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**STRATEGIC FACTORS INFLUENCING THE COMPLETION  
RATE OF DOCTORAL STUDIES IN KENYA: A CASE OF  
SELECTED PUBLIC UNIVERSITIES IN KENYA**

**Dr. Charles Momanyi, PhD**

**Kisii University**

**Email of the corresponding author: [charlesmomanyi@kisiiversity.ac.ke](mailto:charlesmomanyi@kisiiversity.ac.ke)**

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**ABSTRACT**

**Purpose of the study:** The study examined whether strategic factors can influence the completion rate of doctoral studies of public universities in Kenya. The specific objectives were to examine the influence of research information infrastructure, supervision process and mode of study on completion rate.

**Statement of the problem:** The number of applicants for doctoral programmes in many universities in Kenya has continued to rise over the years. However, acquiring a doctoral degree is a daunting task for many students in Kenya. Many students take a considerably longer period to complete their theses or fail to complete them at all.

**Research methodology:** The study adopted the descriptive research design. The study population was 3618 doctoral students (1504 from the University of Nairobi, 1196 from Kenyatta university and 918 from Jomo Kenyatta University of Agriculture and Technology). The sample size was 361 that was calculated using the Yamane formula.

**Findings:** The study established that research information infrastructure is positively and significantly related to completion rate ( $\beta=.413$   $p=0.000$ ). It was found that the supervision process is positively and significantly related to completion rate ( $\beta=.248$   $p=0.000$ ). In addition, the mode of study was found to be positively and significantly related to the completion rate ( $\beta=.382$ ,  $p=0.000$ ).

**Recommendations:** The study recommended the university install internet on all the premises, enable students to read online books and other publications for free on the university digital platforms, facilitate the university digital resource platforms to be easily accessible to everyone,

and the university to support information management skills. There should be specialists to facilitate easy access to the needed information from the digital resource platforms of the university. There should be a supportive mentorship supported by the supervisors/university to PhD students. In addition, there should be timely feedback from the supervisors and supervisors to allow students to consult anytime if a concept is not well understood. In addition, it is recommended that students be treated equally by the supervisors/university regardless of the mode of the study. There should be different types of courses designed to suit students' requirements and university to allow them to choose their mode of study based on their schedules.

**Keywords:** *Strategic factors, research information infrastructure, supervision process, mode of study, Completion Rate, Doctoral Studies, Public Universities, Kenya*

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## **INTRODUCTION**

Education is the most important component that can change the world. An educated society is crucial for economic growth (Virtanen, Taina & Pyhäntö, 2017). Educated people can be more innovative and reliable in the decision-making process. A better-educated population has less unemployment, reduced dependence on public assistance programs and has greater tax revenue. In addition, the conducting of businesses globally is very competitive and thus, educated people are needed to make policies (Sverdlik, Hall, & McAlpine, 2020). An educated person is more likely to develop better moral and ethical values than an uneducated person. The higher the education level, the higher the advantages (Leijen, Lepp & Remmik, 2016). A doctorate is the highest degree level that an individual can obtain in any country. Individuals with a doctorate are much respected in society and are considered more visionary (Munim & Schramm, 2018).

However, the completion rate of doctoral studies in the world has not been sufficient (Bekova, 2021; Vidak, Tokalić, Marušić, Puljak & Sapunar, 2017). The low completion rate of doctorate studies has become a worldwide concern in the education sector. It was reported by Costa Bispo and Pereira (2018) that the completion rate of the PhD students within the stipulated time in Brazil stands at around 37%. Moreover, in Malaysia, the completion rate is about 51% (Jeyaraj, 2020). In Iran, it was reported by Sherkat and Chenari (2020) that the completion rate of doctorate students within the stipulated time stands at 23%. In Pakistan, Ahmed, Akhtar, Ahmed, Bano and Jaffar (2021) found that more than 61% of the doctorate students take more than two years above the normal time to complete their doctorate studies.

In South Africa, more than 61% of the PhD students spent more than six years before graduating (Mphekgwana, Mabila Tirivangasi & Makgopa, 2020). In Botswana, the completion rate is also

slow and only 17% of the enrolled doctorate students take the normal time to complete their studies (Joseph & Kalabamub, 2018). In Kenya, the completion rate of doctorate students within the normal time is low. It was reported by Nafukho, Wekullo and Muyia (2019) that some universities and new schools or faculties hardly have any professors and the majority of academic staff have master's degrees as their highest academic qualification. The low level of academic staff qualifications is compounded by the fact that the numbers of those qualified to teach PhD students are low due to the slow pace in the completion rate of the enrolled doctorate students (Adika & Kwanya, 2020).

