

## **Eitology of Students Failure in Completing their PhD programs within Stipulated Time Period**

**Dr. Muhammad Irshad**

*Department of Management Sciences  
Abasyn University Peshawar  
[mikhaans@gmail.com](mailto:mikhaans@gmail.com)*

**Dr. Syed Naseeb Shah**

*Department of Management Sciences  
Abasyn University Peshawar*

**Sourat Maher**

*PhD Research Scholar, Institute of Business Studies and Leadership  
Abdul Wali Khan University, Mardan  
[sorathm@yahoo.com](mailto:sorathm@yahoo.com)*

**Dr. Hamid Hassan**

*Director, NUCES Lahore Campus  
[Hamid.hassan@nu.edu.pk](mailto:Hamid.hassan@nu.edu.pk)*

### **Abstract**

*Doctorate degree so-called doctor of philosophy (Ph.D.) is amiably recognized as a remarkable postgraduate qualification so far. In the walk of technological advancement and globalization, the demand for doctorate degrees can't be abandon and commonly, students with a vivid academic background, desire to pursue challenging careers, auspicious personal traits with motivation are enrolled for this program. When such distinctive students failed to complete the doctorate degree within the stipulated time, have arisen many questions for stakeholders. This study was conducted to articulate the etiology of student failure in completing a doctorate program within a stipulated time. For this purpose, Ph.D. students were considered population, and data was collected through questionnaires. A total of 268 questionnaires were distributed and 233 were received. Statistical tools such as EFA, CFA, and SEM were applied. For this SPSS-20 and AMOS-24 software were used. Results of the study found that Institutional Support, Personality Trait, and Supervisor Support have a significant positive impact on Ph.D. degree completion. It is recommended that all stakeholders need to play their role and there is a dire need to develop a systematic formally organized research structure. There is also a need to establish a provincial and National Research Monitoring Cell for persuasion and streamlining of research activities. Supervisor's engagement of students beyond odds hours also inculcate research/innovation habits.*

**Keywords:** *Doctorate degree, Personality traits, Supervisor support, and Institutional support*

## **1. INTRODUCTION**

The doctorate degree so-called doctor of philosophy (Ph.D.) is amiably recognized as a remarkable postgraduate qualification for students who desire to pursue challenging academic or research careers, proven their abilities and contribute to literature/society. However, the majority are unfamiliar about the history of a doctorate degree (Frank, 2003). Indeed while investigating the roots of the research degree it has been revealed that in the nineteenth century primary the concept of research degree was introduced by Friedrich Wilhelm University, Berlin (Germany) by awarding first research degree with the nomenclature of Ph.D. (Park, 2005). Importing this concept, United States has started the doctorate degree program, Yale University of North America (Cude, 2001) and in 1860 James Morris Whiton was awarded the Ph.D. degree on completion of one-year postgraduate study and submission of six pages dissertation on Latin proverb “Brevis vita, ars longa” (Frank, 2003). Pursuant to Yale University world-leading universities offered a Ph.D. degree program consequently with a passage of time the research degree program has been offered all over the world, whereas, in Pakistan, this degree program emerged in the nineteenth century (Cude, 2001). The degree-awarding criteria as the same as introduced by Yale University with slight changes as per domestic/discipline requirements (Buhanan & Herubel, 1995). Likewise, the Higher Education Commission, Pakistan (HEC) also set criteria for enrollment and award of Ph.D. degree, the same implemented to be followed by the national degree awarding institutes. In late 1970, in the face of high research degree demand, world-class universities enrolled a sophisticated number of students for this program but the majority failed to complete the degree requirements resultantly dropout, the dropout ratio posed a challenge for academia to fulfill the arising demand (Dressel & Thompson, 1977). Bowen & Rudenstine (1992) concluded that in the American university approximately 50% students enrolled for doctorate degree program failed to complete the causes of their failure what so maybe or a statement they may produce in their defense but they are unable to complete the doctorate program include 20% candidates who have completed all requirements except the dissertation.

