



IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY



VOLUME : 7 ISSUE : 04 Print / Issue Publication Date: 05-May-2026



ISSN : 2455-2143



Indexed In



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ANALYSIS OF STUDENT EVALUATION OF THE IMPACT OF INFORMATION TECHNOLOGY RELATED COURSES CURRICULUM ON CAREER ADVANCEMENT IN A DEVELOPING COUNTRY

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Abstract: This paper proposes and presents a statistical analysis of the of information technology related courses curriculum on students' future career prospects as evaluated by the students using structured questionnaire on the contents of the course curriculum. The analysis was performed using frequencies, percentages and bar charts. The results show in general that a very low proportion (0.0%) of students who have at least a masters degree think that the curricula of the surveyed courses are very irrelevant. Female students are more likely to consider the curricula to be highly relevant to their future career prospects with 6.1% of surveyed females agreeing to this compared to 5.3% for recent graduates and 3.2% for students aged 25 – 29. Respondents with at least a masters degree (29.4%) consider the curricula to have an average impact on their future career prospects than any other group.

Keywords: Student satisfaction, STEM, Curriculum, Developing Countries, Career Advancement.

I. INTRODUCTION

The purpose of education is to provide students with the necessary skills to navigate through life and make contributions to their environment and society. In the course of achieving this, it is important that the students have a sense of the impact the educational process is making in their lives and also to appreciate how the skills they are gaining will be beneficial to them in the pursuit of their career goals in the future.

This work aims to gauge the perception of students in Engineering and Information Technology related courses on the effectiveness of their curriculum in delivering the skills they feel are necessary for their future careers. It focuses on a sample of 112 students who are drawn from 4 courses across 10 Nigerian universities. The respondents are at different levels of their university education.

II. RELATED WORKS

There are studies which have examined the relationship between how students feel about their course, learning environment, curriculum etc and how these relate to their academic performance. For instance, the authors in (Ahmed et al., 2018), were able to establish a link between students' perception of their academic environment and their academic performance. There is also a correlation between the effort students put into a course and how they perceive a course according to level of ease or difficulty. This was studied extensively by the researchers in (3). They were able to establish that students put in more effort into courses they feel are useful to them. According to that work, if students find a course interesting, they put in more effort into the course. There is also evidence of the content of a curriculum having a correlation with the enthusiasm students show towards a course (4). The impact of the model of a curriculum on students was examined in (5) two curricular of different models were examined. The finding in this work proved that different models of curricular would have different impacts on students and hence the need to have tailored curriculum is buttressed. This is further reinforced by suggesting that different curricular models should be employed at different levels of study. In another work, the impact of course activities on student perceptions of engagement and learning online as presented in (6). Three categories of instructional contexts were identified in this work: courses with low student-student but high student-instructor interactions, courses that mainly utilize group discussions and courses with high student-student and high student-instructor interactions and students' perceptions of engagement and learning outcomes varied across groups. Compared to the other two groups, students who were part of the highly interactive courses reported most favorable perceptions of engagement and learning outcomes.



III. SOURCE AND PRESENTATION OF STUDY SAMPLE DATA

The sample data used for this paper is based on a questionnaire which requested a sample of students classified by age, sex, marital status and level of education to, on a scale of 0 – 5, with 0 being ‘Very Irrelevant and 5 being ‘Highly Relevant’, specify how they think the current

curricular has helped (or will help) their future career prospects. The respondents, randomly drawn from 10 Nigerian universities, are either current or past students of courses such as electronic engineering, computer engineering, telecommunication engineering, computer science etc.

Table 1: Frequency distribution of Respondents by Characteristics

Demographic Variables	Number of Respondents	Percentage (%)
Age		
< 25	63	56
25 – 29	31	28
30 and above	18	16
Total	112	100
Sex		
Male	79	71
Female	33	29
Total	112	100
Marital Status		
Single	108	96
Married	4	4
Total	112	100
Level of Education		
Year 3 and below	8	7
Year 4	22	20
Year 5	27	24
Recent Graduates	38	34
Masters Degree and Above	17	15
Total	112	100



Table 1 presents the frequency distribution of the study data by characteristics of the respondents namely by age, sex, marital status and year of study of the students in the survey.

