific outcome. (Spaulding & Rockinson- Szapkiw, 2012). Therefore, the purpose of this paper is to identify the challenges that Saudi doctoral students studying in UK universities face with their supervisors, to shed light on their experiences, and to examine the extent to which these experiences impact their ability to complete their thesis. The results that this study will identify are expected to assist staff coordinating doctoral programs in UK universities, the Ministry of Education in Saudi Arabia, supervisors who work at the Saudi Cultural Bureau in London, and supervisors who work at Saudi universities as they work with students to complete their doctoral studies successfully.

STATEMENT OF THE PROBLEM

A robust conclusion derived from doctoral education research is the importance of superior quality supervision to ensure that doctorate students are satisfied with their courses and complete them in a timely manner (e.g. Bair & Haworth, 2004; Kolmos et al., 2008; Pyhältö et al., 2015; Skakni, 2018;

Spaulding & Rockinson-Szapkiw, 2012; Stubb et al., 2011; Woolderink et al., 2015). Researchers have identified that effective supervision is a key component in the process of completing PhD courses in a timely manner. For example, research conducted in the UK by Abiddin et al. (2009) revealed that the majority of students in PhD programs who do not complete their studies successfully generally explain their failure by identifying problems experienced with supervision to be the primary cause. In a similar manner, as part of their conference paper focused on the attrition, completion and time taken to complete doctoral courses, Bourke et al. (2004) suggested that supervisory issues were cited as the primary cause of students not completing their studies. Likewise, Orellana et al. (2016) stated that the style adopted by the supervisor is one of the main determinants of the student's progress. For a large number of international students, insufficient funding is the main reason for their inability to complete their studies on time. Nevertheless, the majority of international students from Saudi Arabia are supported by copious scholarships offered by the Saudi authorities, which means that funding does not impact their persistence rates. Therefore, overcoming these difficulties will enhance the academic success rates of Saudi students, and will help them to complete their studies on time when studying at UK universities.

THEORETICAL FRAMEWORK

It is widely recognized with regard to postgraduate education research that the quality of supervisors has a considerable impact on the satisfaction levels of doctoral students as well as their capacity to finish their courses on time (e.g., Bair & Haworth, 2004; Kolmos et al., 2008; Pyhältö et al., 2015). Investigation has been conducted into various elements of PhD supervision, for example, the availability of the supervisor, the quality of the relationship between the supervisor and the supervisee, as well as various kinds of support (Bair & Haworth, 2004). Nevertheless, numerous studies have a disadvantage in the absence of a well-grounded theoretical framework (Devos et al., 2015). Therefore, to provide the fundamental for more comprehending of the issues related to timely completion of doctoral programs, self-determination theory (Deci & Ryan, 1985) will be used as the framework for the current study.

More specifically one of the mini-theories of self-determination theory called "basic needs theory" (Ryan & Deci, 2017), which presupposes that people endeavor to meet the following three basic requirements: competence, relatedness, and autonomy (Hagger et al., 2006; Ryan & Deci, 2002). According to Deci and Ryan (1985, 2000), autonomy originates from a sense of well-being, discerning the capability of selecting a person's course of action, as well as experiencing the situation of such actions. Competence is associated with one's perception of attainment, in addition to feeling adequate and confident while completing a task (Deci & Ryan, 1985, 2000). The self-determination theory (Deci & Ryan, 1985) is, at all times, associated with a person's discerned competence, which may differ from that person's real standard of ability. Relatedness may be described as the need for a "psychological sense of being with others in secure communion or unity" (Ryan & Deci, 1985, p. 7). This concept includes feelings associated with a sense of belonging to other individuals and to a community. The level to which persons perceive as being associated with their community will improve their intrinsic motivation.

SAUDI STUDENTS ABROAD

As stated in Abdullah (2019), a recently published report by the Agency of the Ministry of Education for Scholarship Affairs revealed that the total number of Saudi students studying abroad was 92,997. These included 52,038 scholarship students, 18,560 are employees sent on study scholarship, 13,049 students using their own funding, and 9,350 are dependents of scholarship students (Abdullah, 2019). According to data provided by the Ministry of Education for Scholarship Affairs, the total number of students studying around the world is as follows: the United States with 51,083, followed by the United Kingdom with 14,614, Australia with 6,694, Germany with 1,929, Ireland with 1,162, France with 743, the Netherlands with 404, China with 382, Austria with 339, and Japan with 319, while

there are 15,328 students in other countries (Abdullah, 2019). The following sections will review the associated literature and studies connected to this study.

DOCTORAL SUPERVISORS

TEAM SUPERVISION

Åkerlind and McAlpine (2017) underscore the need to conduct further research on supervisory teams that assess the degree to which they provide clarity on their diverse roles and perspectives on the purpose of doctoral. In turn, this approach might enhance the likelihood of doctoral students to attain doctorateness. However, Guerin et al. (2015) identified that there is not one correct model for educational supervision that can be imposed on doctoral pedagogy in terms of team supervision. Therefore, as contended by Robertson (2017), the structure of the supervisory team needs to be individualized according to the specific student, subjects, and the context of recruitment. Furthermore, he alluded to the fact that "the pedagogy is strongly influenced by the team structure, drawing on the expertise and dispositions of individuals and their preferred approaches and working patterns" (p. 360). These fundamental pedagogical principles are critically important for both the doctoral students and their supervisors. Every supervisory team member brings with them their own particular history and educational background and participates in this presumably productive learning and developmental context with a plethora of knowledge and established working practices (Guerin et al., 2015).

THE SUPERVISORY RELATIONSHIP

A productive relationship between supervisor and student is one of the primary factors that contributes to the success of doctoral programs. PhD students who complete their studies rapidly indicate that they have increased contact with their supervisors in comparison to students whose completion of their programs is delayed (Cornér et al., 2017; Lee, 2008). Furthermore, regular supervisory engagement and strong compatibility between doctoral students' and supervisors' perceptions of effective supervision practices are connected with a reduction in dropout rates and augmented satisfaction levels (Pyhältö et al., 2015). Moreover, Pyhältö et al. (2015) contended that doctoral students believe that personal contact with their supervisor is particularly important and take advantage of the opportunities to utilize diverse resources, like supervisory teams. Productive supervisor relations, regular meetings, a casual atmosphere in such meetings, as well as an understanding and kind attitude towards the student being supervised are correlated with improved progress and satisfaction among doctoral students (Cornér et al., 2017; Pyhältö et al., 2015; Zhao et al., 2007). Communicative difficulties, insufficient professional skills, and power clashes between doctoral students and supervisors have been demonstrated to have negative effects on the doctoral journey (Ismail et al., 2013; Robertson, 2017). Therefore, the effectiveness of the relationship between the supervisor and the student, impacts the level of satisfaction the student feels towards the educational process (Zhao et al., 2007).

THE IMPACT OF SUPERVISORY CHANGE

According to Blair (2016), although consideration may be given to changing supervisors, this should be only as a last resort. The first step is to meet the supervisor as a means of resolving difficulties before they intensify. In order to articulate the difficulties, it is wise to discuss them with a trusted friend, prior to meeting the supervisor. Although students may perceive that their supervisor is not supportive, it is important that they understand why this so. Griffiths et al. (2016) suggested that students should be certain of why they wish to change supervisors and should also seek advice from a person outside the supervisory team for advice prior to discussing this with the supervisor. The supervisor should be consulted only after the student is clear about his/her reasons to change and understands the procedures of the university.

Nevertheless, Griffiths et al., (2016) stated that, in certain situations, the transition between supervisors could be unexpected and sudden, for instance, as a result of long-term sickness. Supervisors, in

such circumstances, may be unable to support the transition themselves, but it is possible that an educational institution may have processes for managing such transition between supervisors. Nevertheless, even if this is not the case, it is important that students notify the director of their program and about their requirements so they may continue uninterrupted. In the meantime, the department will forward the student's current records, a procedure in which students ought to participate. It will be helpful for supervisors to supply a written, chronological, and up-to-date account of the student's thinking as well as support details and useful input. Supervisors need to understand how their students work, in addition to their work content; a written account will also be of help in communicating this.

In addition, Burnett (2014) offered some beneficial advice in terms of how students can manage supervisory changes. For example, he stated that supervision is a subjective process; in other words, while one supervisor may perceive a research proposal to have significant merit, another may consider it to have no value. If students seek a new supervisor, this could have an impact on the direction that their PhD is taking. Therefore, it is important that when making such decisions, students should consult with candidate supervisors prior to making the adjustment. While certain supervisors give students feedback in electronic format, others prefer the more personal nature of face-to-face contact. Therefore, it is important that students and supervisors discuss their expectations at the start of the process so that any differences can be identified and addressed before negative situations arise. Students are advised not to use their prior supervisor as justification for choices they make in relation to their research. Students must take responsibility for their research, and, if they are unable to justify the decisions they have taken during their studies, it is possible that they should be reviewed, as these types of questions could be included in the Viva. (The Viva is an oral examination that usually occurs month to three months after submitting the final copy of the thesis.) Revising completed sections and reflecting on prior work should be considered as a positive experience rather than an indication of failure. Although this may appear to be difficult, when students are in their Viva, they will be able to provide sincere justification for their research.