Literature highlights that after the establishment Association of American Universities in 1900 the discouragement of doctorate degree students have seemed to be gradually down resultant the wastage of resources (individual, institutional and government resources) (Berelson, 1960; Gillingham, Seneca & Tasussig 1991; Kluever, 1995; Slaton, 1994). Rogers (1969), has noted that dropout students are disappointed and augmented with various excuses like supervisor support, learning environment, lack of allied facilities (library, technology, etc.). In general, the most common method to evaluate the progress of the doctorate degree program has been noted “time” of completion (Gravois, 2007; Nettles & Millett, 2006). However, such data neither maintained at the department level, institute level, or country-level nor

published for the information of all concerned. According to statistics of The Council of Graduate Schools, only 57% of students have successfully completed their doctorate degrees within a decade (CGS, 2017; Vidak, Tokalic, Marusic, Puljak & Sapunar, 2017). Whereas, data regarding completion rate of doctorate degrees at Canadian universities are not being maintained (Elgar, 2013). Moreover, literature revealed that only 11% graduate students (from 1999 to 2011) enrolled for the doctorate degree program at the University of Split School of Medicine, Croatia have successfully earned the degree (Vidak, et. al., 2017). The delay or dropout from the doctorate degree program is beyond perplexing because outstanding and highly motivated students with similar characteristics are being enrolled for this program (Stankov, Morony & Lee, 2014; van der Westhuizen, Beer & Bekwa, 2011; Vidak, et. al., 2017). Studies revealed that students with strong institutional and supervisor support are comparatively complete doctorate degrees earlier (Bagaka, Bransteter, Rispinto & Badillo, 2015). Moreover, the factors affecting the completion rate of the doctorate degree program may include supervisor support, learning environment, lack of personal attachment, institutional regulation such as separation of coursework and thesis research, lack of quality and structure of doctorate program (van de, Yerkes, Mouw & Sonneveld, 2013).

## **2. DEVELOPMENT OF HYPOTHESES**

Literature revealed that the concept of research-based-degree (doctorate degree) was primarily introduced by Friedrich Wilhelm University, Berlin (Germany) in nineteenth century (Park, 2005) followed by the Yale University of North America in 1860 awarded Ph.D. degree on completion of one-year postgraduate study and submission of six pages dissertation on Latin proverb “Brevis vita, ars longa” (Frank, 2003). The doctorate degree is recognized as a remarkable postgraduate qualification for students who intend to prove their peculiar abilities and work for society or mankind's development. Although the requirements for the award of doctorate degrees are almost the same across the world with litter variation as per domestic condition, the attrition rate also seems to be high as compared to other qualifications. Around the world, universities have also introduced various incentives and penalties as motivational factors to encourage doctorate students for the in-time completion degree program (Halbert, 2014). The study also revealed that doctorate students required more flexibility in all respect to easily manage their resources v/s tasks more effectively and efficiently (Halbert, 2014) but their attrition rate is still high. Baird, (1990) revealed around 50% of students failed to complete their doctorate degree and this percentage may higher in some discipline. Interestingly, the scientific discipline students tend to successfully complete their doctorate degree as compared to the counterpart of humanities (Rodwell & Neumann, 2007; Seagram et al., 1998; Wright & Cochrane, 2000). Similarly, the attrition rate of woman enrolled for doctorate degree have been noted high as compared to counterpart i.e. man (Smallwood, 2004; Lovitts & Nelson, 2000). The literature revealed that the dropped-out rate of American students from a doctorate degree is 8% higher contrasted with foreign students enrolled for a similar program during the last 5 years (Smallwood, 2004). Studies (Bowen, Lord, & Sosa, 1991; Bowen & Rudenstine, 1992) also revealed that

the completion period of doctorate degrees has significantly increased during the last 20 years. UK university statistics revealed that more than 75% of doctorate students unable to complete their degree programs within the stipulated time of four years (HEFCE, 2010).

Several factors have been considered responsible that affect the completion of the doctorate degree program within the due time that may include supervisor support, lack of financial resources, clumsy thesis topic and lack of thesis training (Association for Support of Graduate Students, 1993; Hahs, 1998; National Research Council, 1995; Ramos, 1994; Tluczek, 1995). While describing the impact of demographics on doctorate degree completion (Smith, 2000) revealed the majority of students between the age of mid 30 or early-40 years, their marital status are married or in a relationship and live away from the institute to utilize resources and difficult meet with the supervisor. Further described that 70% of doctorate students are working in the irrelevant discipline. Accordingly Wao, Dedrick, and Ferron (2011) no solo factor is responsible for attrition of doctorate students. The study found program structure and thesis writing skills as internal factors affecting completion of doctorate degree and family support and life events have revealed external factor influence in degree completion (Wao et al., 2011). Pinson (1998) run regression analysis in his study and found strong association amid dissertation writing skill, time, and doctorate degree completion. Chiappetta-Swanson and Watt (2011) have considered lack of thesis writing skills is a roadblock for doctorate degree completion. Whereas, Odena and Burgess (2012a) conclude that the development of writing skills for doctorate students is not essential instead they need to focus on specific subject knowledge. In this regard, literature emphasis that during the last few decades the quality of doctorate student training and writing skills have been significantly improved over the years (Ziolkowski, 1990). however, there is a dare need to work on rest of elements the influence in the reduction of completion time and completion rate because there is lack of empirical study coupled with constructive debate on causes and consequences of high attrition rate of a doctorate degree (Cude, 2001; Kerlin, 1995; Tuckman, Coyle, & Bae, 1990). According to Carter, (2004) the performance of doctorate degree students is measure through “time” which is more likely affected by financial constraint, institutional support, market opportunity, and personal traits. The literature identified several factors influence in the successful completion of a degree program that may include students’ personality traits, supervisor support and institutional support (Kuh Kinzie, Schuh & Whitt, 2005; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; McClenney, 2013; Nasr & Jackson-Harris, 2016; Tinto, 2005; Tovar, 2015). Taken in total it has been comprehended that supervisor support, institutional support, and individual personality traits factor significantly influence in completion of doctorate degrees within a specific timeframe.