It is seen from table 1 that a total number of 112 respondents partook in this study. For the sake of analytical accuracy, the age of the respondents were grouped into 3 categories. The number of respondents who made up these categories are 63 (56%) for the < 25 age group, 31 (28%) for the 25 – 29 group and 18 (16%) for those who are 30

years old and above. For this work, two categories of gender were used: 79 (71%) male respondents and 29 (21%) female respondents. This agrees with the trend of lower female enrollment in engineering courses (8). In terms of marital status, single respondents were 108 (96%) while married respondents were 4 (4%). Finally, students in their 3rd, 4th and 5th year of study were 8 (7%), 22 (20%) and 27 (24%) respectively while recent graduates and respondents with masters degree and above made up 38 (34%) and 17 (15%) respectively.

IV. DATA ANALYSIS

Table 2: Distribution of Student Evaluation of the Relevance of Engineering Curriculum by Assigned Ranks by Characteristics of Students

	Relevance Ranking													Least Rating by Assigned Rank	Average Rating by Assigned Rank	Most Rating by Assigned Rank
	0		1		2		3		4		5					
Demographic and Socioeconomic Variable	No	%	No	%	No	%	No	%	No	%	No	%	Total			
Age																
< 25	8	12.7	17	27.0	17	27.0	15	23.8	5	7.9	1	1.6	63	(5; 1.59%)	(2; 26.98%)	(1,2; 53.96%)
25 - 29	4	12.9	9	29.0	9	29.0	6	19.4	2	6.5	1	3.2	31	(5; 3.2%)	(2; 29%)	(1,2; 58.1%)
30 and Above	1	5.6	6	33.3	3	16.7	5	27.8	3	16.7	0	0.0	18	(5; 0%)	(2; 16.67%)	(1; 33.3%)
All ages	13	11.6	32	28.6	29	25.9	26	23.2	10	8.9	2	1.8	112	(5; 1.80%)	(2; 25.9%)	(1; 28.6%)
Sex																
Male	9	11.4	20	25.3	21	26.6	21	26.6	8	10.1	0	0.0	79	(5; 0%)	(2; 26.60%)	(2,3; 53.1%)
Female	4	12.	12	36.	8	24.	5	15.	2	6.1	2	6.1	33	(4.5;	(2;	(1;



		1		4		2		2						6.06%)	24.24%)	36.36%)
All Sexes	13	11.6	32	28.6	29	25.9	26	23.2	10	8.9	2	1.8	112	(5; 1.8%)	(2; 25.89%)	(1; 28.57%)
Marital Status																
Single	12	11.1	30	27.8	29	26.9	26	24.1	9	8.3	2	1.9	108	(5; 54%)	(2; 26.85%)	(1; 27.80%)
Married	1	25.0	2	50.0	0	0.0	0	0.0	1	25.0	0	0.0	4	(3.3; 0%)	(2; 0%)	(3.3; 0%)
All Marital Status	13	11.6	32	28.6	29	25.9	26	23.2	10	8.9	2	1.8	112	(5; 1.8%)	(2; 25.89%)	(1; 28.57%)
Level of Education																
Masters and above	0	0.0	5	29.4	5	29.4	4	23.5	3	17.6	0	0.0	17	(2.5; 0%)	(2; 29.4%)	(1,2; 29.4%)
Recent graduates	4	10.5	9	23.7	10	26.3	10	26.3	3	7.9	2	5.3	38	(5; 5.26%)	(2; 26.32%)	(2,3; 26.32%)
Year 3 and below	3	37.5	1	12.5	1	12.5	2	25.0	1	12.5	0	0.0	8	(5; 0%)	(2; 12.5%)	(0; 37.5%)
Year 4	3	13.6	8	36.4	6	27.3	4	18.2	1	4.5	0	0.0	22	(5; 0%)	(2; 27.27%)	(1; 36.36%)
Year 5	3	11.1	9	33.3	7	25.9	6	22.2	2	7.4	0	0.0	27	(5; 0%)	(2; 25.93%)	(1; 33.33%)
All Levels of Education	13	11.6	32	28.6	29	25.9	26	23.2	10	8.9	2	1.8	112	(5; 1.8%)	(2; 25.89%)	(1; 28.57%)

