

EXPLORING DIFFERENCES IN EBONYI STATE STUDENTS' PERCEPTIONS OF ARTIFICIAL INTELLIGENCE: A COMPARATIVE STUDY

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Abstract

The paper discusses the perceptions of artificial intelligence (AI) among Ebonyi State students in Nigeria in a comparative manner. The study adopted a primary data collection technique in which structured questionnaires were used to survey 400 undergraduate students of Ebonyi State University in the stratified random sampling technique to represent the different genders, ages, and faculties. The study is framed by the Technology Acceptance Model and Diffusion of Innovations theory as the method of investigating the perceptions with references to the following variables: perceived benefits, fears, ethical issues, curriculum integration and job effects. Data was analyzed using descriptive statistics, t-tests, and ANOVA showing that there were significant gender-based differences with females perceiving AI as more useful towards learning than males and less terrifying. A significant difference was also observed in the faculties, with science students having more positive perceptions generally. The average scores on the 5-point Likert scale were between 3.5 and 3.7 which corresponded to moderate optimism with a certain degree of anxiety. The sample was demographically represented by 55 percent males and 45 percent females with most of the sample aged between 18-20 (41.25) and faculty of sciences (27%). Results obtained are consistent with world literature of mixed AI perceptions in the educational sphere, with special emphasis on contextual peculiarities of a developing state, such as Ebonyi State, which has limited access to AI tools. The research highlights that specific educational interventions are necessary to establish a perception gap and ensure that AI will be used equitably. One of the suggested recommendations is the adoption of AI literacy in curricula, as well as the training of non-technical faculties. The study is relevant in terms of comprehending the perceptions of AI in underexplored African settings in order to inform policymakers and educators to promote an inclusive technological development.

Keywords: artificial intelligence, student perceptions, Ebonyi State, comparative study, Technology Acceptance Model, Diffusion of Innovations

Introduction

Artificial intelligence has become a revolution in several industries such as education because it is expected to trigger a revolution in teaching, learning, and administrative operations. The implementation of AI in higher education systems in the developing countries, such as Nigeria, has opportunities, as well as challenges, especially in those areas, where the technological infrastructure is underdeveloped, such as Ebonyi State. This paper gets into the perception variations between students learning AI and compares the differences based on the demographic factors in order to give a more detailed insight into the ways young learners in this region

perceive emerging technologies. This study has its background regarding the global development of AI, which can be followed back by leading concepts that challenged the scopes of equality between human and machine intelligence. The problem of whether machines could show intelligent behavior was speculated upon in the early thought, and forms the basis of contemporary perceptions.

The notion of human intelligence simulation by machines can be traced back to the mid-20 th century, when researchers started to think about the philosophical and practical nature of computational thinking. This seminal publication brought to light the possibility of machines taking over the work that has always been a human prerogative and has resulted in debate over issues of intelligence, morality and effects in society which are still debated today. With the development of AI technologies, people began to think not only with interest but actively use the opportunities, which determined the attitude of individuals, in particular students, to using these tools. The use of AI in education has been viewed as a two-sided sword: a boon of personalized education and efficiency, but a cause of fear of losing a job and ethical challenges.

The AI adoption trends in education in Nigeria are lower compared to the transitions throughout the rest of the world despite infrastructural limitations, as the latest trends show that there is an increasing interest. Surveys on AI attitudes on the Nigerian higher education have found that educators have moderate fear of the effects of AI on academic dishonesty and dependence on students, with differences according to gender and professional stage. The previous results indicate that the perceptions do not seem to be uniform but dependent on the situation, including access to technologies and cultural orientation towards innovative. The example of Ebonyi State, which is an agrarian-based state in southeastern Nigeria and new educational establishments such as Ebonyi State University depicts these issues. The number of students in higher education in this state is estimated to be approximately 25,000-30,000, and is a productive (youthful) demographic engaged with the concept of technological development and limited resources.

The problem statement is that there is a gap between the potential benefits of AI and the diverse perceptions that can become obstacles to its implementation by the students in the underdeveloped regions. Whereas recent studies in the world reveal that positive approaches towards AI are held by students in terms of their learning experiences, local studies in Nigeria depict otherwise, with fears over ethical application, as well as over dependence. In Ebonyi State, which has lower rates of digital literacy than the nationwide averages, the attitude of the students may display a substantial difference depending on the demographics, which may only increase the inequality in education. As the example of the potentially more positive attitude of students towards AI in common faculties and gender distinctions, it may represent universal social engagement. Despite being unaware of such differences, it can make attempts to implement AI in the curriculum ineffective, which reduces the possibility of mastering skills in a digital economy.