## **2.1 Supervisor support**

Literature revealed the supervisor role in the timely completion of the dissertation is highly linked (Johnston, 1999) particularly the supervision of the dissertation has constituted a prevalent tendency of teaching (Ferman, 2000; Taylor,

2006). In this regard, Knowles (1999) argue that supervision of doctorate dissertation as "critical conversations", whereas Taylor (1995) claims that supervision is basically mentorship more than teaching. However, Whilst, Green and Lee (1995) argue that the supervisor role in doctorate dissertation is still highly ambiguous, the supervisor only advice that is the replication of pedagogy method of teaching. According to Pearson and Kayrooz (2005), the role of the supervisor in doctorate degree dissertation is a lack of developing approach regarding the understanding of supervisor involvement in the study. Gurr, (2001) examine the supervision tendency in the University of Sydney by interviewing four pairs separately and revealed an incredible divergence amid their perception about supervision. The method is continued in order to establish the best relationship and agreeable concept about the supervision. According to Vilikas (2002), the supervisor role in a doctorate degree dissertation is similar as a manager in the business. According to Halbert (2014) supervisor good relation with doctorate students has found a significant factor in student satisfaction.

The doctorate degree student valued the flexible, supportive, and responsive supervisor. The study further claims that supervisors with the positive quality found established enthusiasm, provide normal communication, and also provide a platform for expertise network (Halbert, 2014). Abdelhafez (2007) found a significant positive relationship between student and supervisor attitudes. Moreover, supervisor attitudes were not found to be predicted by year of study or gender. According to Mink, Owen, and Mink, (1993) Supervisor only guides and enables the student to learn and cop the construct under study. So the supervisor support is restrained only to facilitate the students for learning and development (Ellinger, Ellinger, & Keller, 2003). According to Paltridge and Woodrow (2012), the supervisor's support is significant for doctorate candidates to inculcate a sense of development and improvement. Further studies revealed that doctorate degree supervisors required to comprehend their students through a supportive role and enhance their capabilities through continuous writing practices (Cotterall, 2013a; 2013b) and also provide pedagogy support during the entire phase of doctorate journey (Cadman 1997; Paltridge & Woodrow 2012). According to Wisker et al. (2010) in the journey of a doctorate degree, supervisor support plays a significant role and found one of the strategic factors that overcome distrust obstacles, gradually enhance candidates' ownership and autonomy that develop a positive relationship. While discussing the importance of supervisor study revealed that supervisor encouragement has a direct association with student performance (Smith, 2009) and supervisor support enhances student confidence, develop their writing capabilities and abilities to complete a doctorate degree within the stipulated time (Wang & Yang 2012). Based on the above literature, the following hypothesis has been developed for this study:

