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STUDENTS' PERCEPTION OF AGRICULTURAL ENGINEERING AS A CAREER CHOICE IN NIGERIA: CASE STUDY OF RUFUS GIWA POLYTECHNIC OWO, ONDO STATE, NIGERIA

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ABSTRACT
The present study was conducted to test the effects of students' perception on the selection of Agricultural Engineering as a career choice in Nigeria with Rufus Giwa Polytechnic, Owo, as a case study. The study relied on both secondary and primary data collected from the use of questionnaire complemented with oral interviews amongst the students of the department, respectively. Data were analysed using simple statistics and graphical plots. The result showed poor enrolment of students (<10%) in the department of Agricultural Engineering compared to other departments in the Faculty of Engineering Technology of the Polytechnic, during the years 2013-2019. Based on perception, over 83.3% students had negative perception concerning job opportunity after graduation, more than 73% students had negative perception concerning government policy and only 21% of students had positive perception towards Agricultural Engineering. Therefore, the study recommended well-targeted awareness campaigns and social re-orientation, provisions of incentives such as reduced school fees and creation of enabling environment for investors to invest into agriculture and agro-allied industries.

Keywords: *Perception, Agricultural Engineering, Agriculture, Career Choice, Policy*

INTRODUCTION
In spite of the large crude oil exploration in Nigeria, agriculture remains the mainstay of the country's economy with over 40% contribution to the GDP (Nwafor et al., 2011). According to the Food and Agriculture Organisation of the United Nations (FAO, 2020), agriculture employs two-thirds of the entire labour force of the country. Its GDP contribution

as at the 1st quarter of the year 2020 was put at 21.96% by the Premium Times ((2020) based on the data from the National Bureau of Statistics. Moreover, the country aims to achieve her food sufficiency, poverty eradication and economic diversification through extensive agricultural production in the near future. However, despite this lofty idea, studies have shown that agriculture, especially the food production aspect of it, has been left in the hands of the aged people in most developing countries including Nigeria (FAO, 2014) with the youths showing some sorts of lukewarm attitudes (Leavy and Hossain, 2014). The poor interest of the youths in agriculture is not limited to the practical farming and its ancillary occupations, but has also been extended to the study of any course with the world 'agriculture' as either its suffix or prefix, even in the field of engineering and right from the high schools (Pelzom and Katel, 2017;. Obayelu et al., 2019).

As a consequence of the foregoing, there is a growing concern in the field of Agricultural Engineering, a course in engineering that is highly related to agriculture, given the recent observed sliding interests of students in the programme around the world. Researchers have documented the problems of declining enrolments and low appeal of engineering among school leavers (Gôl et al., 2003). This has necessitated a global debate on the future of the agricultural engineering discipline. Professionals in the field of study are concerned that with the trends of things, there is the need for urgent actions to arrest the low interest and poor enrolment of students (Panda et al., 2020). One strategy to attract and retain more undergraduate students is to reform existing educational curricula and degree plans. In this regard, several authors have called for the expansion of the agricultural engineering horizon from its somewhat narrow agricultural base to include other biological industries (Cuello, 1993; 2002). This call has been most warmly received by universities in North America and is rapidly spreading to universities in other parts of the globe, including Nigeria. Accordingly, many agricultural engineering departments and academic programmes have been renamed to include words like *biological, bioresource, biosystems, bioenvironmental* and the prefix *bio* (Opara, 2002). In line with this, many of the Agricultural Engineering programmes in Nigerian Universities have been renamed either as a department of Agricultural and Bio-resources Engineering or Agricultural and Biosystems Engineering or Agricultural and Environmental Engineering. At the Polytechnic level, including Rufus

Giwa Polytechnic, Owo, the programme has been renamed as Agricultural and Bio-environmental Engineering Technology.

Despite the transformative contributions of engineering and technology to the field of agriculture and other land-based industries (Borlaug, 2002) and the world-wide remarkable contributions of agricultural engineering and technology during the past century (Opara, 2001), agricultural engineering as a course is still greatly despised within the various fields of study in engineering. Unfortunately, the continuing success of the industrial sectors, which develop innovative technologies that support agriculture, relies heavily on the education of graduates who have the appropriate skills for research, life-long learning and technology transfer (Opara, 2001). Recent articles have provided empirical evidence in the mainstream engineering technology literature on the extent of the problem facing agricultural engineering (Opara 2003; 2004). Using focused group discussion and questionnaire surveys among final year undergraduate students at Massey University, New Zealand, the author found that most of those students surveyed came from rural backgrounds and had experience of working in the agricultural sector prior to enrolling at the university (Opara, 2003). This limited source of undergraduate students is considered a major challenge in efforts to increase enrolments in agricultural engineering programmes in tertiary institutions in many parts of the world (Opara 2002; 2004). According to Opara et al. (2006) one major factor responsible for the poor enrolment and interest of students in agricultural engineering programme, is the poor perception of the public with respect to the course and inadequate understanding of the role of Agricultural Engineering in the society. Nwankwo (2015) also showed that the majority of students in secondary schools have very poor perception of agriculture as a career field and this has to a great extent affected their interest, aptitude and attitude in the subject. Therefore, the objective of the present study is to appraise the students' perception of Agricultural Engineering as a career choice in Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria.