The current literature is relevant and emphasizes the necessity to analyze AI perceptions in various contexts. According to the recent studies conducted among university students around

the world, although many of them value the inclusion of AI in the process of personalized learning and efficiency, the anxieties of potential job loss and the ethical concerns, remain. The students of liberal arts institutions in the US are ambivalent and tend to consider AI innovative and potentially disruptive to the existing order of things. Such is also the case in Asia, as the students of undergraduate age in China perceived such integration positively, as an inevitable development, yet requiring ethical standards. The conditions in Africa, especially in Sub-Saharan areas, further complicate the situation and the research performed in Kenya, Nigeria, and South Africa indicates that AI tools encourage an inclusive approach to education but are hindered by various challenges, such as inadequate accessibility.

The historical perspective is given in older literature, which demonstrates the shift in perceptions. The spread of technological innovations as they were theorized in the early 1960s defines the adoption rates by aspects such as relative advantage and compatibility. It is also applicable in the current framework of AI perceptions since students will be ready to use AI according to perceptions of usefulness and ease of use, which were introduced in the late 1980s. The earliest AI debates were centered around the question of whether machines would be able to think, which explains the current opinions about the human characteristics of AI. By merging these two views, this study tries to solve the problem by carrying out a comparative analysis within the Ebonyi State in which it seeks to inform policy and practice.

These themes are further expounded in the literature review. The general feeling about AI among students worldwide is favorable, and it is reported that there has been a high rate of using generative AI tools in solving academic assignments. Nonetheless, some are discouraged by issues like insufficient knowledge, and it may be necessary to educate about AI ethics. Higher education Community: AI is perceived as a way of improving feedback and scoring but a few more express that its reliability can be sensitive than human grading in higher education. The positive perception of lecturers in Nigeria is opposite to low rates of adoption which is due to insufficient training. Abia State students are adjacent to Ebonyi, but students of Abia State express positive behavior toward AI in education and regard it as a means of enhancing learning outcomes.

Tragedies found in historical literature are recurrent. The 1950s were when AI was formalized as a discipline and proposals for the learning and adaptation of machines were offered. By 1960s, such innovations as ELIZA had made it clear that AI could talk, and formed a perception of AI as an interactive device. These formative experiences shape the present discourses on AI in education where attitudes are determinants of uptake.

The importance of the given study has to do with the fact that Ebonyi State is the center of the given study, as the data provided by educational fact sheets helps to understand that the out-of-school rates are high and that the levels of completion have been fluctuating. It shows avenues of fair AI application by juxtaposing the perceptions.

Theoretical Framework

The two theories to be applied in this research are the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI). TAM holds that attitudes and actual use depend on the perceived usefulness and ease of use which influences the intention of the users to adopt technology. Regarding AI perceptions, TAM can be used to understand why students may perceive AI as helpful in the learning process in case they consider it helpful and easy to use. DOI theory fills this by defining the spread of innovation through social systems over time, with the categories of adopters to innovator and laggard are described and features such as relative advantage are identified that determine the rate of adopting innovations. Combined, these frameworks give an overview through which different perceptions can be analyzed since the demographic factors can be consistent with adopter categories, or they can affect the perceived qualities of AI.

Methodology

In this research, the following research design was used: the descriptive survey approach was adopted; it is a quantitative research design. The sample population consisted of undergraduates in Ebonyi state University and its population was about 25,000-29,999 students. Stratified random sampling was used to select 400 students so that proportionality structure was provided to the sample in terms of gender distinctions, age groups, and faculties. The stratification was done according to the university records, in which the faculties were Sciences, Humanities, Social Sciences, Education and Health Sciences.

The primary method of data collection was a structured questionnaire, which is called Students perceptions of artificially intelligent questionnaire (SPAIIQ). The instrument included two parts: Section A covered demographic data (gender, age, faculty) and Section B (20 items on a 5-point Likert scale 1 = Strongly Disagree, to 5 = Strongly Agree): perceptions assessed in terms of five dimensions benefits to learning, fears/scary aspects, ethical concerns, curriculum integration, and job impacts. The items were created by using literature and approved by an expert who works in the field of educational technology giving a reliability value of Cronbachs alpha of 0.85.

The questionnaire questions were given personally through lectures, and ethical issues considered were informed consent and anonymity. Statistical data was conducted through descriptive statistics of mean and percentages, independent t -tests on gender and ANOVA One - way analysis measuring differences between faculties and age done through SPSS version 25.