**H1: There is a statistically positive association between supervisor support and doctorate degree completion.**

## **2.2. Institutional Support**

In academia, the concept of institutional support has derived from organization support theory and as per this theory employees perceived for organization support for their development and betterment have positively associated with performance (Baran, Shanock, & Miller, 2012; Sumathi, Kamalanabhan, & Thenmozhi, 2015). Consequently, exchange theories (Blau, 1964; Khan, Mahmood, Kanwal & Latif, 2015; March & Simon, 1958) encompass organization support within work setting (Cropanzano & Mitchell, 2005) and revealed that employees performance can be integrated in form of resources exchange (Foa & Foa, 1980). Similarly, institutional support for doctorate degree students surely affects their performance and completion time. Institutional support is generally divided into two categories a) tangible support such as financial, lab, equipment, space, etc. b) intangible support that may include encouragement, freedom, authority, self-esteem, and acknowledgment, etc. (Neves & Champion, 2015). The study revealed that once institute successes to establish a positive support image in stakeholder seems to be received a low rate of attrition and high target completion rate (Cropanzano, Howes, J. C., Grandey, & Toth, 1997) consequently defuse negative behaviors (Allen & Shanock, 2013). The study revealed that institutes that discourage procedural discrimination and implement policies fairly their stakeholders are performed well (Dejoy, Della, Vandenberg & Wilson, 2010). In academic students' satisfaction is measured through evaluation of their results, and experience (Weerasinghe & Fernando, 2017). According to Stelnicki, Nordstoeke, and Saklofske (2015), institutional leadership is responsible for student success. The supportive leaders that understand the requirement of students and take favorable initiatives tend to enhance students successes rate (Shumaker & Wood, 2016). The implementation of favorable policy assesses students to timely complete their degree programs (Brooks, Jones & Burt, 2013; Campbell, Smith & Dugan, 2012). Supportive institutional conditions play a significant role in creating a learning environment that leads to enhance success ratio (Felten, Gardner, Schroeder, Lambert, Barefoot & Hrabowski, 2016). Lei (2016) describe the characteristics of institutional support seems to affect students' performance may comprise campus climate, size and living condition, library size and population, events and activities, student-faculty ratio and availability of allied facilities. According to Dowd, Pak, and Bensimon (2013), institutional support helped students to utilize full potential, enhance academic performance and self-confidence. Based on the above literature, the following hypothesis has been developed for this study:

**H2: There is a statistically positive association between institutional support and doctorate degree completion.**

### **2.3 Personality Traits**

The role of personality traits in performance and success has always found a crucial challenge (Sellman, Born, Stricland, & Ross, 2010). Palmer (2009) conducted a study on research students and found that dissertation duration has a direct association with individual personality to cope with the pressure. While investigating the factors that positively contribute to the completion of doctorate degree studies found students' personal traits and working habits (Ramos, 1994; Tluczek, 1995).

Cotterall (2013b) concludes that personal traits such as emotions enhance the level of inspiration to complete a doctorate timely and suggest not to suppressed or ignored students' personal that may lead to delay or even derail them. Further argue that doctorate students' emotions and positive experiences have found a significant association with dissertation completion (Cotterall, 2013b). The study has proven the assumption of a positive correlation between personality traits and performance (Fosse, Buch, Safvenbom & Martinussen, (2015) findings further supported the statement that candidates believed their own abilities commonly transform such disposition into behavior that enhances outcomes (Caprara, Vecchione, Alessandri, Gerbino, & Barbaranelli, 2011; Martocchio & Judge, 1997). Caprara, et al., (2011) argue that personality traits and self-efficacy are operated on two different levels consequently they distinguished the divergence between individual self-efficacy and personality traits with the integration of two theories. They claim that personality traits are the inherent character of an individual (McCrae & Costa, 1999) whereas, self-efficacy is related to the individual behavior regulated or interacted with the environment (Bandura, 1997). According to Bandura (2012), individual self-efficacy significant positive contributes to the development of individual behavior that is recognized as the personality traits of individuals. Literature found individual self-efficacy and personal traits is positive predictors of academic performance (Barrick, Mount, & Judge, 2001; Judge, Ilies, Bono, & Gerhardt, 2002; Judge, Jackson, Shaw, & Rich, 2007; Poropat, 2009; Richardson, Abraham, & Bond, 2012). While describing academic performance study revealed conscientiousness is the strongest positive factor of Big Five personality traits (Barrick, Mount, & Judge, 2001; Caprara et al., 2011; Poropat, 2009). Further study found that conscientiousness may positively affect stamina, motivation, and inspiration (Tabak, Nguyen, Basuray & Darrow, 2009). Further added by Judge and Ilies (2002) that conscientiousness has a direct positive association with three forms of motivation such as goal-setting, expectancy, and self-efficacy. According to Dinther, Dochy, and Segers, (2011), generally, students scoring high seems to be greatly involved in the study and hard work to achieve their set goals. According to study personality traits need to be positively utilized by providing an adequate study environment in order to produce significant outcomes (Feyter, Caers, Vigna, & Berings, 2012; Poropat, 2009). Based on the above literature, the following hypothesis has been developed for this study:

**H3: There is a statistically positive association between individual personality traits and doctorate degree completion.**

### **3. PROBLEM STATEMENT**

An Apropos doctorate degree is highly recognized radiant post-graduate qualification and usually, candidates with a vivid academic background, strong family support, long studying/working stamina, and auspicious personal traits with motivation are enrolled for this program. However, their attrition rate across disciplines has been revealed very high (Kang, 2004) and the dropout ratio of women seems to be higher than men (Smallwood, 2004). When such distinctive students failed to complete the doctorate degree within the stipulated time, have arisen

question for sponsors, government, policymakers, and academia. The reason what so maybe, but there is a dare need to articulate the etiology of student failure to complete a doctorate degree program within the stipulated time. This study is conducted to determine the role of supervisor, candidate personal traits, and institutional support toward completion of a doctorate degree.