A survey conducted by Commission for University Education in 2019 indicated that only 11 percent of the PhD students enrolled in Kenyan universities complete their studies, meaning a whopping 89 percent fail to graduate within the stipulated time. Thus, it was significant to establish the factors influencing the low completion rate of doctorate students in Kenya for policy formulations. Consequently, the strategic factors were deemed significant and could affect the low completion rate of doctoral studies in Kenya. Strategic factors are things universities and students need to get right to ensure a high completion rate of doctoral studies (Yang & Bai, 2019). The strategic factors are notably key issues that are strategically relevant and determine the success or failure of the students.

Some of the strategic factors considered key to enhancing the doctorate studies' completion rate include research information infrastructure, supervision process and mode of study (Hill & Conceição, 2020; Lim, Covrig, Freed, De Oliveira, Ongo & Newman, 2019). The information infrastructure can include developments of ICT networks, digital resource platforms, information resources, access policies and document management processes (Elliot, 2021). The strategic factors aimed at enhancing the information infrastructure can be key in promoting the completion rate of doctoral studies. Moreover, a good relationship between the supervisors and students can determine the completion rate. Proper supervision, arrangements, timely feedback to students, advisor-advice meeting frequency, good relationship and an early start are key pointers of a possible high rate and timely completion of thesis writing (Joseph & Kalabamub, 2018).

The mode of study, such as full time (school based) and part time (evening study) programme can influence the completion of the students (Maloshonok & Terentev, 2019). The school-based students might have more time to complete their course work than part-time students. The number

of applicants for doctoral programmes in many universities in Kenya has continued to rise over years. However, acquiring a doctoral degree is a daunting task for many students (Matheka, Jansen & Hofman, 2020). Many students take a considerably longer period to complete their theses or fail to complete them at all (Mugendi & Githae, 2021). The causes for delay or failure to complete doctoral studies within the stipulated time formed the basis of the current study. The study sought to examine strategic factors influencing the completion rate of doctoral studies of public universities in Kenya.

### **STATEMENT OF THE PROBLEM**

The completion rate of doctoral studies is key to the students and the entire nation. Educated people are more innovative and reliable in the decision-making process. An individual continuously aims to attain the highest level of education. A doctorate is the highest degree level that an individual can obtain in any country (Munim & Schramm, 2018). The number of applicants for doctoral programmes in many universities in Kenya has continued to rise over the years. Nonetheless, acquiring a doctoral degree is a daunting task for many students in Kenya (Matheka, Jansen & Hofman, 2020). World Health Organization (2018) revealed that 31% of doctoral students had shown signs of mental disorder resulting from pressures to complete their studies. Many students take a considerably longer period to complete their theses or fail to complete them at all (Mugendi & Githae, 2021).

Moreover, based on the empirical studies reviewed, there was inadequate information to make inferences for the current study. For instance, a study by Rong' uno (2016) showed that factors influencing doctoral completion rates were programme requirements, supervision quality, inadequate information infrastructure, inadequate number of supervisors and individual student factors, while the current study was focused on the influence of research information infrastructure, supervision process and mode of study on the completion rate of doctoral studies in selected public universities in Kenya, thus a conceptual gap.

Another study by Njoroge, Wang' eri and Gichure (2016) examined the influence of examination repeats, semester deferments on dropping out among the private universities in Nairobi County, Kenya and presented a contextual gap since it was conducted in private universities while the current in public universities. Furthermore, Kiplagat, Ferej and Kafu (2018) investigated the influence of institution-based factors on trainees' completion rate in Vocational Training Centres

(VTCs) in Kenya and thus depicts a contextual gap. In addition, Mwangi (2017) examined factors influencing the completion rate of learners in distance learning programmes at Mount Kenya University. Based on this background, the current study was deemed satisfactory to examine whether strategic factors influence the completion rate of doctoral studies of public universities in Kenya.