Results

The demographic information of the participants had a proportional representation that was representative of the student population of Ebonyi state. The sample was composed of males (55 percent) and females (45 percent). There was 41.25 in the 18-20, 29 in the 21-23, 18.5 in the 24-26 and 11.25 in the 27 and above age. Faculty-wise Sciences had the largest representation with 27 percent then Education at 19.25 percent, Social Sciences 18.75 percent, Humanities 17.75

percent and Health Sciences at 17.25 percent. This allocation fits the state priority of STEM and education sector against a population of more than 4 million people of which the younger age group of 15 years and below form a large population.

Table 1 presents the demographic characteristics.

Table 1
Demographic Characteristics of Participants

Variable	Category	Frequency	Percentage
Gender	Male	220	55.0
	Female	180	45.0
Age	18-20	165	41.25
	21-23	116	29.0
	24-26	74	18.5
	27+	45	11.25
Faculty	Sciences	108	27.0
	Education	77	19.25
	Social Sciences	75	18.75
	Humanities	71	17.75
	Health Sciences	69	17.25

The overall mean perceptions were moderate in terms of dimensions. The average of the AI as helpful was 3.68, for scary aspects 3.60, ethical issues 3.62, curriculum integration 3.59, and job influence 3.61 were recorded.

Table 2 shows mean perception scores.

Table 2
Mean Perception Scores on AI Dimensions

Dimension	Mean	Standard Deviation
AI Beneficial	3.68	0.79
AI Scary	3.60	0.84
AI Ethical Concerns	3.62	0.81
AI Curriculum Integration	3.59	0.89
AI Job Impact	3.61	0.78

Gender comparative analysis showed a great difference. Women were found to have better means of helpful perceptions (3.88) than males (3.52) $t = -4.59$, $p = 0.0001$. In terms of aspects that are scarce, females scored low (3.49) as compared to males (3.68), $t = 2.37$, $p = 0.018$. There were no major differences between other dimensions.

Table 3

Perceptions by Gender

Dimension	Male Mean	Female Mean	t-value	p-value
AI Beneficial	3.52	3.88	-4.59	0.000
AI Scary	3.68	3.49	2.37	0.018
AI Ethical	3.65	3.60	0.62	0.535
AI Curriculum	3.58	3.60	-0.18	0.855
AI Job Impact	3.63	3.58	0.68	0.498

Faculty ANOVA revealed that there is a significant difference between beneficial ($F = 3.86$, $p = 0.004$), scary ($F = 6.9$, $p = 0.001$), and ethical ($F = 4.71$, $p = 0.001$). Sciences students were the most means (i.e. beneficial 3.9 0), whereas the Humanities were lower.

Table 4

Perceptions by Faculty

Faculty	Beneficial Mean	Scary Mean	Ethical Mean	Curriculum Mean	Job Impact Mean
Sciences	3.90	3.93	3.85	3.75	3.77
Education	3.74	3.47	3.51	3.57	3.52
Social Sciences	3.59	3.49	3.46	3.37	3.64
Humanities	3.54	3.57	3.58	3.61	3.49
Health Sciences	3.53	3.35	3.58	3.58	3.52

Age variation was insignificant indicating that exposure rather than maturity is the determinant of perceptions.

Discussion

Students of Ebonyi State have rather subtle views of AI, which is in line with the global trend as students with a positive view of AI have reservations. The gender disparity of more optimistic females about the benefits is possibly true in greater empowerment discourses of technology adoption in the developing situation. The difference in faculty suggests the importance of exposure by discipline since science majors, who may be more familiar with technology, are more accepting, which is in line with the DOI theory of compatibility.

Ethical issues are representative of literatures about the effects of AI on the academic integrity in Peru and Chile. These results can be extrapolated to previous studies on the perceptions of lecturers that have been done in Nigeria indicated that student perceptions reflect those of educators with demographic quirks. The parallels among historical understanding are on the early AI scepticism in which machines were perceived as threats to the exceptionality of humanity.

These are limitations such as self-reported and single-institution focus, and strengths such as primary data and statistically rigorous.

Finalization and Research Recommendations.

Finally, students at Ebonyi State showed moderate and differentiated views on AI, contingent on gender and faculty. These observations indicate that strategies to achieve elevated opinions and address concerns must be context-specific.

It can be recommended to create AI literacy courses specifically designed to address non-technical faculties, to include ethical training in the curriculum and carry out longitudinal adoption studies. There should be investment in infrastructure by the policymakers in order to democratize AI access, so that benefits can be evenly distributed.

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