

Failure Factors Quality in Vocational and Technical Education in Nigeria Higher Institutions: The Use of Rasch Model



Olojuolawe Sunday Rufus, Tunde Ajayi Babatunde Joseph, Awolumate Emmanuel Olorunfemi

Abstract: The study is a case study of the student academic performance in vocational and technical education at the College of Education, Ikere Ekiti. The academic performance of students has been abysmally low. This has grossly impacted the students' enrolment in the departments and the College in general. The paper identifies the major causes of the failures in vocational and technical education courses in the College. The survey research employing exploratory sequential mixed method was used. It involves 12 Participants and 50 respondents. The Nvivo12 software was used to obtain the word cloud. The Rasch Analysis Model was applied to obtain the Person and Item separations, reliabilities and the respondent's agreement. The hierarchy details the factors in order relativity and difficulty level. Findings shows that both internal and external factors are the main sources of students' failure.

Keywords: Technical Education, Technopreneur, Graduate, Employability

I. INTRODUCTION

The introduction of vocational and technical education into the curriculum of Colleges of education in Nigeria was aimed at inculcating saleable skills into the youths [1]–[4]. The recipients are trained to acquire skills, attitude and knowledge which are needed for the economic growth of the nation (Kehinde & Adewuyi, 2015). The general aim was to promote human resource development, productivity and economic development. Vocational and technical education is crucial to national development of most countries of the world [5]. The poor image of vocational and technical education have been linked to the rising rate of youth unemployment in Nigeria [6]–[9]. Despite the strong commitment of government at providing adequate infrastructures and facilities in Nigeria tertiary institutions and Colleges of Education in particular, vocational and technical education is still faced with myriad of problems [9]–[11]. These ranges from the classrooms to the labour market. Studies conducted by Hayatu & Abubakar, (2019)

indicated external and external factors as the main contributing factors for students' academic poor performance in Nigeria Higher institutions. Internal factors are students induced factors. While the teachers, schools, government and parental factors are external factors [12], [13]. Recently, the rate of mass failure in vocational and technical education attracted the attention of the College Management and ordered a probe. Consequently, this study is aimed at identifying the major causes of students' failure in TVET. The specific objective includes identifying the problems, order the problems into the level of severity and offering possible suggestion. Figure 1.1 shows the conceptual framework of the study.

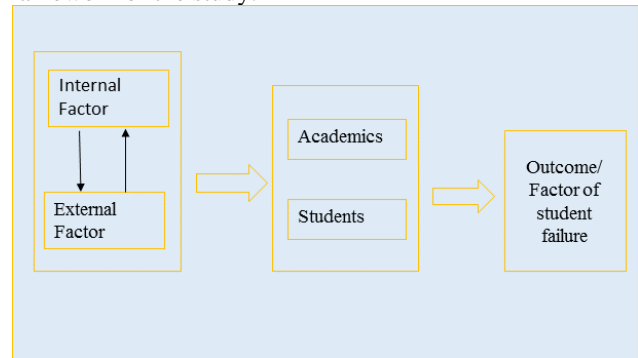


Figure 1.1: Conceptual framework

II. METHODOLOGY

This study employs exploratory sequential mixed methods because of the large population [14], [15]. The study consists of personal interview with the Academics and the students in the school of study. They forms the major critical stakeholders for the study. Table 1.1 shows the list of the departments in the school, including the number of Academics and students.

Table 1.1: Number of Departments

S/N	DEPARTMENT	ACADEMICS	STUDENTS
1	Agricultural Education		
2	Business Education		
3	Fine & Applied Arts Education		
4	Home Economics Education		
5	Technical Education		

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The population for the study is made up of both Academics and students in the school of vocational and technical education in the college. The purposive sampling technique was used for the qualitative aspect of the study because of the time frame [16], [17]. Consequently, the sample size for the qualitative study involves 10 participants which included 5 academics and 5 students.