## **RESEARCH OBJECTIVES**

- i. To examine the influence of research information infrastructure on completion rate of doctoral studies in selected public universities in Kenya
- ii. To examine the influence of supervision process on completion rate of doctoral studies in selected public universities in Kenya
- iii. To examine the influence of mode of study on completion rate of doctoral studies in selected public universities in Kenya

## **LITERATURE REVIEW**

A study was conducted by Rong' uno (2016) to examine the effect of institutional and student-related factors on doctoral Studies completion rates in Education at selected Public Universities in Kenya. A descriptive survey design was used. The total number of participants was 115. The number of doctoral students who participated was 388 registered between 2009 and 2013. A questionnaire, document analysis guide and interview guide were used to collect data for the study. The study found out that about 50% of the teaching staff at the selected public universities were tutorial fellows- who cannot supervise PhD hence inadequate staff. The study also indicated that supervision quality and inadequate information infrastructure negatively influence the completion rates. The study concluded that key factors influencing doctoral completion rates were programme requirements, supervision quality, inadequate information infrastructure, inadequate number of supervisors and individual student factors, including socio-economic and lack of thesis writing skills.

Another study was conducted by Njoroge, Wang' eri and Gichure (2016) to examine the influence of examination repeats, semester deferments on dropping out among the private universities in Nairobi County, Kenya. The study utilized the descriptive research design. The study sample consisted of 387 current and 60 students who had dropped out of 13 private universities in Nairobi,

Kenya. Data was collected through a paper-based questionnaire and in-depth interviews. The results showed that examination repeats and semester deferments influenced the dropout of students to a large extent. The study recommended mechanisms to be developed by the institutions for early detection of attrition risk to ensure students pursue their studies to completion.

Khan (2019) assessed the effect of different factors on students' performance at the University of Malakand. Primary data was used in the study. Students were selected to collect information regarding the factors responsible for the academic performance of students through random sampling. The study found that factors like ICT infrastructure, examination system, supervision quality and living status of students have a significant effect on the students' academic performance. The study concluded that students' graduation is positively and significantly related to ICT infrastructure, examination system, supervision quality and living status of students.

Furthermore, Kiplagat, Ferej and Kafu (2018) investigated the influence of institution-based factors on trainees' completion rate in Vocational Training Centres (VTCs) in Kenya. Data was collected from the five VTC sites. Data was collected using two sets of questionnaires and interview schedules. The findings of the study revealed that difficult NVCET curriculum, low qualification of instructors, inadequate general facilities and instructional materials, inadequate handling of guidance and counselling issues among others greatly influenced trainees' low completion rate in VTCs. The study recommended that VTCs together with parents should enhance guidance and counselling programs, Government and VTCs should employ additional qualified instructors, develop infrastructure and instructional materials, and the NVCET curriculum should be urgently reviewed.

In addition, Mwangi (2017) examined factors influencing completion rate of learners in distance learning programmes in Mount Kenya university. The research study adopted the descriptive survey research method and employed both qualitative and quantitative approaches. A sample of the respondents was sought using the snow ball sampling technique. The study established that the ICT infrastructure, occupations and social-economic status are the significant factors influencing the completion rate of distance learners. Further, Ogwengo and Osano (2017) found strategy implementation such as development in information infrastructure has a significant effect on completion rates of students in institutions of higher learning in Kenya.

## RESEARCH METHODOLOGY

The study adopted the descriptive research design. The use of descriptive design is used when the researcher wants to give information from the respondents without influencing their opinions. Thus, the design was deemed satisfactory to be utilized in the study. The study population was three selected public universities: University of Nairobi, Kenyatta University, and Jomo Kenyatta University of Agriculture and Technology in Nairobi County and Kiambu County. The unit of observation was doctorate students. Based on their websites, the University of Nairobi had 1504 doctorate students, Kenyatta university 1196 and Jomo Kenyatta University of Agriculture and Technology 918, yielding 3618 students. The sample size was 361 that was calculated using the Yamane formula. The collection instruments used included the questionnaires. The statistical software used was SPSS version 24. The analysis of the data was done using descriptive and inferential statistics. The descriptive statistics were analyzed using the mean, standard deviation and percentages, while the inferential statistics included the Pearson correlation and regression analysis

## RESEARCH FINDINGS

### Response rate

The number of questionnaires administered to the doctoral students in the three universities was 361. Out of the 361 respondents, 313 questionnaires were duly filled and returned, as presented in Table 1