Supervisors' Written Feedback

According to Manjet (2015), doctoral students experience problems when writing academically in terms of expressing ideas, connecting ideas, ensuring their assignment is sequenced correctly, and enhancing their clarity of their writing. Consequently, it is significantly important that faculty members provide constructive feedback in writing, in order to enhance the academic writing abilities of students. Additional areas in which students regularly require advice include logical order and the arrangement of ideas and information, as well as the linkage and flow between sentences, paragraphs, or sections. Likewise, Gulfidan (2009) also noted that doctoral students were cognizant of these challenges and had the expectation that feedback would be provided in terms of the actions they could take to enhance the transitions between sentences, paragraphs, and sections. Bitchner et al. (2011) claimed that the elements of cohesion and coherence in the generation of arguments presented certain challenges for some students when writing their thesis.

On the basis of prior research by Manjet (2015), it was determined that the concepts of academic writing that doctoral students acquire from their previous academic experiences are different from the requirements with which they are confronted when they embark on doctoral programs. Due to the fact that their previous learning has a significant impact on their writing style, both lecturers and thesis supervisors have particular importance in terms of providing constructive feedback to students in writing, to enhance their academic writing abilities in line with the stipulated guidelines and academic writing culture that prevails within the respective higher-education institution. In the next section, the elements of effective supervision as perceived by graduate students will be reviewed.

ELEMENTS OF EFFECTIVE SUPERVISION

Davis (2019) explored the perceptions of students regarding the attributes a perfect supervisor should have, in addition to the attributes they perceived in their present and previous supervisors. Covering a total of 15 universities in Australia and a variety of different fields, 698 students volunteered to participate in a survey in which they were asked to offer descriptions of their supervisors' attributes in addition to their perceptions of the characteristic of a perfect supervisor. The survey was student centered, meaning that students were asked to submit the attributes of their supervisor(s) instead of requiring them to give responses to statements pertaining to supervisors/supervision on the basis of a Likert-type scale. According to the research findings, the student-submitted perceptions of the negative and positive attributes of their supervisors reinforced the outcomes of other research, which demonstrated that students appreciate and want supervisors to have cognitive and affective people-related qualities over being experts in their particular field or research area. According to 25 percent of the study sample, their main supervisor did not possess any of the qualities they expected from the perfect supervisor, although 50 percent said that their supervisor possessed one such quality.

In a different study conducted by Ali et al. (2016), the opinions of doctoral research students and research supervisors regarding doctoral research supervision and the relationships between students and supervisors were investigated. The data collection process involved an internet questionnaire comprising 30 Likert-type questions, which was administered to a total of 131 doctoral research students as well as 77 supervisors. On the basis of exploratory factor analysis, the research constructed a three-factor model comprised of leadership, knowledge, and support. The findings showed that there was a consensus among students and supervisors regarding the characteristics of effective supervision. According to both supervisors and students, a supervisor should be interested in the research the student is conducting. Furthermore, the supervisor should provide constructive feedback in a timely manner and should provide assistance in the time management process. Students and supervisors believe a supervisor should help the students where limitations and learning needs are identified. Students stated that supervisors should empower students to conduct research independently, and to utilise all opportunities to present their work.

Numerous different salient issues have arisen from the literature review relating to students' perceptions of effective supervision in doctoral studies, and it is evident that some researchers have clarified a number of related perceptions. However, the present study differs from the previous ones that have been reviewed thus far in that this study attempts to address the issue more rigorously as follows. Firstly, all the previous studies reflected on the experience of doctoral students studying in their own countries, but the present study focuses on Saudi students who are studying in the UK. Secondly, this study adopts a combination of questionnaire and semi-structured interview methods, while previous studies have not used semi-structured interviews to collect their data, such as Davis (2019), Manjet (2015), and Ali et al., (2016). Thirdly, the previous studies such as Davis (2019), Manjet (2015), and Ali et al., (2016) focused on both students and supervisors, whereas the current study focuses only on students. Fourthly, the current study concentrates on students whose major is mathematics, which has not been a factor in previous studies. Fifthly, the samples of the previous studies were not from Arabic countries, whereas the sample in the current study is comprised of students from Saudi Arabia, and this also represents the first study to be context on this subject within Saudi Arabia.

METHODOLOGY

The study was conducted in universities in the United Kingdom (UK). All participants were Saudi doctoral students (full time), including a total of 300 doctoral students who were specializing in curricula and methods of teaching mathematics and other related areas. In total, questionnaire responses were received from a total of 300 students, and 32 of them subsequently agreed to be interviewed.

RESEARCH QUESTIONS

This study investigates the following research questions:

1) What were the students' experiences, challenges and their perceptions of their supervisors during their studies?

2) What are the elements of effective supervision from the perspective of graduate students based on their study experiences?

RESEARCH APPROACH

A multi-method approach was adopted for the data collection process in this study. The students' views with regard to their supervisors were initially elicited from their written questionnaire responses, which were subsequently followed up with more in-depth questioning about the responses through the use of semi structured interviews. According to Kendall (2008), a more extensive awareness of the viewpoints, concepts and actions of questionnaire participants is frequently generated by qualitative interview data, whereas verification of patterns within sizeable populations can be obtained from such questionnaires.

QUESTIONNAIRE AND INTERVIEW DESIGN

The questionnaire was designed in three parts. The first part contains background data about the participants, followed by 16 statements aimed at obtaining the perceptions of students of their supervisors. The final part contains 16 statements about the elements of effective supervision from the perspective of graduate students (see Appendix, Table A1). The same questions that were asked in the questionnaire formed the basis of the interviews. However, the reason for using the semi-structured method was because this interview approach can enable the interviewer to introduce new questions based on the interviewees' answers (Zhang & Wildemuth, 2009). Therefore, this method was appropriate for examining the concerns expressed by the participants rather than rigidly adhering to a series of fixed questions that comprise structured interviews (Minichiello et al., 1995).

Translation of the questions

The questionnaire and interview questions were written in Arabic and later translated into English, a process that was followed by asking a different person to produce a translation to compare and ensure accuracy. Because the language of the respondents was Arabic, the questionnaire was read by five specialists in Arabic language were consulted separately to receive their comments on the possibility of any ambiguous wording.

QUESTIONNAIRE AND INTERVIEW PILOT

A further process, which is of assistance in evaluating the validity and reliability of the questionnaire, is to test the research instrument (Aldridge & Levine, 2001; Bell, 2005; Bryman, 2008; Cohen et al., 2007; Gay & Airasian, 2003; Wilkinson & Birmingham, 2003). Moreover, Cohen et al. (2007) emphasize the significance of piloting the questionnaire as well as editing its contents.

The questionnaire was piloted meticulously in order to guarantee an acceptable standard of validity. Subsequently, the following groups participated in piloting it:

 Experts as indicated by Cohen et al. (2007).

 Colleagues as indicated by Wilkinson and Birmingham (2003).

 A participants' sample in the main study as indicated by Cohen et al. (2007), Wilkinson and Birmingham (2003) and Bryman (2008).

Fifteen Saudi colleagues, who are experienced in this area, and who are studying for their PhD degrees in the United Kingdom, completed the questionnaire. Furthermore, they were requested to mention their individual experiences regarding ethical matters, especially those appertaining to Saudi culture. Twenty-one students, who were representative of those who participated in the main study, completed the questionnaire.

According to Bryman (2008), this process has a potential impact on future representations within the sample. This is particularly the case where the selected group is representative of part of the main sample; consequently, the 21 students who completed the questionnaire were not included. Since colleagues are unrepresentative of the target population, Aldridge and Levine (2001) are critical of the dependence on them in evaluating the questionnaire. In contrast, Cohen et al. (2007) propose that experts on questionnaires are consulted, such process being applied in this paper.

It is advocated by Gay and Airasian (2003) that, in order to verify the validity of the questionnaire, those who review it should answer it themselves. Following the completion of the questionnaire in this pilot study, each participant in every group responded to questions according to Bell (2005), which included:

- Did you fail to answer any of the questions?
- Were the instructions ambiguous in any way?
- Was the questionnaire too short, the correct length, or excessively lengthy?
- What part or parts of the questionnaire did you find unclear?
- Please suggest any topics that you think could be added.
- Was the questionnaire design appealing and acceptable?
- Do you wish to add any comments?

With regard to the level of the scope and clarity of the questionnaire, the answers were useful. Pilot interviews were then conducted to determine the relevance of the interview questions, as well as to assess the duration of the interview and to evaluate the ability to perform the task. The interview rehearsal was administered to two doctoral students.

The benefits gained from piloting the questionnaires

The participants' comments at the pilot stage led to numerous advantages. Firstly, the pilot sample was clear when the Arabic and English versions of the questionnaire were compared. Because the first language of the participants, is Arabic, they preferred the Arabic version; moreover, Gass and Mackey (2007) advocated this.

Furthermore, the participants emphasized the significance of the letter that accompanied the questionnaire, the purpose of such letter being to clarify the study. Moreover, they recommended that the participants read this letter in the main study.