Since the current study is seeking to establish the validity of the factors responsible for students' failure in vocational and technical education in Ikere College of Education using the Rasch Analysis Model, it is therefore important to follow the sample size prescribed for Rasch Measurement Model. The researcher decided to go for ± 1 logit with a 99% confidence level, and the sample size for most purposes is 50. Rasch analysis sample size of at least 50 respondents and a minimum of 20 items are suggested for attaining stable indices [18], [19].

III. DATA ANALYSIS

Table 1.2 shows the data analysis for student factors.

Table 1.2: Interview Findings for Student Factors.

Example of responses	Respondents	Codes	Themes
Most students don't attend lectures...first lecture only 9 came for class out of 19	AC1 AC2	Attendance at lectures	Absenteeism
Parents poor financial background delayed registration...poor financial status of the students...absence of subsidy / scholarships to cushion the effects of the high school fees	AC1 AC2 AC3 ST1 ST2 ST3	Late registration for courses	High tuition
Economic situation in the country...lack of job opportunities dampens students morale...graduated seniors didn't have jobs.	AC1 AC2 ST2 ST3	Weakened interest	Motivation

Nothing to arouse their interest...lack of job motivation.			
Most students failed to participate in tests, assignment...care free attitudes are exhibited. Lack of interest in education because there is no job. Most lecturers are hostile.	AC2 AC3 ST1 ST2 ST3	Uncared attitudes	Attitudes
Instructional material are not available...abstract teaching...absence of teaching materials	AC1 AC2 AC3 ST1	Lack of materials for workshop practice	Abstract teaching

Table 1.3: Summary of interview finding for Students factors

Sub Construct	Academics					Students				
	A C1	A C2	A C3	A C4	A C5	S T1	S T2	S T3	S T4	S T5
Absenteeism	*	*								
High tuition	*	*	*			*	*	*		
Motivation	*	*					*	*		
Attitudes		*	*			*	*	*		
Abstract teaching	*	*	*			*				

Table 1.4: Interview Findings for Lecturers' Factor

Example of responses	Respondents	Codes	Themes
..lecturers are not working to the optimum. They are weakly motivated. Entitlement are not responded to by management . Hazard allowance poor.. e	AC1 AC2 ST3	Poor motivation.	Dampened morale
The composure of most lecturers are not good...they shows too much ego in teaching...s ome are very good while some are not good	AC1 AC2 ST1 ST2 ST3	Relationshi p with students	Lecturer hostility
The equipment, machines and tools are obsolete...so me are not functioning ...the available are not functioning ...funds not release for consumable materials	AC1 AC2 AC3 ST2 ST3	Absence of teaching material for workshop practice.	Lack of materials/ tools for practical teaching.
...most of the course in TVET are not relevant to the future need of the student...too many courses offering	AC1 AC2 AC3 ST1 ST2 ST3	Overloade d curriculum	Overloade d curriculum

Table 1.5: Summary of Interview Findings for Lectures Factor

Sub Construct	Academics					Students				
	A C 1	A C 2	A C 3	A C 4	A C 5	S T 1	S T 2	S T 3	S T 4	S T 5
Dampened morale	*	*						*		
Lecturers hostility	*	*				*	*	*		
Lack of materials and tools	*	*					*	*		
Overloaded curriculum	*	*	*			*	*	*		

Table 1.6: Interview Findings for College Factor

Example of responses	Respond ents	Codes	Themes
The equipment, machines and tools are obsolete...some are not functioning...the available are not functioning...fun ds not release for consumable materials... teaching on only done theoretically.	AC1 AC2 AC3 ST1 ST2 ST3	Absenc e of teachin g material for worksh op practice .	Teaching materials/ tools.
...most of the course in TVET are not relevant to the future need of the student...too many courses offering. Assignments overload affect students performance.	AC1 AC2 AC3 ST1 ST2 ST3	Overloa ded curricul um	Overload ed curriculu m
Failure to maintain stable academic calender...many atimes, two months makes a semester... Failure to maintain stable academic calender...many atimes, two months makes a semester..	AC2 AC3 STI ST2 ST3	Unstabl e academi c calenda r	Academic calendar