#### **4. RESEARCH OBJECTIVES**

The broad objective of the study is to determine the etiology of student failure to complete a doctorate degree within a stipulated time. However, the specific objectives are appended below:

- (a) To evaluate the role of the supervisor toward the completion of a doctorate degree.
- (b) To evaluate the role of institutional support toward the completion of a doctorate degree.
- (c) To evaluate the contribution of students' personal traits in the completion of a doctorate degree.

#### **5. RESEARCH METHODOLOGY**

This study is quantitative in nature and philosophical the study adopted positivism approach. According to Saunders, et al., (2009) in positivism approach authors view and observe existing social reality. Further explain by Smith (1998) in the field of social sciences mostly authors adopting positivism approach to study problem based on primary data. Apropos, this study aims to evaluate the etiology of student failure to complete a doctorate degree within the stipulated time, in this regard population comprised students enrolled for doctorate degree (Ph.D. Scholars) in universities chartered by Government of Khyber Pakhtunkhwa and recognized by Higher Education Commission, Pakistan. Purposive sampling technique was adopted for the selection of a sufficient number of participants. In order to invite participants word-of-mouth, student reference, supervisor, and alumni networks were being used response ration and ensure the elimination of non-family member (irrelevant respondent) which are commonly occurred in snowball sampling techniques. For this purpose criteria were established; a) participant must be enrolled for a Ph.D. degree program in universities chartered by Government of Khyber Pakhtunkhwa, b) currently at research work stage c) voluntarily participates in the survey. For data collection, a self-administrated questionnaire was designed and distributed amongst 268 respondents. In total 233 questionnaires were received from respondents completed in all respect that proceeded for further analysis. The collected data was analyzed through statistical software SPSS-20 and AMOS-24. Analysis includes descriptive and inferential statistics. Descriptive statistic was applied to convert the data in to percentages. However inferential statistic was applied to evaluate the relationship. As stated that scale were adopted from previous study and modified according to local condition so reliability and validity tests were conducted followed by Confirmatory Factor Analysis. In order to evaluation the relationship a structural equation modeling

was applied. However, before structural equation modeling the good fitness of model was evaluated through ten fit indices.

**5.1 Measurements scale**

The questionnaire was used as a survey instrument that has been adopted from existing literature based on five likert scale from strongly disagree to strongly agree (1 to 5). Measurement scales adopted from studies of Halbert, (2014), Neill, (2016) Baloyi, Waveren, and Chan, (2014) and Slight, (2017) respectively.

**Table 1**      *Measurement scales*

Scale	Item(s)
<b>Institutional Support</b>	My institute provides IT support
	My institute assists me in time management
	My institute provides a platform to doctoral network
	My institute helps in all admin support and processes
	My institute respects my other obligations (work and family etc.)
	My institute provide conducive desk space and computer access
	My institute grants access to equipment and people on a required basis.
	My institute understand that we are human
<b>Personality Traits</b>	My institute support the students in all respect
	I use personality traits to manage time effectively.
	I use personality traits to precisely predict the task completion time.
	I use personality traits to prepare a daily or weekly "to-do" list.
	I use personality traits to finish my scheduled task each day.
	I use personality traits to make effective plans for getting things done.
	I use personality traits to balance my professional life, social life, and study.
	I use personality traits to cope with difficulties.
<b>Supervisor Support</b>	I use personality traits to organize my life and study in all respect.
	My supervisor recognized my abilities, hard-work.
	My supervisor always available when I need guidance.
	I feel free to talk openly and honestly with my supervisor.
	My supervisor gives me clear directives for improvement.
	My supervisor takes prompt and fair corrective action as required.
	My supervisor is prompt in sorting problem solutions and effective in decision making.
	I am happy while working with my supervisor.
<b>Doctorate degree completion</b>	I understand deadlines of degree completion
	I understand the requirements of degree completion
	I understand the final assessment procedures of doctorate degree
	I understand my responsibilities as a doctorate student
	My confidence to be creative or innovative has developed during my program
	I have developed contacts with professional during this program
	Supervisor studios support encourage to timely degree completion
My personality traits play an affirmative role in degree completion	

Institute meticulous support coerce for in-time degree completion  
I am confident that I will complete a doctorate degree within the expected  
timescale

## 6. DATA ANALYSIS AND RESULTS

As discussed earlier that questionnaire was used as a survey instrument for data collection which was adopted from existing literature and molded accordingly. So, that, prior to testing research hypotheses through Structural Equation Modeling (SEM), an Exploratory Factor Analysis followed by Confirmatory Factor Analysis (CFA) was performed using SPSS-21 and AMOS-24 respectively. The reliability was evaluated through Cronbach's alpha result show that the value of Cronbach's alpha for composed variables was noted  $\alpha = 0.966 > 0.7$  (acceptable range). However, Cronbach's alpha for perceived Institutional support, personality traits perceived supervisor support and doctorate degree complete were found  $\alpha = 0.974$ ,  $\alpha = 0.981$ ,  $\alpha = 0.987$  and  $\alpha = .990$  respectively (acceptable as suggested by Gliem & Gliem, 2003).