The authors also used this feedback to improve the questionnaire by reducing its length and deleting repetitive statements.

VALIDITY AND RELIABILITY OF THE QUESTIONNAIRE

Although the questionnaire's validity and reliability may be tested by applying several methods, the principal aspect of the questionnaire is validity, of which reliability is a subset. Validity indicates the questionnaire to be comprehensive and that, in a fair manner, it addresses the matter under investigation (Gass & Mackey, 2007). Fraenkel and Wallen (2008, p. 153) define the validity as "the appropriateness, meaningfulness and usefulness of the specific inferences researchers make based on the data they collect." Subsequently, it is possible to verify the questionnaire's external validity by considering

the opinions of academics regarding its framework and content (Bryman, 2008; Cohen et al., 2007; Crowl, 1996; Gay & Airasian 2003; Gass & Mackey, 2007). In order to attain this objective, twelve members of an academic curriculum and instruction department at Saudi Arabian universities were consulted for discussion of the questions asked in the interviews and in the questionnaire.

Therefore, in this study, the researcher adopted face-validity and content-validity. Oppenheim (2001) stated that "content-validity seeks to establish that the items or questions are a well-balanced sample of the content domain to be measured" (p. 162). There are actually numerous methods of attaining content-validity, ranging from dependable research construction by submitting the plan to experts, to analysing the validity and reliability statistically. There are formulae; for example, Cronbach's Alpha coefficient which ranges from zero to one (unreliability-reliability) (Gay & Airasian, 2000).

Having established the ideas of validity and reliability, the following section will consider the face validity of this study.

Face-validity

In order to attain the optimal degree of face-validity in this research, particular actions were taken prior to the final dissemination of the questionnaire. Such actions may be summarized as follows: submitting the questionnaire to a proof-reader in order to improve clarity; offering it to colleagues at the Department of Education, particularly for discussion with doctoral students, and submitting it to experts and specialists in this area of research and study. The final step was to submit the questionnaire to a committee comprising referees, in order to assess for every aspect including clarity, language, duplication, and contradiction. The Arabic and the English versions were presented to this body, accompanied by a cover letter. Furthermore, the questionnaire was submitted to a statistician for the purpose of assessment, as well as to receive help in selecting the correct measurement (Cohen et al., 2004; Gay & Airasian, 2000; Oppenheim, 2001).

The reliability of the questionnaire

The researcher applied Cronbach's Alpha coefficient in order to evaluate the internal reliability of different parts of the questionnaire. A research instrument is regarded as being reliable when the reapplication of the tests produces similar results (Alduhayan & Ezat, 2002; Cohen et al., 2003). Moreover, it is encouraging that factor analysis indicated a similar pattern to the original design. The researcher used Cronbach's Alpha coefficient as a means of evaluating the reliability of the different parts of the questionnaire. This coefficient may have a maximum value of one and a minimum value of zero. Although the test is more reliable with higher values, exceptionally high values can cause problems.

The results are reasonable, ranging from a minimum of 0.75 for component 1 (team supervision) to a maximum of 0.86 for component 4 (the elements of effective supervision in their current supervisors). The Cronbach's Alphas for each component are sufficiently high to conclude that the scales are reliable (internally consistent).

It ought to be mentioned that some researchers; for example, Alassaf (2010), are of the opinion that Cronbach's Alpha coefficient should be at least 0.80 in order to ensure reliability. However, other researchers, for example, Nunnally and Bernstein (1994), claim that Cronbach's Alpha coefficient should be at 0.70 or above. Moreover, Cohen et al. (2007, p. 506) contend that this coefficient may be considered as "> 0.90 very highly reliable, 0.80-0.90 highly reliable, 0.70-0.79 reliable, and 0.60-0.69 marginally/minimally reliable."

SAMPLING PROCEDURES

Various methods may be applied in conducting this questionnaire, for instance, personal interviews, email, or mail (Aldridge & Levine, 2001; Bell, 2005; Cohen et al., 2007; Gay & Airasian, 2003; Wilkinson & Birmingham, 2003). In this study emails inviting doctoral students who were specializing in

curricula and methods of teaching mathematics and other related areas to participate in the study along with a link to the online questionnaire were distributed. A reminder email was sent three weeks after the initial invitation to encourage participation. The questionnaire was attached with a letter explaining it as recommended by Cohen et al. (2007). Therefore, a cover letter was included with the distributed questionnaire in order to guarantee the largest possible number of participants. The letter indicated the research's principal topic and the means of responding to the questions and asked the respondents to be cooperative by replying quickly; it also provided details on how the questionnaire should be returned. Furthermore, strict confidentiality would be guaranteed with the answers, which we used exclusively for research purposes. Finally, the participants were thanked in advance for their participation. Cohen et al. (2004) stated the purpose of the covering letter was "to indicate the aim of the survey, to convey to respondents its importance, to assure them of confidentiality, and to encourage their replies" (p.97). After receiving the completed questionnaires from the participants, 32 of them, who had been selected randomly, agreed to be interviewed. During the interview, in order to ensure a smooth interview process, the environment was ensured to be suitable and secure with enough space and the necessary facilities; for instance, it was verified that a tape recorder and batteries were present and functioning prior to the day of the interview. A 30-45 minute interview was planned for each interviewee.

DATA ANALYSIS

The responses to the questionnaire were coded and entered into Microsoft Office Excel from which they were transferred to the statistical package for social science (SPSS), under the supervision of a statistics specialist. It is important to mention that the statistics consultation began from the design stage in order to choose the appropriate measures to attain the study's objectives. Thematic analysis, which is one of the tools of grounded theory, was utilized in order to analyze the interview data. Initially, every interview was recorded and subsequently transcribed, and the data were then read and reread. The next stage involved the application of thematic coding (underlining the text in various colors) and then the data were matched to separate categories, thereby enabling reduction and synthesis of the large amount of data. Subsequent to this, every recognized commonality was divided into topics. It was necessary to supply the following three ethical requirements. Firstly, all participants were informed that they were volunteers in this study and had the right to ask for any of the responses they had given previously to be removed. Secondly, the confidentiality of participants' identities and personal details was guaranteed, meaning that their names would not be included in the course of the translation procedure. The third involved providing the participants comprehensive details regarding the purposes of the research.

THE DOCTORAL SUPERVISION MODELS

Due to the fact that the doctoral supervision models applied in different countries can differ (Watson et al., 2011), it is necessary to explain the specific context in the UK, to assist with the reader's comprehension of the study setting. PhD students at UK universities will generally be assigned a supervisory team comprised of a minimum of two supervisors. This team is usually established before the student embarks on their educational journey. Generally, the supervisory team continues in the same form for the duration of the PhD research project, which lasts three years for full-time students and four years for part time), but they are not involved in examining the final thesis. Usually, every research thesis submitted will be subject to examination by one Internal Examiner in addition to an External Examiner, who is normally a faculty member at a different academic establishment.

RESULTS

The following section describes the results of 300 responses to the questionnaire that was designed to identify the challenges Saudi doctoral students studying in UK universities face with their supervisors. In regard to the interviews, the findings are presented in the discussion section.

Tables 1 to 5 show a summary of the responses of everyone who completed the questionnaire. We can see the mean, standard deviation, and rank of all four dimensions, which are presented as a summary table (Table 1) with details of each one being provided separately (Tables 2 to 5). It is important to clarify for the reader what the numbers in these tables signify. Next to the statements in Tables 2 to 5 there five possible answers, *Strongly Disagree* (S D,) *Disagree* (D), *Neither agree nor disagree* (N), *Agree* (A), and *Strongly Agree* (S A); the numbers below these answers refer to the total number and percentage of 300 participants.

Table 1 shows the mean, standard deviation, and rank of all four dimensions: (A) team supervision, (B) the supervisory relationship, (C) the elements of effective supervision in their current supervisors, and (D) supervisors' written feedback, and Figure 1 also presents the mean of each dimension. The largest average value was the "team supervision" dimension with a mean of 4.45 (i.e., Strongly Agree) and a standard deviation of 0.13. The lowest average value dimension was "supervisors' written feedback" with mean of 2.14 (i.e., Disagree) and a standard deviation of 0.83. We can see that dimensions one and two have the mean response of Strongly Agree, while dimension three has Agree, and the last dimension has Disagree.