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No teaching and instructional material for workshop practice...this made teaching to be dogmatic and theoretical...	AC1 AC2 ST2	Failure to use varied teaching methods/ techniques.	Teaching material
The learning environment is grossly uninviting...it does not encourage learning to stimulate interest...I think the environment is not too pleasant for teaching/ learning the environment is not serene...the road network is not good.	AC1 AC2 AC3 ST1 ST2 ST3	Poor learning environment	Aesthetics
Non-payment of school fees normally leads to outstanding and failure...the school fees is too high...we are not given grace to complete payment...the present Provost is trying...	AC3 ST1 ST2 ST3	Burden of high tuition	High tuition
We are always faced with registration problem...remittance challenge	ST1 ST2 ST3	Student registration	Hardship in registration
The infrastructures enjoyed by other students in other institution are not present in the College...no wifi, power supply, water and so on...no scholarship to student.	ST2 ST3	Absence of infrastructure	Social amenities

Table 1.7: Summary of Interview Findings for College Factor

Sub Construct	Academics					Students				
	A C 1	A C 2	A C 3	A C 4	A C 5	S T 1	S T 2	S T 3	S T 4	S T 5
Teaching materials/tools	*	*	*			*	*	*		
Overloaded curriculum	*	*	*			*	*	*		
Unstable academic calendar		*	*			*	*	*		
Absence of Teaching materials	*	*					*			
Aesthetics	*	*	*			*	*	*		
High tuition			*			*	*	*		
Hardship in registration						*	*	*		
Social amenities							*	*		

Table 1.8: Interview Findings for Government Factor

Example of responses	Respondents	Codes	Themes
Government needs to fund TVET adequately...technical education is relegated to the background...need for the provision of educational resources in schools.	AC1 AC2 ST1 ST2	Poor funding of education	Inadequately funding
Most of us are in the College by chance...We actually want to go to the university...just because we are poor. That is why...no one want to be a teacher.	AC1 AC2 ST1 ST2 ST3	Societal perception of TVET/ College of education	Image Teaching Profession

Table 1.9: Summary of Interview Findings for Government Factor

Sub Construct	Academics					Students				
	A C 1	A C 2	A C 3	A C 4	A C 5	S T 1	S T 2	S T 3	S T 4	S T 5
Inadequate funding	*	*				*	*			
Image of teaching profession	*	*				*	*	*		

IV. RESULTS

The result of the initial finding (qualitative) is shown in table 1.10.

Table 1.10: Initial Factors Responsible for Students Failure in TVET

INTERNAL FACTOR		
STUDENTS FACTOR		
. Absenteeism		
. High tuition		
. Lack of motivation		
. Uncared attitudes		
. Abstract teaching		
EXTERNAL FACTOR		
LECTURER FACTOR	COLLEGE FACTOR	GOVERNMENT FACTOR
. Dampened morale	. Teaching materials/ tools	. Inadequate funding
. Hostility to students	. Overloaded curriculum	. Poor image of teaching profession
. lack of material for practical	. unstable Academic calendar	
	. Aesthetics	
	. High tuition	
	. Hardship in registration	
	. Absence of social amenities	

The word view of the constructs is shown in Figure 1.2 as generated using NVIVO 12 software.

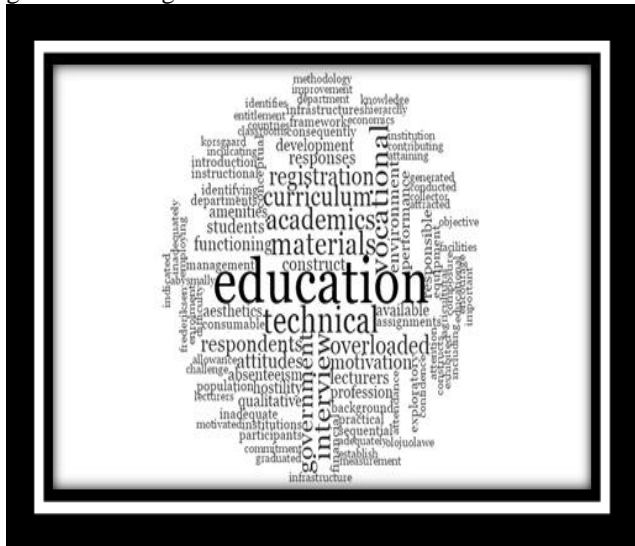


Figure 1.2: Word View.