### 6.1 Demographic details

Table 2 present the profile of respondents. A total of 233 respondents participated in the study, out of which 39 were found less than 24 years age, 43 participants between 25 to 30 years age group, 64 participants between 31 to 35 years age and 87 participants were found above 36 years age. Gender wise distribution depicts that 171 were male and 62 were female respondents who took part in the study. Similarly, 137 respondents were found married and 96 were found unmarried.

**Table 2** Respondents Demographic detail

Description	Variable(s)	Frequency	Percent	Cumulative Percent
Age	Less than 24 years	39	16.7	16.7
	25 to 30 years	43	18.5	35.2
	31 to 35 years	64	27.5	62.7
	Above 36 years	87	37.3	100.0
Gender	Male	171	73.4	73.4
	Female	62	26.6	100.0
Marital status	Married	137	58.8	58.8
	Unmarried	96	41.2	100.0

### 6.2 Exploratory Factor Analysis

Exploratory factor analysis is run in order to determine the comparatively hang together similar items or groups of items as a set. Based on exploratory factor analysis researchers determine the level of construct (so-called factorial) validity within the prescribed dataset. The core functions of the exploratory factor analysis to identify a sufficient number of factors to be included in the proposed model.

**Table 3** *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.756
Bartlett's Test of Sphericity	Approx. Chi-Square	26064.313
	Df	561
	Sig.	.000

Kaiser-Meyer-Olkin (KMO) test is conducted to ascertain the sizeable number of items envisaging for a single factor also examine partial correlations amid variable (Leech, Barrett & Morgan, 2005). The KMO value must be greater than acceptable value i.e. .50. In this study, the KMO value is .75. The table also presents Bartlett's test value .000 less than 0.05 (suggested value). The above statistics satisfied the assumption of sphericity and datasets is ready for analysis.

**Table 4** *Factor loading and Communalities*

	Component				Communalities
	1	2	3	4	
IS1		.983			.971
IS2		.964			.930
IS3		.944			.893
IS4		.966			.936
IS5		.984			.975
IS6		.986			.977
IS7		.979			.964
IS8		.950			.909
IS9		.931			.877
PT1			.979		.961
PT2			.883		.779
PT3			.898		.810
PT4			.970		.944
PT5			.900		.811
PT6			.937		.878
PT7			.981		.965
PT8			.979		.961
SS1				.994	.993
SS2				.955	.917
SS3				.987	.978
SS4				.990	.987
SS5				.988	.983
SS6				.958	.925
SS7				.979	.966
DC1	.953				.908
DC2	.956				.918
DC3	.956				.914
DC4	.962				.931

DC5	.963	.930
DC6	.960	.925
DC7	.962	.926
DC8	.954	.913
DC9	.928	.861
DC10	.907	.830

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

The above statistics present the details of factors loading and communalities. The analysis result shows that 4 iterations were carried out for 34 items of four variables. The values of all computed are greater than .50 (suggested value) (Leech et al., 2005) resultantly not even a solo item has removed.

### 6.3 Confirmatory Factor Analysis

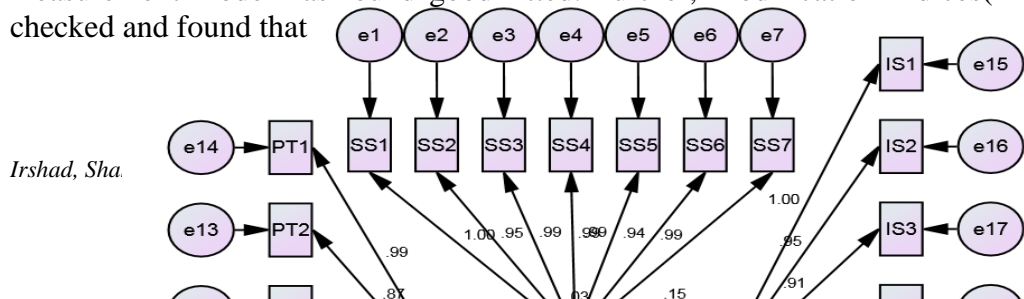
The questionnaire was used as an instrument for data collection which was adopted from existing literature and molded accordingly. To test validity Confirmatory Factor Analysis (CFA) was applied using AMOS-24. Nevertheless, some assumptions that need to be satisfied before applying AMOS. That includes minimum sample size, autocorrelation and data normality, etc. In this study, the sample size is sufficient to address the minimum sample size issue. However, for normality skewness and kurtosis test was conducted using SPSS. Results depict the normality of data as the values of skewness and kurtosis for all constructs were found within acceptable range i.e.  $\pm 2$  (suggested by George & Mallery, 2010), shown in table 5 also depicts the values of mean and standard deviation.