Table1. Mean, standard deviation, and rank of all four dimensions

#	Dimensions	Mean	Std. Deviation	Rank
1	TEAM SUPERVISION	4.45 (S A)	0.13	1
2	THE SUPERVISORY RELATIONSHIP	4.32 (S A)	0.43	2
3	THE ELEMENTS OF EFFECTIVE SUPERVISION IN THEIR CURRENT SUPERVISORS	3.70 (A)	0.21	3
4	SUPERVISORS' WRITTEN FEEDBACK	2.14 (D)	0.83	4

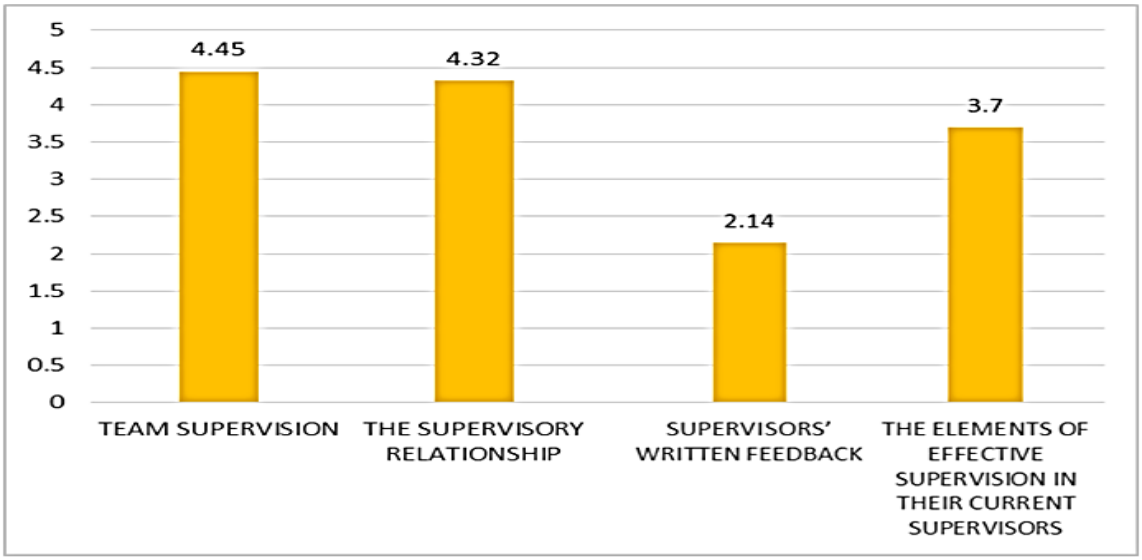

Figure 1. Means of all four dimensions

Table2. Mean, standard deviation, and rank of the first dimension: Team Supervision

#	Statement		The number of responses					Mean	Std. D	R
			S D	D	N	A	S A			
1	Many problems commonly experienced during doctoral studies are related to the supervisory process.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
2	The 'principal' supervisor is the senior researcher who has the final say on any decisions about your project.	F	265	30	0	5	0	1.15 (S D)	0.48	6
		%	88.3	10.0	0	1.7	0			
3	The first and the second supervisor are aware of your project's direction and progress.	F	0	0	0	12	288	4.96 (S A)	0.20	4
		%	0	0	0	4.0	96.0			
4	Airing a plethora of ideas, opinions and decisions easily leads to confusion	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
5	Sometimes, after meeting with the supervisors, I do not know what decisions were made for the project.	F	0	0	0	5	295	4.98 (S A)	0.13	2
		%	0	0	0	1.7	98.3			
6	The main challenges in regard to team supervision for doctoral students is the potential for conflicting advice	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
7	Sometimes, I do not know which supervisor decisions I have to follow. For example, should I choose the easy option or follow my principal supervisor?	F	0	0	0	10	290	4.97 (S A)	0.18	3
		%	0	0	0	3.3	96.7			
8	Supervisors' behaviors might be focused on each other rather than on the student's needs.	F	0	20	0	80	200	4.53 (S A)	0.81	5
		%	0	6.7	0	26.7	66.7			
Total								4.45 (S A)	0.13	

Table 2 shows the mean, standard deviation, and rank of the first dimension: Team Supervision. The largest average value was for statements one, four, and six, respectively, with average values of 5 (Strongly Agree) and the standard deviation was 0.00. Statements three, five and seven are slightly lower in means than are statements one, four, and six, with average values of 4.96. 4.98, and 4.97, respectively. The lowest average value was statement two with average values of 1.15 (Strongly Disagree) and a standard deviation of 0.48. We can see from the above statements that the high percentage of the participants' answers marked 'Strongly Agree' were between 66.7% and 100%, except for statement two where a high percentage of participants marked 'Strongly Disagree' which presented 88.3% from those who completed the questionnaire.

Table 3. Mean, standard deviation, and rank of the second dimension: The Supervisory Relationship

#	Statement		The number of responses					Mean	Std. D	R
			S D	D	N	A	S A			
9	Doctoral students who have more interaction with their supervisors usually take less time to complete their study	F	0	0	5	5	290	4.95 (S A)	0.28	2
		%	0	0	1.7	1.7	96.7			
10	Your perception is that relationships between supervisors and students are crucial to the success of the project.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
11	Many supervisory relationships have ups and downs.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
12	You know that supervision styles differ between supervisors.	F	0	90	10	10	190	4.00 (A)	1.37	3
		%	0	30.0	3.3	3.3	63.3			
13	You alone should take responsibility for the way in which your research progresses.	F	35	65	0	6	194	3.86 (A)	1.60	4
		%	11.7	21.7	0	2.0	64.7			
14	Your supervisors will be able to justify your research in the Viva exam with greater confidence than you.	F	50	60	80	30	80	3.10 (N)	1.42	5
		%	16.7	20.0	26.7	10.0	26.7			
Total								4.32 (S A)	0.43	

With regard to the second dimension, 'the supervisory relationship', we observe that, as Table 3 shows, the largest average value was for statements ten and eleven, respectively, with a standard deviation of 0.00 and where mean was 5 (Strongly Agree). Statement nine has a slightly lower mean than the above statements with an average value of 4.95 (standard deviation 0.28). The lowest average value was statement 14 with an average value of 3.10 (Neither Agree nor Disagree; standard deviation of 1.42). We can notice values from statements nine to thirteen, where a high percentage of the participants' answers marked 'Strongly Agree', were between 63.3% and 100%.

Table 4. Mean, standard deviation, and rank of the third dimension: The Elements of Effective Supervision in Their Current Supervisors

#	Statement		The number of responses					Mean	Std. D	R
			S D	D	N	A	S A			
1	The supervisors' team experience in general knowledge of the research area and research methods.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
2	They help students publish their research in a quality journal.	F	266	12	1	14	7	1.28 (S D)	0.88	11
		%	88.7	4.0	0.3	4.7	2.3			
3	They help students attend scientific conferences on a regular basis.	F	197	54	20	24	5	1.62 (S D)	1.03	10
		%	65.7	18.0	6.7	8.0	1.7			
4	The supervisors' team provides continued support.	F	20	8	0	2	270	4.65 (S A)	1.09	4
		%	6.7	2.7	0	0.7	90.0			
5	Set regular and realistic deadlines.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
6	Help international students who have problem with the English language such as writing.	F	285	14	1	0	0	1.05 (S D)	0.24	12
		%	95.0	4.7	0.3	0	0			
7	Are friendly.	F	0	0	0	23	277	4.92 (S A)	0.27	2
		%	0	0	0	7.7	92.3			
8	Are approachable and flexible.	F	2	16	2	80	200	4.53 (S A)	0.82	5
		%	0.7	5.3	0.7	26.6	66.7			
9	They provide detailed feedback on students' work.	F	20	5	0	80	195	4.42 (S A)	1.07	6
		%	6.7	1.7	0	26.7	65.0			
10	Meet together with the second supervisor	F	7	3	0	0	290	4.88 (S A)	0.67	3
		%	2.3	1.0	0	0	96.7			
11	Read the student's draft before scheduled meetings.	F	130	62	8	14	86	2.55 (D)	1.71	8
		%	43.3	20.7	2.7	4.7	28.7			
12	Are constructively critical.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			
13	Have sufficient interest in their research.	F	0	0	0	0	300	5.00 (S A)	0.00	1
		%	0	0	0	0	100.0			

#	Statement		The number of responses					Mean	Std. D	R
			S D	D	N	A	S A			
14	Motivate students through encouragement.	F	40	77	50	100	33	3.03 (N)	1.25	7
		%	13.3	25.7	16.7	33.3	11.0			
15	Direct students to appropriate resources and training, particularly those whose first language is not English.	F	219	13	10	50	8	1.72 (S D)	1.26	9
		%	73.0	4.3	3.3	16.7	2.7			
16	Notify students in advance when they want to move to another university.	F	0	0	40	60	200	4.53 (S A)	0.72	5
		%	0	0	13.3	20.0	66.7			
Total								3.70 (A)	0.21	

Moving to the third dimension 'the elements of effective supervision in their current supervisors' as shown in Table 4, statements one, five, twelve and thirteen have the largest average value of 5.00 (Strongly Agree) and standard deviation of 0.00. We can notice that statements four, seven, eight, nine and ten have a high percentage of 'Strongly Agree' answers, compared with another degree in the same table. In contrast, we can notice that a large number of the participants marked 'Strongly Disagree' in the following statements: two, three, six and fifteen which have 88.7%, 65.7, 95.0%, and 73.0%, respectively.