**Table 1: Response Rate**

University	Returned	Unreturned	Percentage
University of Nairobi	127	23	84.61
Kenyatta university	108	11	90.50
Jomo Kenyatta University of Agriculture and Technology	78	14	85.19
<b>Total</b>	<b>313</b>	<b>48</b>	<b>86.70</b>

The average response rate presented in Table 1 is 86.70%. This response rate was deemed satisfactory as it was consistent with the findings of Babbie (2004), which asserted that response rates of above 50% is acceptable to analyze and publish, 60% is good, 70% is very good and 80% is excellent. Thus, the response was above 80% hence very good for the study for the analysis and making of the inferences.



## Descriptive Statistics

This section presents the descriptive statistics of research information infrastructure, supervision process, mode of study and completion rate of doctoral studies in selected public universities in Nairobi County and Kiambu County.

### Research Information Infrastructure

The first objective of the study was to examine the influence of research information infrastructure on completion rate of doctoral studies in public universities in Kenya. The descriptive statistics of research information infrastructure is presented in Table 2

**Table 2: Descriptive Statistics of Research Information Infrastructure**

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
The university has installed internet on all the premises	2.80%	10.80%	10.20%	34.70%	41.50%	4.01	1.10
Students can read online books and other publications for free on the university digital platforms	4.00%	8.00%	3.40%	49.40%	35.20%	4.04	1.03
The university digital resource platforms are easily accessible to everyone.	2.80%	6.80%	10.80%	38.10%	41.50%	4.09	1.02
The university supports information management skills	3.40%	7.40%	4.50%	36.40%	48.30%	4.19	1.05
There are specialists to facilitate easy access to the needed information from the digital resource platforms of the university.	3.10%	8.50%	6.80%	50.00%	31.50%	3.94	1.10
<b>Average</b>						<b>4.05</b>	<b>1.06</b>

The field results (descriptive statistics) depicted in Table 2 indicate 76.20% (34.70%+ 41.50%) of the doctorate students disagreed the university has installed internet on all the premises while 13.60% (2.80%+10.80%) agreed with the statement and 10.20% remained neutral. This implied that the majority of the students disagreed the university has installed internet on all the premises as supported by the mean score of 4.01 with a standard deviation of 1.10. It was found that 84.60%



of the students disagreed students can read online books and other publications for free on the university digital platforms, while 12% agreed with the statement and 3.40% remained neutral. The mean score of the survey question was 4.04 with a standard deviation of 1.03.

The study found that 79.60% of students disagreed the university digital resource platforms are easily accessible to everyone and 9.60% agreed with the survey question while 10.80% remained neutral. Moreover, the study found that 84.70% of the students disagreed the university supports information management skills while 10.80% agreed with the statement with 4.50% remaining to be neutral. The mean score was 4.19, with a standard deviation of 1.05. It was found that 81.50% of the respondents disagreed there are specialists to facilitate easy access to the needed information from the digital resource platforms of the university while 11.60% agreed with the statement and 6.80% remained neutral. The mean score of the survey question was 3.94, with a standard deviation of 1.10. Finally, the average mean score of the survey questions of research information infrastructure was 4.05, with a standard deviation of 1.06. This signified that the majority of the doctorate students disagreed with the majority of the survey questions.

### **Supervision Process**

The second objective of the study was to examine the influence of supervision process on completion rate of doctoral studies in public universities in Kenya and the descriptive statistics is presented in Table 3

**Table 3: Descriptive statistics of Supervision Process**

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
The university management inspects the progress of the supervision of student's dissertation/thesis	2.80%	12.50%	9.70%	34.10%	40.90%	3.98	1.13
The supervisors guide students on how to develop thesis research topics	5.70%	9.10%	5.10%	36.40%	43.80%	4.03	1.17
There is supportive mentorship supported by the supervisors/ university to PhD students	2.80%	11.40%	14.80%	33.50%	37.50%	3.91	1.11
There is timely feedback from the supervisors	4.50%	15.30%	13.10%	31.30%	35.80%	3.78	1.21
The supervisors allow students to consult anytime if a concept is not well understood	1.70%	6.80%	5.70%	38.10%	47.70%	4.23	0.96
<b>Average</b>						<b>3.99</b>	<b>1.12</b>