**Table 5** Skewness and Kurtosis

Construct	Mean	Std. Deviation	Skewness	Kurtosis
Personality Traits	2.6269	1.78286	.380	-1.641
Institutional Support	2.9403	1.75998	.067	-1.714
Supervisor Support	2.7948	1.78184	.209	-1.716
Degree Completion	3.0000	1.79053	.000	-1.758

#### 6.3.1 Measurement Model

In this study CFA (Maximum Likelihood) was performed to ensure the factor loadings, validity, and reliability of the scales and constructs. Results show that statistical values of factor loadings are above 0.70 (acceptable range) so the measurement model has found good fitted. Further, Modification Indices (MI) were checked and found that



the generated result shows that all values are within suggested values and the model is found good fitted. The statistical values of the model are presented in table 6.

**Table 6** *Model Fitness Indices*

Model fit measure	Recommended value*	Measure value
<b>Absolute Fit Measure</b>		
RMR	$\leq .05$	.038
GFI	$\geq .90$	.96
AGFI	$\geq .80$	.87
<b>Incremental Fit Measure</b>		
NFI	$\geq .90$	.98
RFI	$\geq .90$	.96
CFI	$\geq .90$	.99
IFI	$\geq .90$	.99
TLI	$\geq .90$	.97
<b>Parsimonious Fit Measure</b>		
X <sup>2</sup> / df	$\leq 3.00$	2.3
RMSEA	$\leq 0.08$	.05

\*Hair, Black, Babin and Babin, 2010; Hu & Bentler, 1999; McDonald & Ho, 2002; Wan, 2002

### 6.3.2 *Model validity*

Prior to the test hypothesis, while using a structural model, it has suggested checking the validity and reliability of constructs (Barclay Higgins, & Thompson, 1995). In this regard convergent validity, discriminant validity, and composite reliability have been examined. The statistic shows that values of convergent validity, Discriminant validity and Composite reliability of all constructs were found acceptable (higher than 0.50, higher than 0.70 and above 0.70 respectively) as suggested by (Hair et al., 2010; Henseler, Ringle, & Sarstedt., 2015; Hu & Bentler, 1999). Moreover, the statistical values of discriminant validity also found higher than the correlation values of the construct with other constructs. So it concluded that there is no issue of validity concern to test the research hypothesis through the structural model.

**Table 7** *Validity Statistics*

	CR	AVE	MSV	MaxR(H)	SS	PT	IS	DC
<b>SS</b>	0.994	0.957	0.022	1.001	0.978			
<b>PT</b>	0.982	0.872	0.007	0.993	0.044	0.934		
<b>IS</b>	0.990	0.919	0.022	0.999	0.148*	0.033	0.958	
<b>DC</b>	0.985	0.871	0.007	0.994	0.015	**	0.013	0.933

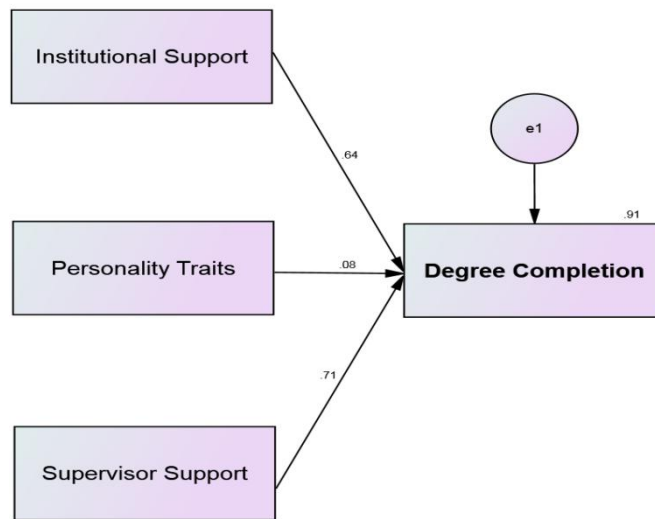
SS=Supervisor Support, PT=Personality traits, IS= Institutional Support, DC= Degree Completion

**HTMT Analysis**

Statistic shows that all values of HTMT were found within threshold and highly significant as recommended by Henseler et al., (2015).