Table 5. Mean, standard deviation, and rank of the fourth dimension: Supervisors' Written Feedback

#	Statement		The number of responses					Mean	Std.D	R
			S D	D	N	A	S A			
15	Your supervisors advise you to consult other experienced people in order to improve your performance and skills.	F	66	100	40	69	25	2.62 (N)	1.28	1
		%	22.0	33.3	13.3	23.0	8.3			
17	Students require more constructive feedback and criticism from their supervisors	F	214	44	2	13	27	1.65 (S D)	1.26	2
		%	71.3	14.7	0.7	4.3	9.0			
Total								2.14 (D)	0.83	

As shown in Table 5, the fourth dimension "supervisors' written feedback" has two statements. The largest average value was Statement fifteen with a mean of 2.62 (Neither Agree nor Disagree) and a standard deviation of 1.28. In this statement, a high percentage of the participants' answers was marked 'Disagree', at 33.3%, and 8.3% of the participants' marked 'Strongly Agree' which was considered the low percentage of the participants' answers. Statement seventeen has an average value of 1.56 (Strongly Disagree; standard deviation of 1.26) which is considered the lowest in the mean. In this statement, a high percentage of the participants' answers was marked 'Strongly Disagree', at

71.3% , and 0.7% of the participants marked 'Neither Agree nor Disagree', which is considered a low percentage of the participants' answers.

DISCUSSION OF THE RESULT BY DIMENSIONS

This section discusses the findings concluded from the answers to the questionnaire, the interview questions, and the literature according to four dimensions: (A) team supervision, (B) the supervisory relationship, (C) the elements of effective supervision in their current supervisors, and (D) supervisors' written feedback.

These dimensions have been arranged in this order according to their importance to the participants (see Table 1). We notice that the dimensions 'team supervision' and 'the supervisory relationship' appear in the first and second ranks, respectively, with 4.45 and 4.32, respectively (i.e., 'Strongly Agree'), showing their importance to participants. Students wish to send a message that if their problems in these two dimensions were resolved, they would be able to complete their studies within the recommended timeframe, without requesting an extension. Mathematics students find the diversity of opinions and ideas expressed in teams to be confusing; therefore, they need a consensus from their supervisory team. Furthermore, the relationship between student and supervisors are critical to the student's success, because good student-supervisor relationships are associated with quicker completion times. As mentioned, the basic needs theory postulates that individuals endeavor to meet the following three intrinsic requirements: competence, relatedness, and autonomy (Hagger et al., 2006; Ryan & Deci, 2002).

The third and fourth dimensions have average values of 3.70 and 2.14, respectively. This is because occasionally, mathematics students have no desire for additional constructive feedback and criticism from their supervisors. This is because they believe that this will affect their progress, thereby leading to a failure to graduate on time, meaning that these two dimensions are not a serious problem for them.

TEAM SUPERVISION

Table 2 begins with statement number one in the statement sequence, it can be seen that all the participants Strongly Agreed that many problems commonly experienced during a study are often relate to the supervisory process. In fact, this provides an indication to researchers that certain problems are experienced between doctoral students and their supervisors that need to be solved. According to Table 1 and the responses from the interviews, it can be seen that these problems can be grouped into four categories(A) team supervision; (B) the supervisory relationship; (C) the impact of supervisory change and (D) supervisors' written feedback.

We may note from questions three to eight in Table 2 above that between 66.7% and 100% of the participants marked 'Strongly Agree', except for question 2 where 88.3% of the participants marked 'Strongly Disagree'. All these questions referred to team supervision, which clearly reveals that students can face problems when they meet with their first and second supervisors. Based on some of the interview answers, further evidence can be provided to support this point. For example, one of the participants said:

> *Regarding my perceptions of the supervisors, I will start by talking about the supervisory team. As you know, the role of the supervisors is to help guide our research as mathematics students in the right way in order to complete our research project within the allocated time. I know that there is not one correct model of supervision that can be used to help guide our research and assist us with developing our skills and knowledge, and in fact this is my perception of the supervisors. However, you sometimes face problems and you do not know how to solve them and maybe it can take a long time to solve these problems. … Umm… for example, each doctoral student usually has two supervisors. The problem here is that the first supervisor does not always agree with the second supervisor regarding the type of research method that should be used in our research.*

> *When I met with the first supervisor, I agreed with him that I would use the interview and observation methods answer the research questions, and actually I felt comfortable with this decision. However, when I met with the second supervisor and I told him I that I was going to use the interview and observation methods in my research, and I told him of the reasons for doing this, he said you have to use the questionnaire method to answer your research questions, and I am sure that interviews will not answer your research questions very well. In fact, it took me a long time to convince the second supervisor that I should use the interview and observation methods without a questionnaire. … In fact, I will not forget the time when my first supervisor asked me before I arrived in the UK to tell him my time of arrival so he could pick me up from the airport and take me to my home. He was very polite and this is my general perception of the supervisors here in the UK.*

Additionally, to provide readers with more details about the 'Team Supervision' dimension, the words of another participant are significant:

> *My perceptions of the supervisors are that the supervisory team for a research student consists of a minimum of two staff members, where one of them is the main supervisor, and the second one provides general support during the research project. However, I did not expect that I would experience such a large disagreement between my supervisors. For example, the first supervisor recommended that I used this model for a theoretical framework, while the second one said that this model was not appropriate for the research. Although I had finished writing my literature review, as a result of this disagreement, I was forced to stop writing anything else in order to ensure that I made the right decision. … I think we need to solve this problem, and what should students should do in these situations? Every supervisor thinks that his or her information or ideas are right, and sometimes you might think that both of them are right, and I think this is good. However, this can also lead to significant concerns for students, and they will ask themselves whether they should in fact follow the first supervisor's ideas or opinions because he or she is the main supervisor. The reality is that co-supervision has considerable benefits for us as students, but it needs to be managed harmoniously. This is because being inundated with such a large number of ideas can easily lead to confusion and sometimes paralysis, and this is particularly troubling for mathematics students.*

These findings are consistent with many other researchers, such as Åkerlind and McAlpine (2017), Guerin and colleagues (2015) and Robertson (2017). Åkerlind and McAlpine (2017) underscore the need to conduct further research on supervisory teams that assesses the degree to which they provide clarity on their diverse roles and perspectives on the purpose of doctoral. In turn, this approach might enhance the likelihood of doctoral students to attain doctorateness. However, Guerin et al. (2015) identified that there is not a gold standard supervision model that can be imposed on doctoral pedagogy in terms of team supervision. As a result, as contended by Robertson (2017), it is important to structure the supervisory team in such a way that it is tailored to the student, the subject, and the context of recruitment. In fact, one of the participants expressed that they wanted to provide doctoral students with the following advice:

> *I think the main benefit from team supervision comes when the first supervisor wants to move to another university. The university can ask the second supervisor to continue with the student as he/she will know everything about the student. Otherwise, I do not think there is any other benefit from team supervision. Therefore, I advise all students to share with the second supervisor everything they have done in their project with the first supervisor, because as mathematics students, I think it is difficult to move to another supervisor from another university as the change process can take a long time, and as mathematics students, we cannot progress without a supervisor.*

The advantage is that when the first supervisor decides to move to another university, the student has the option to work with the second supervisor because he or she is familiar with the work as a useful back-up. However, the disadvantage is that two supervisors can provide conflicting advice. Finally, it is recommended that students and their supervisors should clarify the different roles and responsibilities of the relevant individuals in the first meeting.

THE SUPERVISORY RELATIONSHIP

It can be noticed from questions nine to twelve in Table 3 above that a large proportion of the participants (96.7%, 100%, 100%, and 63.3% respectively) marked 'Strongly Agree'. According to the answers given to these four questions about the supervisory relationship, a large number of the participants strongly agreed that supervisory relationships are central to the successful completion of postgraduate studies.

It is evident that the participants believe that that the reason why doctoral students graduate within the expected period is because they receive significant support from and interact effectively with their supervisors during their studies. This appears to be true because effective relationships between students and the supervisors will increase the enthusiasm of students to complete their studies in the required time without any obstacles. PhD students who complete their studies in a rapid manner indicate that they have greater interaction with their supervisors in comparison to those who experience delays (Cornér et al., 2017; Lee, 2008). Therefore, it is recommended that all doctoral students develop and maintain their relationships with their supervisors, and this can only happen when they cooperate effectively. If problems emerge between the students and supervisors or there are misunderstandings, it is suggested that all these problems should be solved before they develop into a more serious conflict, which could negatively impact the progress of the student. As previously mentioned, it can be observed that a large proportion of participants were keen to maintain good relationships with their supervisors, and an attempt was made to understand this further by using the interview methods provide more details. For example, one of the participants mentioned:

> *As students, we know that there are factors that can affect the timely completion of a doctoral program. I think that the supervisory relationship is one of the most important elements that directly impact the study progress and success of the doctoral journey. I will give you an example to be more clear. As you know, the time it takes to complete a doctoral program varies from one student to another. As doctoral students, before we started our doctoral journey, we thought that the factors that affected the timely completion of doctoral programs were just the student's interest towards research work and their lack of research skills, but now we have changed our minds and I will say that it is not only these factors that affect the timely completion of doctoral programs, but we also saw that students who take a long time to complete their researches have less involvement with their supervisors than those students with fast completion times.*

In fact, when a follow up question was posed the participant responded:

> *I know you will ask me why, as I could see that in your eyes. I will tell you, a good relationship between the supervisor and student will create a relaxed atmosphere that helps the study process to progress rapidly and leads to completion in the required time, and we need this atmosphere as mathematics students.*