Based on the results presented in Table 3, 75% of the students disagreed the university management inspects the progress of the supervision of student's dissertation/thesis while 15.30% agreed with the statement and 9.70% remained neutral. The mean score of the survey question was 3.98 with a standard deviation of 1.13 and this implied that majority of the students disagreed the university management inspects the progress of the supervision of student's dissertation/thesis. It was found that 80.20% of the students disagreed the supervisors guide students on how to develop thesis research topics and 14.80% agreed with the statement, while 5.10% remained neutral. The mean score of the survey question was 4.03, with a standard deviation of 1.17. The study found that 71% of the students disagreed there is supportive mentorship supported by the supervisors/ university to PhD students and 14.20% agreed with the statement while 14.80% remained neutral. The mean score of the survey question was 3.91, with a standard deviation of 1.11.

It was found that 67.10% of the students disagreed there is timely feedback from the supervisors while 19.80% agreed with the survey question and 13.10% remained neutral. The mean score of the survey question was 3.78, with a standard deviation of 1.21. The study found that 85.80% of the students disagreed the supervisors allow students to consult anytime if a concept is not well understood and 8.50% agreed with the statement. The mean score of the survey question was 4.23, with a standard deviation of 0.96. Finally, the average mean score of the survey questions of

supervision process was 3.99, with a standard deviation of 1.12. This signified that the majority of the students disagreed with the developed survey questions.

**Mode of Study**

The third objective of the study was to examine the influence of mode of study on completion rate of doctoral studies in public universities in Kenya and the descriptive statistics is presented in Table 4

**Table 4: Descriptive Statistics of Mode of Study**

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
The students are treated equally by the supervisors/university regardless of the mode of the study.	4.50%	10.20%	9.70%	48.30%	27.30%	3.84	1.08
There are different types of courses designed to suit students' requirements.	4.50%	8.00%	7.40%	34.10%	46.00%	4.08	1.12
The method of teaching depends on the mode of study undertaken by the students	9.10%	7.40%	2.80%	43.20%	37.50%	3.93	1.23
The university allows the students to choose their mode of study based on their schedules.	4.00%	15.30%	8.50%	31.30%	40.90%	3.90	1.21
The frequency of teaching depends on whether a student is a full time or part-time	1.10%	9.70%	5.70%	50.60%	33.00%	4.05	0.94
<b>Average</b>						<b>3.96</b>	<b>1.12</b>

It was found that 75.6% of the respondents (students) disagreed students are treated equally by the supervisors/university regardless of the mode of the study while 14.70% disagreed with the statement and 9.70% remained neutral. The mean score of the survey question was 3.84 with a standard deviation of 1.08 and this implied the majority of the respondents (students) disagreed students are treated equally by the supervisors/university regardless of the mode of the study. The study found that 80.10% of the students disagreed there are different types of courses designed to

suit students' requirements while 12.50% agreed with the survey question and 7.40% remained neutral. The mean score was 4.08, with a standard deviation of 1.12.

Furthermore, the study found that 80.70% of the students disagreed the method of teaching depends on the mode of study undertaken by the students, while 16.50 agreed with the survey question and 2.80% remained neutral. The mean score was 3.93, with a standard deviation of 1.23. It was found that 72.20% of the students disagreed the university allows the students to choose their mode of study based on their schedules while 19.30% agreed with the statement and 8.50% remained neutral. The study found that 83.60% disagreed the frequency of teaching depends on whether a student is a full time or part-time and 10.80% agreed with the statement, while 5.70% remained neutral. The average mean score of the survey statements of mode of study was 3.96, with a standard deviation of 1.12. This signified that the majority of the students disagreed with the developed survey questions.

### Completion Rate

The completion rate was the dependent variable and the descriptive statistics is presented in Table 5

**Table 5: Descriptive Statistics of Completion Rate**

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
Majority of the PhD students in the university graduates within the stipulated time	5.10%	14.80%	8.00%	36.40%	35.80%	3.83	1.21
The completion rate of the dissertations/thesis in the university has been within the stipulated time.	4.50%	13.60%	6.80%	23.30%	51.70%	4.04	1.24
The PhD students graduating from the university have increased in the last five years.	4.00%	8.50%	7.40%	43.20%	36.90%	4.01	1.07
The graduation rate of the enrolled PhD students in the public universities are more than in private universities	5.10%	10.20%	5.70%	47.20%	31.80%	3.90	1.11
Majority of the PhD students in the university complete course work on time	1.70%	9.10%	5.10%	50.60%	33.50%	4.05	0.95
<b>Average</b>						<b>3.97</b>	<b>1.12</b>