It is seen from table 2 that 8 (12.7%) of students aged < 25 years considered the information technology related courses curriculum as very irrelevant (ranked 0) to their future

career advancement compared with 4 (12.9%) students aged 25 – 29, 1 (5.6%) student aged 30 years and above, 9 (11.4%) male students, 4 (12.1%) female students, 12

(11.1%) single students, 1 (25%) married student, 4 (10.5%) recent graduates, 3 (37.5%) students in year 3 and below, 3 (13.6%) students in year 4, 3 (11.6%) students in year 5 and none (0.0%) of the students with masters or higher level of education who also consider the information technology related courses curriculum as being very irrelevant to their future career advancement.

Also, 17 (27.0%) students aged < 25 years consider the academic curriculum to be irrelevant (ranked 1) to their future career advancement compared with 9 (29.0%) students aged 25 – 29, 6 (33.3%) students aged 30 years and above, 20 (25.3%) male students, 12 (36.4%) female students, 30 (27.8%) single students, 2 (50.0%) married students, 5 (29.4%) students with masters degree and above, 9 (23.7%) recent graduates, 1 (12.5%) student in year 3 and below, 8 (36.4%) students in year 4 and 9 (33.3%) students in year 5 consider the information technology related courses curriculum to be irrelevant to their future career advancement.

Furthermore, 15 (23.8%) students aged < 25 years consider the information technology related courses curriculum to be relevant (ranked 3) to their future career advancement compared with 6 (19.4%) students aged 25 – 29 years, 5 (27.8%) students who are 30 years and above, 21 (26.6%) male students, 5 (15.2%) female students, 26 (24.1%) single students, 0 (0.0%) married students, 4 (23.5%) students with masters degree and above, 10 (26.3%) recent graduates, 2 (25.0%) students in year 3 and below, 4

(18.2%) students in year 4 and 6 (22.2%) students in year 5 who also think that the information technology related courses curriculum is relevant to their future career advancement.

Finally, on the other hand, 1 (1.6%) student aged < 25 years considers the information technology related courses curriculum to be highly relevant (ranked 5) to their future career advancement compared to 1 (3.2%) student aged 25 – 29 years, 2 each for female students (6.1%), single students (1.9%) and recent graduates (5.3%). No student aged 30 and above, male students, married students, students with masters degree and above, students in year 3 and below, students in year 4, students in year 5 considered the information technology related courses curriculum as highly relevant to their future career advancement.

Note that overall, when all the sampled students are considered together, 13 (11.6%) of the students think that the information technology related courses curriculum is very irrelevant (ranked 0), 32 (28.6%) regard the curriculum as irrelevant (ranked 1), 29 (25.9%) consider the curriculum as somewhat relevant (ranked 2), 26 (23.2%) think the curriculum as relevant (ranked 3), 10 (8.9%) regard the curriculum to be quite relevant (ranked 4) and 2 (1.8%) consider the curriculum to be highly relevant (ranked 5) to their future career advancement.

These results may be more succinctly presented graphically in the form of bar charts as in figures 1a – 1d.