These findings also appear to concur with Pyhältö et al. (2015), who emphasized that PhD students believe personal interaction with their supervisors to have specific importance and take advantage of the chance to utilize diverse resources, including supervisory teams. Factors such as constructive supervisory relationships, regular meetings, a casual atmosphere in the meetings, and supervisors that show understanding and kind attitudes towards their students are correlated with rapid completion and satisfaction when studying on PhD programs (Cornér et al., 2017; Pyhältö et al., 2015; Zhao et al., 2007). A different participant noted that:

> *Although it may be pleasant to study abroad, in my country, I am actually a sociable person; for example, I like to share my thoughts with people, particularly with faculty members at school or university, and I like to thank any person who gives me help or information or anything. As you know, saying thank you is one of the fundamental aspects of good manners. However, in this country, I cannot act like that maybe because I cannot speak English fluently. This problem affected the relationship I had with my supervisor, because sometimes he would ask me a question, and I would try to answer this question, but after I answered the question I could see anger on his/her face, because he or she did not understand what I was saying, even though in my language I could answer that question clearly. As you know, during meetings with supervisors, you sometimes*

> *need to share your thoughts with them. … If you fail to do that, you will fail to build the necessary relationship with your supervisor, which could lead to a delay in graduation.*

Although they have questions to ask the supervisors and they want to initiate a discussion, due to problems with speaking English clearly, they are embarrassed to communicate with their supervisors during meetings. For example, students failed to properly prepare themselves for studying in an English-speaking country. This preparation can be beneficial by developing English language and study skills, to prepare them for their main course at a UK University. Additionally, international students who want to attend universities in the UK will be required to take an English exam as part of their admission requirements. (The test is designed to assess the language ability of non-native English speakers, which consists of four parts: Speaking, listening, reading and writing, and the total test time is about three hours). However, students who do not have a good comprehension of the English language, were still able to achieve the required test score that would allow them to enter university at their first attempt. Some of them were surprised that they scored so highly because their English was poor, and this can be regarded as the starting point of the problems they experienced on the course, because they experienced difficulties when trying to communicate with their supervisor. It is preferable that the university offers a special test in order to ensure the readiness of students in terms of both cognitive, and academic aspects.

Another participant mentioned the relationship with their academic supervisors:

> *'The relationship with your academic supervisors can make or break the experience of a doctoral. I can advise all doctoral students, do not take the academic criticism personally, because if you take it personally, this will negatively affect your relationship with your supervisor, and this is what happened with me. Therefore, please do not forget that the responsibility of your supervisor is to spot potential holes in your research. This means that their feedback will strengthen your research, so do not take it personally. I hope I answered your question 'What are the perceptions of students of their supervisors?' Also, you asked me 'What are the elements of effective supervision as perceived by graduate students?' I can answer as following. … From my experience, I want to say to supervisors, please do not forget to direct students whose first language is not English, I mean direct them to appropriate training because they need it. Additionally, please critique me because I need it to support my research. I can say I will miss your critique after my graduation.*'

It can be seen that the participants provided valuable advice, and this is highly beneficial as it can help students to avoid many mistakes that previous students experienced with their supervisors. Many students spend significant amounts of time working on their research, and after sending their paper to their supervisors, they often receive comments and criticism. However, it is important that they do not take such criticism personally, because criticism is part of the beauty of science, which challenges students and encourages them to improve.

It can be observed from the answer above that the student attempted to send a message to supervisors to not forget to direct students whose first language is not English. We can take this message and disseminate it to all doctoral students who have difficulties with speaking or understanding the English language. It is important that they do not take criticism personally, because comments made by supervisors do not always mean what they appear to mean.

Before moving on to 'the elements of effective supervision in their current supervisors', it is an important to mention that some students believed that their supervisor would be able to help them during the Viva exam by defending the thesis instead of them (the viva is an oral examination that usually occurs month to three months after submitting the final copy of the thesis). Some of them said that as their supervisors knew everything about their thesis, why could he or she not clarify anything asked by the examiners during the exam. They were not aware that their thesis was their work, and they alone were required to defend the research in the oral examination. Therefore, an attempt was made to determine how many doctoral students knew about this information by adding some elements to the questionnaire, which are listed as questions thirteen and fourteen (see Table 3.).

It was found that 11.7% of the participants marked 'Strongly Disagree' in response to question thirteen in the questionnaire 'You alone should take responsibility for the way your research progresses'. In addition, 21.7% of the participants marked 'Disagree' for the same question in the questionnaire. In fact, this provides an indication to researchers and faculty members that they should explain to students that the thesis is their work, and they have to defend the thesis during the exam. Further evidence from the questionnaire shows the necessity for faculty members to guide students in the right way before starting their studies, which can be found in question number fourteen in the questionnaire. In response to this question, 26.7% of the participants marked 'Strongly Agree', and 10% of the participants marked 'Agree' that their supervisor alone would be able to justify their research in the Viva exam with greater confidence than them.

The Elements of Effective Supervision in Their Current Supervisors

As shown in Table 4, which presented the following dimension: 'The elements of effective supervision in their current supervisors'', it was noted that between 65% and 100% of the participants marked ' Strongly Agree' beside 'The supervisors' team experience in general knowledge of the research area and research methods', 'The supervisors' team provides continued support', 'Set regular and realistic deadlines', 'Are friendly', 'Are approachable and flexible', 'They provide detailed feedback on students' work', 'Meet together with the second supervisor', 'Are constructively critical', and 'Have sufficient interest in their research'. All the above attributes are very important for supervisors, because without these elements, supervision may not be effective, thus causing undue delay in completion.

On the contrary, it can be seen that between 65,7% and 95% of the students marked 'Strongly Disagree' in relation to the following statements 'They help students publish their research in a quality journal', 'They help students attend scientific conferences on a regular basis', 'Help international students who have problem with the English language such as writing', and 'Direct students to appropriate resources and training, particularly those whose first language is not English'. This means those students want all these elements in their supervisors, but they did not observe them during their studies. This seems to be consistent with the results of Ali et al. (2016), who found that students and supervisors believe a supervisor should help students where limitations and learning needs are identified.

According to the interviewees, some participants mentioned that if doctoral students do not make sufficient progress in their studies, their supervisors will not help them to publish their research or help them to attend scientific conferences. However, if supervisors perceive that the progress is very good, they will advise students directly. Many excellent students who finished their studies mentioned that their supervisors advised them to publish their thesis prior to doing the Viva exam. This is beneficial advice from supervisors, because this will give confidence to students when facing the examiners and will demonstrate to them that the thesis has been reviewed by other people. Additionally, it is important to consider that articles have undergone an anonymous double-blind review, which will provide added strength to the thesis.

It can be seen that 33.3% of participants marked 'Agree' and 11% of the participants chose 'Strongly Agree' for 'Motivate students through encouragement'. This is an important element, because if students are not motivated, they will not be enthusiastic to conduct their research. It is important to mention that during the interviews, some participants added the element of effective supervision, which was discussed in previous pages.

This seems to be consistent with the results of Ali et al., (2016), who found that students and supervisors believe a supervisor should help students where limitations and learning needs are identified.

SUPERVISORS' WRITTEN FEEDBACK

Question seventeen in Table 5 reflects the statement 'Students require more constructive feedback and criticism from their supervisors'. It can be noted that a large number of participants (71.3%) marked 'Strongly Disagree', and 14.7 of them marked 'Disagree'. Doctoral students are not keen to receive such a large amount of feedback or criticism during their doctoral journey, because they think that this will affect their progress and will cause them to graduate after the expected completion time.

In regard to the 9% of the participants who chose 'Strongly Agree', and the 4.3% of them who marked 'Agree', the following interview response indicates why they chose this option:

> *As you know, feedback may influence a student's written work. However, I expected that my supervisors would help me to determine the parts of my writing that needed correction, as well as how to link and express ideas. In fact, we need this because we bring things from our previous academic learning background that are different from higher education. Additionally, mathematical symbols need to be translated correctly from our language to English, which means we need more help from our supervisor.*

This concurs with Manjet (2015), who found that the concepts of academic writing that doctoral students acquire from their previous academic experiences are different from the requirements with which they are confronted when they embark on doctoral programs. Due to the fact that their previous learning has a significant impact on their writing style, supervisors have particular importance in terms of providing constructive feedback to students in writing. Students should not have the expectation that their supervisors will help them determine the aspects of their writing that require correction. This is because supervisors do not have sufficient time to correct grammar mistakes in students' theses; however, it is better that supervisors make general comments for students indicating that there are mistakes on the page that require correction. Additionally, one of the participants mentioned:

> *We value feedback because it helps us as mathematics students to not repeat the same mistakes. I think it is important for the supervisor to focus on content and not on grammatical mistakes, because I think it is not job of supervisors to check our mistakes in grammar, spelling, and punctuation, as this is the responsibility of the students. This is what my supervisor said to me before starting the program, and I agree with him.*