SUMMARY OF 36 MEASURED ITEM

TOTAL		MODEL	
INFIT	OUTFIT		
SCORE	COUNT	MEASURE	ERROR
MNSQ	ZSTD	MNSQ	ZSTD
4.33	5.8	7.46	7.9
MEAN	120.6	40.0	.00
			.18

S.D.	8.7	.0	1.74	.05
3.25	2.6	2.75	2.0	
MAX.	144.0	40.0	1.63	.22
9.90	9.9	9.90	9.9	
MIN.	95.0	40.0	-3.01	.10
1.55	2.0	2.79	3.9	

UMEAN=.0000 USCALE=1.0000
I
TEM RAW SCORE-TO-MEASURE CORRELATION = -.76
1440 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE:
9180.43 with 1324 d.f. p=.0000
Global Root-Mean-Square Residual (excluding
extreme scores): 10.3691

Figure 1.3: Measured Item

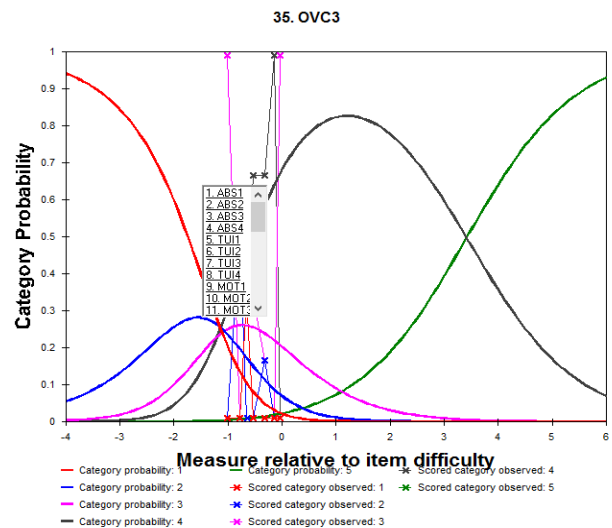


Figure 1.4: ICC Plots Category

Table 1.11: Expert consensus model

INTERNAL FACTOR			
Variable	Value	Variable	Value
ABS1	-1.04	ABS3	.21
ABS2	-.25	ABS4	.00
TUI1	-.56	TUI2	.21
TUI3	-.25	MOT1	.00
TUI4	-.56	MOT2	.21
EXTERNAL FACTOR			
MOT4	-.56	MOT3	.21
STA3	-1.04	STA1	.21
STA4	-.25	STA2	.41
ABT3	-.56	ABT1	.21
TOM2	-1.04	ABT2	.00
OVC2	-1.04	ABT4	.21
OVC4	-.27	DMO1	.00
		DMO2	.21
		DMO3	.21
		DMO4	.84
		LEA1	.21

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		LEA2	.21
		LEA3	.52
		LEA4	.04
		TOM1	.41
		TOM3	.41
		TOM4	.84
		OVC1	.00
		OVC3	.00