The study reported that 72.20% of the students disagreed the majority of the PhD students in the university graduates within the stipulated time, while 19.90% agreed with the survey question and 8.00% remained neutral. The mean score of the survey question was 3.83, with a standard deviation of 1.21. It was found that 75% of the students disagreed the completion rate of the dissertations/thesis in the university has been within the stipulated time while 18.10 agreed with the survey question and 6.80% remained neutral. Moreover, the study found that 80.10% of the students disagreed the PhD students graduating from the university have increased in the last five years and 12.50% agreed with the statement, while 7.40% remained undecided. The mean score of the survey question was 4.01, with a standard deviation of 1.07. This implied that the majority of the students disagreed the PhD students graduating from the university have increased in the last five years.

Further, the study found that 79% of the students disagreed the graduation rate of the enrolled PhD students in the public universities are more than in private universities while 15.30% agreed with the statement and 5.70% remained neutral. The mean score of the survey statement was 3.90, with a standard deviation of 1.11. The study found that 84.10% of the students disagreed majority of the PhD students in the university complete course work on time while 10.80% agreed with the statement. The mean score of the survey question was 4.05, with a standard deviation of 0.95. The average mean score of the survey questions was 3.97 with a standard deviation of 1.12. This implied majority of the students disagreed with the developed survey questions.

### **Inferential Statistics**

The inferential statistics entails the correlation analysis and regression analysis.

### **Correlation Analysis**

The correlation results are shown in Table 6

**Table 6: Correlation Results**

		Completion Rate	Research Information Infrastructure	Supervision Process	Mode of Study
Completion Rate	Pearson Correlation Sig. (2-tailed)	1.000			
Research Information Infrastructure	Pearson Correlation Sig. (2-tailed)	.680** 0.000	1.000		
Supervision Process	Pearson Correlation Sig. (2-tailed)	.561** 0.000	.387** 0.000	1.000	
Mode of Study	Pearson Correlation Sig. (2-tailed)	.669** 0.000	.520** 0.000	.434** 0.000	1.000

The correlation results depicted in Table 6 establish a positive and significant association between research information infrastructure and completion rate ( $r=.680$ ,  $p=.000$ ). Also, a positive and significant association exists between supervision process and completion rate ( $r=.561$ ,  $p=.000$ ). Likewise, mode of study and completion rate was found to be positively and significantly associated ( $r=.669$ ,  $p=.000$ ). The results are consistent with the findings of Rong' uno (2016) which established key factors influencing doctoral completion rates were programme requirements, supervision quality, inadequate information infrastructure, inadequate number of supervisors and individual student factors, including socio-economic and lack of thesis writing skills. In addition,, Ogwengo and Osano (2017) found strategy implementation such as development in information infrastructure has a significant effect on completion rates of students in institutions of higher learning in Kenya

### Regression Analysis

The section comprises of model fitness, analysis of variance and regression of coefficient. The results presented in Table 7 indicate the model fitness

**Table 7: Model Fitness**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805a	0.649	0.645	.2068152

a. Predictors: Research information infrastructure, supervision process, mode of study

The results presented in Table 7 establish that research information infrastructure, supervision process, mode of the study were found to be satisfactory in explaining the completion rate of doctoral studies in public universities in Kenya. The coefficient of determination, also known as the R square, was 0.649 (64.9%). This implied that research information infrastructure, supervision process and mode of the study explain 64.9% of the variations in the dependent variable, which is the completion rate of doctoral studies in public universities in Kenya.

Table 8 provides the results on the analysis of variance (ANOVA).

**Table 8: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.408	3	8.136	190.220	.000 <sup>b</sup>
	Residual	13.217	309	.043		
	Total	37.625	312			

The results in Table 8 indicate that the overall model was statistically significant. The results imply that research information infrastructure, supervision process, mode of study are good predictors in explaining the completion rate of doctoral studies in public universities in Kenya. This was supported by an F statistic of 190.220 and the reported p-value of 0.000, which is less than the conventional probability significance level of 0.05.