However, it is recommended that when doctoral supervisors notice mistakes in doctoral students' work, they should advise them to consult other experienced people in order to improve their performance and develop their skills. For example, recalling question fifteen in Table 5, it can be seen that 33.3% of the participants marked 'Disagree' and 22% of them marked 'Strongly Disagree', which means that their supervisors did not advise them to consult other experienced people, which means that students are unsure what actions they should take when they experience problems in their studies. Another student said:

> *Actually, as mathematics students, we are keen to receive feedback from our supervisors, but I noticed that one of the problems we experienced was that after we received feedback from the supervisors, we would have to ask each other what the supervisor meant by this sentence or how the problem could be solved according to the supervisor's comments. I think the main problem is the language, as you know that English is not our mother tongue. … I thought that the supervisors would help us avoid the difficulties we had with the language, but I noticed that my friends advised me that I must not show or make the supervisor feel that my language is weak; for example, I had to say "yes I understand" in response to everything he mentioned, because the supervisor could ask the university to discontinue their supervision of this student as he cannot understand what is being said, which would cause a delay in his graduation.*

This seem to be consistent with many researchers, such as Manjet (2015) and Gulfidan (2009), who emphasized the importance of supervisors' written feedback to help doctoral students. Based on the above, rather than concealing the fact that their language is weak, it is better for students to improve their academic English by reading a well-written book or thesis on their subject. Additionally, students should be honest with their supervisor, informing them if they do not understand what he or

she has written in their feedback. Students should not feel a sense of shame when asking for help, as the doctoral experience should be enjoyable. Experiments that fail can still be included in a successful doctoral thesis.

CONCLUSION AND RECOMMENDATIONS

The purpose of this paper is to identify the challenges Saudi mathematics students studying in UK universities face with their supervisors, to shed light on their experiences, and to examine the extent to which these experiences impact their ability to complete their thesis. It is found, based on their experiences, that there are some problems between doctoral students and their supervisors that need to be solved, and according to the questionnaire and the responses of the interviews, it can be noticed that these problems consists of four dimensions: team supervision, the supervisory relationship, the elements of effective supervision in their current supervisors, and supervisors' written feedback.

Further research is needed to explore supervisors' views and experiences, as well as staff supporting and coordinating doctoral programs who may have a more holistic view of the supervisory process. Secondly, the stakeholders in Saudi Arabia should take advantage of the answers given by the participants to help those and future students. Furthermore, at a practical level, this study invites mathematics students to solve the challenges they face with their supervisors immediately, in order to be able to complete their thesis on time. Additionally, it is important that university and departmental administrative bodies consider tracking their study paths to better assist students. Furthermore, universities should be clear regarding the different roles and responsibilities of the students and their supervisors before the candidates start their studies.

Thirdly, at the society level, the study participants' experiences of their doctoral studies could be highly beneficial for comprehending the problems that confront them when studying, which will enable better assistance to be provided. Lastly, it is also suggested that this kind of research could be extended to other fields. Furthermore, particular measures can be implemented to enhance supervision, which could be associated with satisfaction levels and/or the performance of students.

THE RESEARCH LIMITATIONS

The main limitations are summarized as follows.

This study focuses only on mathematics subject and other related areas in UK universities. The UK was selected as the country from which the data were collected because of the previous experience studying in this country, which enabled the project to be conducted efficiently. Furthermore, the emphasis of this study sample is solely on doctoral students, thus excluding supervisors owing to the challenges associated with eliciting approval to extend the survey to a larger audience.

In any research, there is a possibility that the answers may contain unfamiliar dispersion or unanticipated findings. This can occur irrespective of meticulous planning; for example, piloting the questionnaire as required. The unanticipated patterns in the questionnaire's second section revealed this, which was thought to have been caused by a misinterpretation of the question design (semantic differential). The fact that surveys demonstrate associations and permit description should, without fail, be stated. However, such surveys give no evidence of specific causal relationships, as is apparent in experimental research techniques. This includes the surveys conducted in this research. Creswell (2012, p. 376) states, "survey designs differ from experimental research in that they do not involve a treatment given by researcher. Because survey researchers do not experimentally manipulate the conditions, they cannot explain cause and effect as well as experimental researchers can...survey researchers often correlate variables". Casual connections could be shown by the application of intervention techniques in any future research.

REFERENCES

Abdullah, Y. (2019). *Education reveals the numbers and specialties of students who study on abroad around the world.* https://www.okaz.com.sa/article/1709889

Abiddin, Z., Hassan, A., & Ahmad, R. (2009). Research student supervision: An approach to good supervisory practice. *The Open Education Journal, 2*(1), 11-16. https://doi.org/10.2174/1874920800902010011

Åkerlind, G., & McAlpine, L. (2017). Supervising doctoral students: Variation in purpose and pedagogy. *Studies in Higher Education*, *42*(9), 1686-1698. https://doi.org/10.1080/03075079.2015.1118031

Alassaf, S. (2010). *An introduction to research in behavioral sciences.* Obaykan Bookshop.

Aldridge, A., & Levine, K. (2001). *Surveying the social world: Principles and practice in survey research*. Open University Press.

Alduhayan, S., & Ezat, H. (2002). *Data analysis with SPSS 16*. Obikan.

Ali, P. A., Watson, R., & Dhingra, K. (2016). Postgraduate research students' and their supervisors' attitudes towards supervision. *International Journal of Doctoral Studies, 11*, 227-241. https://doi.org/10.28945/3541

Bair, C. R., & Haworth, J. G. (2004). Doctoral student attrition and persistence: A meta-synthesis of research. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (pp. 481-534). Kluwer Academic Publishers. https://doi.org/10.1007/1-4020-2456-8_11

Bell, J. (2005). *Doing your research project: A guide for first-time researchers in education, health and social science.* Open University Press.

Bitchener, J., Basturkmen, H., East, M., & Meyer, H. (2011). *Best practices in supervisor feedback to thesis students.* Ako Aotearoa – National Centre for Tertiary Teaching Excellence. https://ako.ac.nz/assets/Knowledge-centre/NPF-08-002-Best-Practice-in-Supervisor-Feedback-to-Thesis-Writers/2334ce033a/RESEARCH-REPORT-Best-Practice-in-Supervisor-Feedback-to-Thesis-Students.pdf

Blair, L. (2016). *Dealing with student-supervisor problems.* Sense Publishers.

Bourke, S., Holbrook, A., Lovat, T., & Farley, P. (2004, 28 Nov – 2 Dec). *Attrition, completion and completion times of PhD candidates* [Paper presentation]. AARE Annual Conference, Melbourne.

Burnett, E. (2014). *Changing PhD supervisors: Help or hindrance?* https://emmaburnettx.wordpress.com/2014

Bryman, A. (2008). *Social research methods.* Oxford University Press.

Cohen, L., Manion, L., & Morrison, K. (2003). *Research methods in education.* (5th ed.). RoutledgeFalmer.

Cohen, L., Manion, L. & Morrison, K. (2004) *Research methods in education* (6th ed.). Routledge.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (7th ed.). RoutledgeFalmer.

Cornér, S., Löfström, E., & Pyhältö, K. (2017). The relationship between doctoral students' perceptions of supervision and burnout. *International Journal of Doctoral Studies, 12*, 91-106. https://doi.org/10.28945/3754

Crowl, T. K. (1996). *Fundamentals of educational research.* Brown & Benchmark.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Pearson/Merrill Prentice Hall.

Davis, D. (2019). Students' perceptions of supervisory qualities: What do students want? What do they believe they receive? *International Journal of Doctoral Studies, 14*, 431-464. https://doi.org/10.28945/4361

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* Plenum.

Deci, E. L, & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11* (4), 227–268. https://doi.org/10.1207/s15327965pli1104_01

Devos, C., Van der Linden, N., Boudrenghien, G., Azzi A., Frenay, M., Galand, B., & Klein, O. (2015). Doctoral supervision in the light of the three types of support promoted in self-determination theory. *International Journal of Doctoral Studies, 10*, 439–464. https://doi.org/10.28945/2308

Fraenkel, J. R., & Wallen, N. E. (2008). *How to design and evaluate research in education.* McGraw-Hill Higher Education.

Gay, L. R. and Airasian, P. (2000) *Educational research: Competencies for analysis and application* (6th ed.). Prentice Hall.

Gay, L. R., & Airasian, P. W. (2003). *Educational research: Competencies for analysis and applications* (7th ed.). Merrill/Prentice Hall.

Gass, S. M., & Mackey, A. (2007). *Data elicitation for second and foreign language research.* Lawrence Erlbaum Associates.

Griffiths, A. W., Blakey, H., & Vardy, E. (2016). *The role of a supervisor and the impact of supervisory change during your PhD*. British Psychological Society.

Gulfidan, C. (2009). *A model for doctoral students' perceptions and attitudes towards written feedback* [Unpublished doctoral dissertation]. Utah State University, Utah.