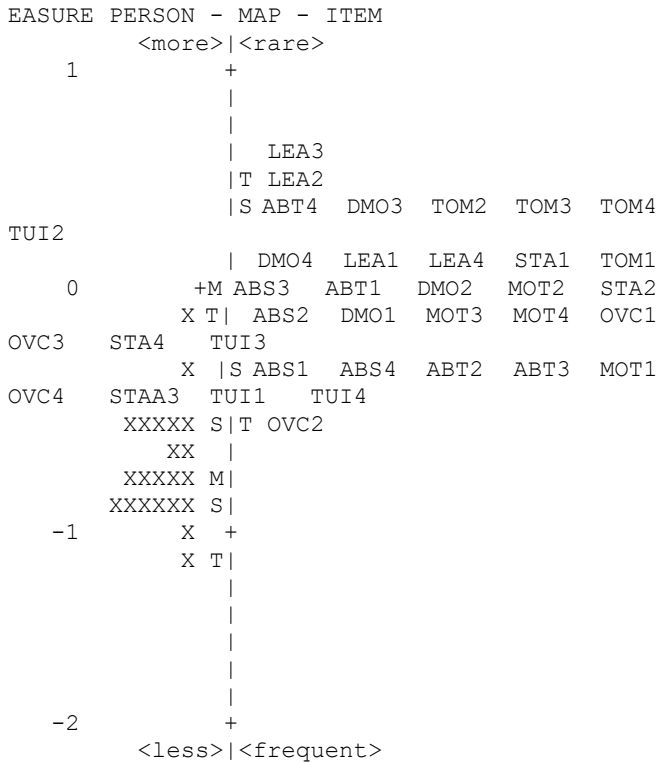


Figure 1.5: Item Map

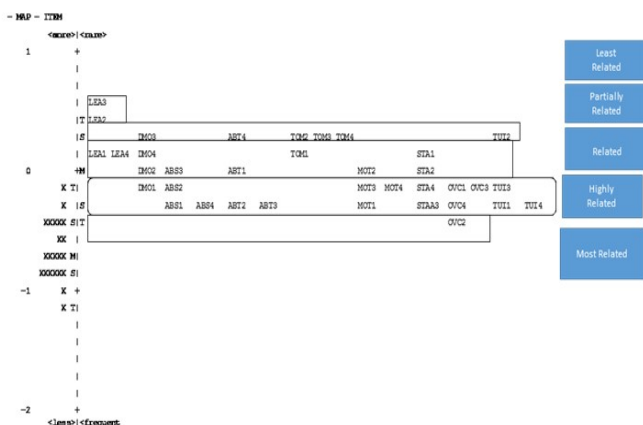


Figure 1.6: Item Hierarchy of Relativity and Difficulty Level.

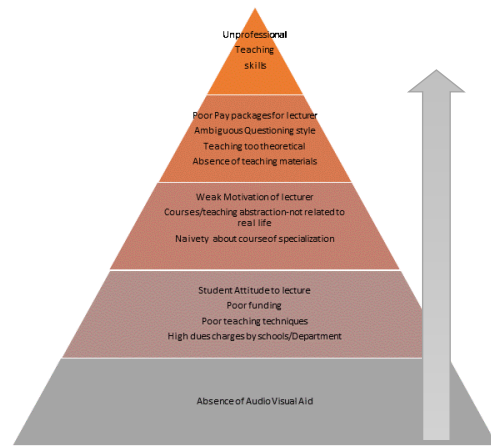


Figure 1.7: Item Hierarchy of Relativity and Difficulty Level

V. DISCUSSION OF FINDINGS

Although, the findings indicate that both internal and external factors were responsible for the failure of Vocational and Technical students in their courses, analysis shows that the degree of contributory factors varies. Consequently, with an item separation of 5.38 and a reliability of .97, the sample size was large enough to distinguish and confirm the item difficulty level. Thus, only the items (factors) that has their PCM Mean Values below the threshold of Zero (0) has the consensus of all the experts, and are the factors considered to be validly responsible for student’s failure in Vocational and Technical education programme in Nigeria. This is contained in Table 1.11.

Figure 1.7 shows the hierarchy of student failure. The hierarchy indicates that the absence of audio visual aids for teaching and learning contribute more to student’s failure in vocational and technical education. This is closely followed by high tuition/dues charged by the College and department, poor teaching technique, and the students attitudes to lecture to the most difficult; unprofessional teaching skills.

VI. CONCLUSION AND RECOMMENDATION

Generally, all the factors identified are important and contribute validly to the student’s failure. However, there is the need to overcome the problem from the bottom of the hierarchy – absence of audio visual aids progressively to the most difficult at the peak. The most difficult to attain is unprofessional teaching skills displayed by lecturers. Retraining and on the job training may be the only way out for this identified problem. Similarly, subsidies and scholarships is an option for mitigating the effects of high tuition and dues being charged the students. The senate and management of the higher institutions in Nigeria should put in place an advisory standing committee to advise it on the modus operandi of handling and tackling the menace.

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