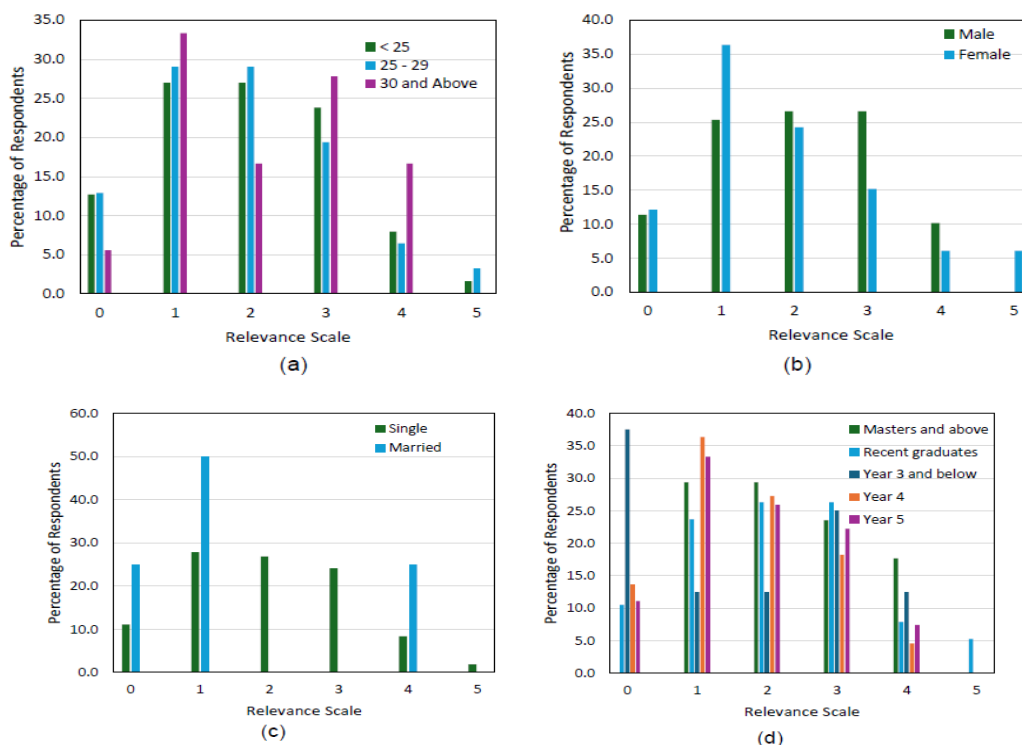


Fig 1: Student assessment of the relevance of information technology related courses curriculum by (a) Age (b) Sex (c) Marital Status and (d) Level of Education



V. DISCUSSIONS OF RESULTS

It can be seen from Table 2 and Figure 1 that for the sampled students the lowest proportion who consider the information technology related courses curriculum as very irrelevant to their future career prospect is found among the students with masters degree and above (0.0%), followed by student who are 30 years and above (5.6%) and then the recent graduates (10.5%) in this increasing order.

In terms of considering the engineering curriculum to be highly relevant to their future career prospects, the female students agree with this most (6.1%), followed by the recent graduates (5.3%) and then students aged 25 – 29 (3.2%) in this decreasing order.

Students who consider the engineering curriculum to be averagely relevant to their future career advancement are found mostly among those with masters degree and above (29.4%). Second to these students are those in the 25 – 29 age group (29%) and then those who are in the 4th year of their information technology related courses education (27.27%).

VI. SUMMARY AND CONCLUSION

This work has been able to explore the perception of students of engineering and information technology courses on their curriculum. The perception of the students varies across the various levels of students who participated in the study. More mature students who probably have had some work experience and have seen the practical application of what they learnt in school are less likely to say that the content of the curriculum is irrelevant. The perception of irrelevance of the curriculum diminishes among the female students and female graduates. While the reason for this trend is not readily apparent, there is a possibility that the female students are more likely to go outside to gain necessary skills hence see the applications of the curriculum outside the classroom. The outcome of this work suggests the need to ensure the students appreciate the content of the curriculum. It is also necessary to ensure that engineering curriculum is engaging and relevant in the 21st century and. Early exposure to the learning objectives and outcomes of a course is also paramount.

Acknowledgments

We sincerely thank all the participants of the study for making out time to fill the questionnaire and doing so to the best of their ability.

Ethics Approval Statement

Not Applicable

Consent to Participate

Informed consent was obtained from participants and the questionnaire was designed in a manner that is easy to understand and needed no further explanation to participants.

Consent for Publication

Not applicable

Declaration of Conflicting Interest

The authors have no conflict of interest to declare

Funding Statement

The authors received no funding for this work

Data Availability

All data used for this work can be made available on request by the authors

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