	SS	PT	IS	DC
<b>Supervisor Support</b>				
<b>Personality traits</b>	0.034			
<b>Institutional Support</b>	0.133	0.040		
<b>Degree Completion</b>	0.007	0.050	0.024	

**Structural Modelling**



**Table 8** Structural Modelling Statistic

		Estimate (β1)*	Estimate (β2)**	S.E.	C.R.	P
Degree Completion <---	IS	.636	.455	.013	35.274	***
Degree Completion <---	PT	.085	.060	.013	4.710	***
Degree Completion <---	SS	.708	.505	.013	39.304	***

\*β1= Standardized, \*\*β2= Unstandardized

IS= Institutional Support, PT= Personality Traits, SS= Supervisor Support

Hypotheses were tested through structural modeling and statistical values are presented in the above table show that Institutional Support has significant positive

predictor of degree completion ( $\beta = .636$ , C.R. = 35.274,  $p < .05$ ), Personality traits has also found a significant positive predictor of degree completion ( $\beta = .085$ , C.R. = 4.710,  $p < .05$ ) and Supervisor support has found a significant positive predictor of degree completion ( $\beta = .708$ , C.R. = 39.304,  $p < .05$ ).

## **7. DISCUSSION AND CONCLUSIONS**

The aim of this study was to examine the etiology of students failing to complete a doctorate degree within stipulated time. The population for this study comprised students enrolled for a doctorate degree (Ph.D.) in Khyber Pakhtunkhwa universities. Data was collected through a questionnaire distributed amongst 268 respondents and responses were received from 233 corrected in all respects. Statistical software SPSS-20 and AMOS-24 were used for data analysis. The demographics statistics of the study show that the majority of respondents are in the age of 30 or early 40s years, and the majority of respondents were found married. The demographics statistics of this study have revealed similarities with the previous study of Smith (2000) and conclude that majority ABDs in the mid-30s or early-40s and either married or in relation (Frank, 2003). Results show that the measurement model has a good fit and there is no issue of validity concern so hypotheses were tested through SEM. All hypotheses were accepted based on statistical values. Institutional Support has found a significant positive predictor of degree completion. Study findings have found similar to findings of a previous study conducted by (Edenfield, 2018; Lei, 2016). Personality trait has found a significant positive predictor of degree completion. The study result supports the findings of previous studies conducted by Paltridge and Woodrow, (2012), Tinto (2016). Supervisor support has found a significant positive predictor of degree completion. This research finding also supports and is similar to findings of a previous study of Collins, 2002, Cotterall (2013a), Wendy, (2004), Wisker et al. (2010).

There is a dire need to revamp the education system to cope with futuristic scientists/researchers' demand. In this regard, all stakeholders need to play an assortment role. At the national level, a systematic formal organization structure is needed to be developed to clearly define the role and responsibility of stakeholders. In this regard, the National Research Monitoring Cell (NRMC) is needed to be established at the top to ascertain present and future scientists/researchers' requirements. The National Research Monitoring Cell acts as a hub to collaborate with international and also provides support to national institutions/researchers. All researchers and research degree awarding institutes must register with NRMC along with project in-hand (if any) also submit progress report quarterly. Accordingly, NRMC monitors their activities and provides valuable suggestions for improvement. Further research degree awarding institutes extend support to enrolled research students for time completion also arrange research pedagogy-cum-motivational workshops. Supervisors play a role of mentor for their students to effectively engage their students in research activities beyond odd hours also encourage to overcome social and domestic issues and inculcate the research/innovation habits. Supervisors regularly monitor the progress of the respective students. Also conduct a mentor session eavesdrop the domestic, social, and academic issues of their students and

guide them accordingly. This formal structure of research seems to be more systematic and productive for national/international bodies and it is perceived that it may faster the research activities also contribution in-time research degree completion. Moreover, there is a need to introduce an incentive for quality and before time research/project completion. Further, a State of Art Research Centers may be established equipped with advanced facilities such as access to research data, digital libraries, and international bodies. Research degree awarding institutes needs to regularly arrange and conduct motivation and character-building seminars to inculcate enthusiasm and good personality traits in the researchers. Despite this, this research was conducted on the philosophical foundation factors of a doctorate degree, however, there is a need to conduct research studies in different other allied factors that contribute to doctorate degree completion at the regional level. Moreover, a research study needs to be conducted to formally study the doctorate degree requirements in accordance with prevailing technological advancement and globalization.

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