Guerin, C., Kerr, H., & Green, I. (2015). Supervision pedagogies: Narratives from the field. *Teaching in Higher Education, 20*, 107-118. https://doi.org/10.1080/13562517.2014.957271

Hagger, M. S., Chatzisarantis, N. L. D., & Harris, J. (2006). From psychological need satisfaction to intentional behavior: Testing a motivational sequence in two behavioral contexts. *Personality and Social Psychology Bulletin, 32*, 131-138. https://doi.org/10.1177/0146167205279905

Ismail, H. M., Majidb, F. A., & Ismail, I. S. (2013). "It's a complicated" relationship: Research students' perspective on doctoral supervision. *Procedia - Social and Behavioral Sciences, 90*, 165-170. https://doi.org/10.1016/j.sbspro.2013.07.078

Johnston, L., Sampson, K. A., Comer, K., & Brogt, E. (2016). Using doctoral experience survey data to support developments in postgraduate supervision and support. *International Journal of Doctoral Studies*, *11*, 185-203. https://doi.org/10.28945/3505

Kendall, L. (2008). The conduct of qualitative interviews: Research questions, methodological issues, and researching online. In J. Coiro, M. Knobel, C. Lankshear & D. Leu (Eds.), *Handbook of research on new literacies* (pp.133-149). Lawrence Erlbaum Associates.

Kolmos, A., Kofoed, L. B., & Du, X. Y. (2008). PhD students' work conditions and study environment in university- and industry-based PhD programmes. *European Journal of Engineering Education, 33*(5-6). 539-550. https://doi.org/10.1080/03043790802588383

Latona, K., & Browne, M. (2001). *Factors associated with completion of research degrees*. Higher Education Series, Report No. 37. Canberra: Department of Education, Science and Training.

Lee, A. (2008). How are doctoral students supervised? Concepts of doctoral research supervision. *Studies in Higher Education, 33*, 267–281. https://doi.org/10.1080/03075070802049202

Maher, M. A., Ford, M. E., & Thompson, C. M. (2004). Degree progress of women doctoral students: Factors that constrain, facilitate, and differentiate. *The Review of Higher Education, 27*(3), 385–408. https://doi.org/10.1353/rhe.2004.0003

Minichiello, V., Aroni, R., Timewell, E., & Alexander, L. (1995). *In-depth interviewing: Principles, techniques, analysis.* Addison Welsey Longman.

Manjet, K. (2015). International graduate students' academic writing practices in Malaysia: Challenges and solutions. *Journal of International Students, 5*(1), 12-22. https://www.ojed.org/index.php/jis/article/view/439

Murphy, N., Bain, J. D., & Conard, L. (2007). Orientation to research higher degree supervision. *Higher Education, 53*, 209-234. https://doi.org/10.1007/s10734-005-5608-9

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. McGraw-Hill.

Orellana, M. L., Darder, A., Pérez, A., & Salinas, J. (2016). Improving doctoral success by matching PhD students with supervisors. *International Journal of Doctoral Studies, 11*, 87-103. https://doi.org/10.28945/3404

Oppenheim, A. (2001). *Questionnaire design, interviewing and attitude measurement*. Continuum.

Overall, N. C., Deane, K. L., & Peterson, E. R. (2011). Promoting doctoral students' research self-efficacy: Combining academic guidance with autonomy support. *Higher Education Research & Development, 30*(6), 791–805. https://doi.org/10.1080/07294360.2010.535508

Petersen, E. B. (2007). Negotiating academicity: Postgraduate research supervision as category boundary work. *Studies in Higher Education, 32*, 475-487. https://doi.org/10.1080/03075070701476167

Pyhältöm, K., Vekkaila, J., & Keskinen, J. (2015). Fit matters in the supervisory relationship: Doctoral students and supervisors perceptions about the supervisory activities. *Innovations in Education and Teaching International*, *52*(1), 4-16. https://doi.org/10.1080/14703297.2014.981836

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. In: E. L. Deci & R. M. Ryan (Eds), *Handbook of self-determination research* (pp. 3–33). Rochester University Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.7202/1041847ar

Robertson, M. J. (2017). Team modes and power: Supervision of doctoral students. *Higher Education Research & Development, 36*, 358-371. https://doi.org/10.1080/07294360.2016.1208157

Sambrook, S., Stewart, J., & Roberts, C. (2008). Doctoral supervision…A view from above, below and the middle! *Journal of Further and Higher Education, 32*, 71-84. https://doi.org/10.1080/03098770701781473

Shariff, N., Ramli, K. I., & Ahmad, R. (2014). Factors contributing to the timely completion of PhD at the Malaysian IPTA: The case of University Utara Malaysia. *Proceedings of International Conference on Postgraduate Research,* 131-141.

Skakni, I. (2018), Doctoral studies as an initiatory trial: Expected and taken-for-granted practices that impede PhD students' progress. *Teaching in Higher Education, 23*(8), 927-944. https://doi.org/10.1080/13562517.2018.1449742

Spaulding, L. S., & Rockinson-Szapkiw, A. J. (2012). Hearing their voices: Factors Doctoral Candidates Attribute to Their Persistence. *International Journal of Doctoral Studies, 7*, 199–219. https://doi.org/10.28945/1589

Stubb, J., Pyhältö, K., & Lonka, K. (2011). Balancing between inspiration and exhaustion: PhD students' experienced socio-psychological well-being. *Studies in Continuing Education, 33* (1), 33–50. https://doi.org/10.1080/0158037X.2010.515572

Tahir, I. M., Ghani, N. A., Atek, E. S. E., & Manaf, Z. A. (2012). Effective supervision from research students' perspective. *International Journal of Education, 4*(2), 211-222. https://doi.org/10.5296/ije.v4i2.1531

Van de Schoot, R., Yerkes, M. A., Mouw J. M., & Sonneveld, H. (2013). What took them so long? Explaining PhD delays among doctoral candidates. *PLOS ONE, 8* (7), e68839. https://doi.org/10.1371/journal.pone.0068839

Watson, R., Thompson, D. R., & Amella, E. J. (2011). Doctorates and nurses. *Contemporary Nurse*, *38*(1-2), 151-159. https://doi.org/10.5172/conu.2011.38.1-2.151

Wilkinson, D., & Birmingham, P. (2003). *Using research instruments: A guide for researchers*. RoutledgeFalmer. https://thenigerianprofessionalaccountant.files.wordpress.com/2013/04/using-research-instruments-a-toolkit-for-researchers.pdf

Wright, T. (2003). Postgraduate research students: People in context? *British Journal of Guidance and Counselling, 31*(2), 209-227. https://doi.org/10.1080/0306988031000102379

Woolderink, M., Putnik, K., van der Boom, H., & Klabbers, G. (2015). The voice of PhD candidates and PhD supervisors: A qualitative exploratory study amongst PhD candidates and supervisors to evaluate the relational aspects of PhD supervision in the Netherlands. *International Journal of Doctoral Studies, 10*, 217-235. https://doi.org/10.28945/2276

Zhang, Y., & Wildemuth, B. M. (2009). Unstructured interviews. In B. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp.222-231). Libraries Unlimited.

Zhao, C-M, Golde, C. M., & McCormick, A. C. (2007). More than a signature. How advisor choice and advisor behavior affect doctoral student satisfaction. *Journal of Further and Higher Education, 31*, 263-281. https://doi.org/10.1080/03098770701424983

APPENDIX

TABLE A1. SUMMARY OF QUESTIONNAIRE

A- Your challenges, perceptions and experiences with supervisors.		
1- Many problems commonly experienced during doctoral studies are related to the supervisory process.	2- The 'principal' supervisor is the senior researcher who has the final say on any decisions about your project.	3- The first and the second supervisor are aware of your project's direction and progress.
4- Airing a plethora of ideas, opinions and decisions easily leads to confusion.	5- Sometimes, after meeting with the supervisors, I do not know what decisions were made for the project.	6- The main challenges in regard to team supervision for doctoral students is the potential for conflicting advice.
7- Sometimes, I do not know which supervisor decisions I have to follow. For example, should I choose the easy option or follow my principal supervisor?	8- Supervisors' behaviors might be focused on each other rather than on the student's needs.	9- Doctoral students who have more interaction with their supervisors usually take less time to complete their study.
10- Your perception is that relationships between supervisors and students are crucial to the success of the project.	11- Many supervisory relationships have ups and downs.	12- You know that supervision styles differ between supervisors.
13- You alone should take responsibility for the way in which your research progresses.	14- Your supervisors will be able to justify your research in the Viva exam with greater confidence than you.	15- Your supervisors advise you to consult other experienced people in order to improve your performance and skills.
16- Students require more constructive feedback and criticism from their supervisors.		
B- The elements of effective supervision (that you saw in your current supervisors)		
1- The supervisors' team experience in general knowledge of the research area and research methods.	2- They help students publish their research in a quality journal.	3- They help students attend scientific conferences on a regular basis.
4- The supervisors' team provides continued support.	5- Set regular and realistic deadlines.	6- Help international students who have problem with the English language such as writing.
7- Are friendly.	8- Are approachable and flexible.	9- They provide detailed feedback on students' work.
10- Meet together with the second supervisor.	11- Read the student's draft before scheduled meetings.	12- Are constructively critical.
13- Have sufficient interest in their research.	14- Motivate students through encouragement.	15- Direct students to appropriate resources and training, particularly those whose first language is not English.
16- Notify students in advance when they want to move to another university.		

BIOGRAPHY

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