The regressions of coefficient results are presented in Table 9



**Table 9: Regressions of Coefficient**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.142	.179		.789	.431
	Research information infrastructure	.413	.042	.399	9.877	.000
	Supervision process	.248	.037	.253	6.615	.000
	Mode of study	.382	.045	.352	8.529	.000

a Dependent Variable: Completion rate

Table 9 results show that research information infrastructure is positively and significantly related to completion rate ( $\beta=.413$   $p=0.000$ ). The results were supported by the calculated t-statistic of 9.877, larger than the critical t-statistic of 1.96. The results signified that a unitary improvement of the research information infrastructure would increase the completion rate of doctoral studies in public universities in Kenya by 0.413 units while other factors are held constant. Further, it was found that the supervision process is positively and significantly related to completion rate ( $\beta=.248$   $p=0.000$ ). This was supported by a calculated t-statistic of 6.615 that is larger than the critical t-statistic of 1.96. The study results implied that a unitary improvement in the supervision process would increase the completion rate of doctoral studies in public universities in Kenya by 0.248 units while other factors are held constant. Finally, it was found that the mode of study is positively and significantly related to the completion rate ( $\beta=.382$ ,  $p=0.000$ ). The outcome was supported by the calculated t-statistic of 8.529 that is larger than the critical t-statistic of 1.96. The results meant that a unitary improvement in the mode of study would increase the completion rate of doctoral studies in public universities in Kenya by 0.382 units while other factors are held constant.

The results are consistent with the findings of Khan (2019), which indicated that students' graduation is positively and significantly related to ICT infrastructure, examination system, supervision quality and living status of students. Besides, Ogwengo and Osano (2017) found strategy implementation such as development in information infrastructure has a significant effect on completion rates of students in institutions of higher learning in Kenya. In addition, Mwangi (2017) established that the ICT infrastructure, occupations and social-economic status are the significant factors influencing the completion rate of distance learners.

## **CONCLUSION**

The study concluded that that research information infrastructure is positively and significantly related to completion rate. The results indicated that a unitary improvement of the research information infrastructure would increase the completion rate of doctoral studies in public universities in Kenya by 0.413 units while other factors are held constant. It is concluded that research information infrastructure can include the university installing internet on all the premises, enabling students to read online books and other publications for free on the university digital platforms, and enabling the university digital resource platforms to be easily accessible to everyone. The research information infrastructure can include the university supporting information management skills and having specialists to facilitate easy access to the needed information from the digital resource platforms of the university.

The study concluded that the supervision process is positively and significantly related to the completion rate. A unitary improvement in the supervision process would increase the completion rate of doctoral studies in public universities in Kenya by 0.248 units while other factors are held constant. The supervision process can include the university management inspecting the progress of the supervision of students' dissertation/thesis and supervisors guiding students on how to develop thesis research topics. The supportive mentorship supported to PhD students, timely feedback from the supervisors and allowing students to consult anytime if a concept is not well understood can be key strategic factors that can influence the completion rate.

Moreover, it is concluded that the mode of study is positively and significantly related to the completion rate. The study results indicated a unitary improvement in the mode of study would increase the completion rate of doctoral studies in public universities in Kenya by 0.382 units while other factors are held constant. The mode of study can include students being treated equally by the supervisors/university regardless of the mode of the study, having different types of courses designed to suit students' requirements, method of teaching depending on the mode of study undertaken by the students and the university allowing the students to choose their mode of study based on their schedules.

## RECOMMENDATIONS

Based on the findings, it is recommended the university install internet on all the premises, enable students to read online books and other publications for free on the university digital platforms, to facilitate the university digital resource platforms to be easily accessible to everyone, and the university to support information management skills. There should be specialists to facilitate easy access to the needed information from the digital resource platforms of the university. Moreover, it is recommended the university management regularly inspect the progress of the supervision of students' dissertation/. The supervisors to guide students on how to develop thesis research topics. There should be a supportive mentorship supported by the supervisors/university to PhD students. It is also suggested that there should be timely feedback from the supervisors and supervisors to allow students to consult anytime if a concept is not well understood. In addition, it is recommended that students be treated equally by the supervisors/university regardless of the mode of the study. There should be different types of courses designed to suit students' requirements and the university to allow the students to choose their mode of study based on their schedules. Further, it is recommended that the frequency of teaching to depends on whether a student is full-time or part-time.

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