Theoretical Framework on Career Choice

Career is the series of occupations whether paid or unpaid which one undertakes throughout a lifetime or a portion of his time. 'Career' includes life style and roles, leisure activities, learning and work. Patton and McMahon (2001) defines career as the personal development and action especially those related to individual occupation throughout his

lifetime. A career is often composed of the jobs held, titles earned and work accomplished over a long period of time, rather than just referring to one position in a work situation. Different scholars developed theories on the choice of career; notables among is Holland theory of career choice. The theory explains the behaviour of people at work such as; the type of career person should choose that will or likely lead to job success and satisfaction. It also explains other human activities and feelings like success and satisfaction in educational institutions and other training program (Lawrence, 2001). Holland theory of personality is the widely used theory in the field of students' psychology and perception and for most career councillors in the educational institutions. The theory helps to make an informed decision and good selection about the occupation that will suite an individual personality, choice of academics disciplines, or training program that best fit an individual personality. The study of Holland theory will guide the student on the right career that is most suitable for his/her personality. Holland's developed his theory on people, culture and the six personality types such as the realistic, investigative, artistic, social, enterprising and conventional that influences the choice of career of an individual, employee of the same personality type. For instance, where sociable persons are working together on a job situations or study in the same environment, they form a work or study environment that are social and all their behaviours and thinking will be in a social way. Employees always look for where they can utilise their intellectual abilities and demonstrate their values and attitudes and show their commitment that will often boost their morale in work situations. For instance, people with an investigative personality types will always look for investigative environment to work; person with artistic personality look for artistic environment, social type search for social environment, engineering and technology search for research, invention and new ideas environment and so on.

MATERIAL AND METHODS

The study was carried out at the end of 2018/2019 academic session. The survey also covered seven years of academic sessions in order to know the admission trend of the Department of Agricultural and Bio-Environmental Engineering Technology (ABET), Rufus Giwa Polytechnic, Owo, Ondo state Nigeria (RUGIPO), compared with other departments of the Faculty of Engineering RUGIPO. There were (5) five departments in the faculty at the time of this study. The population for the study was students of the Faculty of Engineering RUGIPO.

An interview schedule was prepared in view of the objectives of the study following the method adopted by Vavaliya et al. (2015). Although questionnaires were prepared for the interview to obtain the relevant information from the selected respondents, they were filled in their presence while they responded to the questions read out to them from the questionnaires. In all, a total of 260 respondents were interviewed out of which 60 of them were from the department of Agricultural Engineering while the rest were distributed into other four departments at 50 respondents per one.

While the data on students' enrolment into the faculty of engineering for the years 2013-2019 was retrieved from the Directorate of Academic Affairs of the Polytechnic, information obtained from the use of questionnaire and interview with the students in the Faculty of Engineering formed the primary data. A purposive selecting method of sampling was adopted for this study and the data obtained were analysed using graph plots and simple statistical tools.

RESULTS AND DISCUSSION

Students' Enrolment in the Faculty of Engineering (National Diploma)

The pattern of enrolment into the various departments for the National Diploma (ND) programmes in the Faculty of Engineering of Rufus Giwa Polytechnic for the academic years 2013-2019 is as shown (Fig. 1). In the year 2013, out of about 300 students' enrolment in the faculty, only 25 students enrolled in the department of Agricultural Engineering, with an average students enrolment in the faculty put at 70. This is less than 10% of the total enrolment figure for the year.

Similarly, for the year 2014, the total number of students enrolled into the department of Agricultural Engineering was 30, while the average number of students admitted into other four departments (Civil, Mechanical, Electrical/Electronic and Computer) was 90 students and the highest intake was recorded in the department of Civil Engineering with 97 students. This also puts the enrolment in the department of Agricultural Engineering at just about 7.6% for the year. The scenario was not different in the year 2015, during which the total number of students' enrolment into the department of Agricultural Engineering was 62, while the average intake into other four department was 148 students, and the highest intake was in the department of Electrical/Electronic Engineering

with 191 students. This also shows that the department had less than 10% of the total students' enrolment in the faculty for the year.

In the year 2016, only 92 students were enrolled into the department of Agricultural Engineering whereas the average number of students' enrolment in the other four departments was put at 270 and the highest intake was recorded by the department of Electrical/Electronic Engineering with the total number of students of 303. In the year 2017, results show that the total number of students enrolled in the department of Agricultural Engineering was 56, while the average number of students' enrolment in the other four departments was 230 and the highest enrolment was from the Department of Civil Engineering with the total number of 283 students. This gave a paltry of less than 6% enrolment to the department of Agricultural Engineering. The situation was not significantly different in the year 2018, when the total number of students enrolled in the department of Agricultural Engineering was 69, while the average enrolment for the other four departments was 165 students, and the highest intake was in the department of Civil Engineering with the total number of 198 students.

In the years 2019, the enrolment figure for the department of Agricultural Engineering was put at 58, while the average students' enrolment for the other four departments was 127, and the highest intake was from the department of Civil Engineering with the total number of 157 students. Although there was a general decline in the enrolment figure in the entire faculty during the year, the department of Agricultural Engineering took about 10% of the total enrolment which implied an improvement over the previous years.

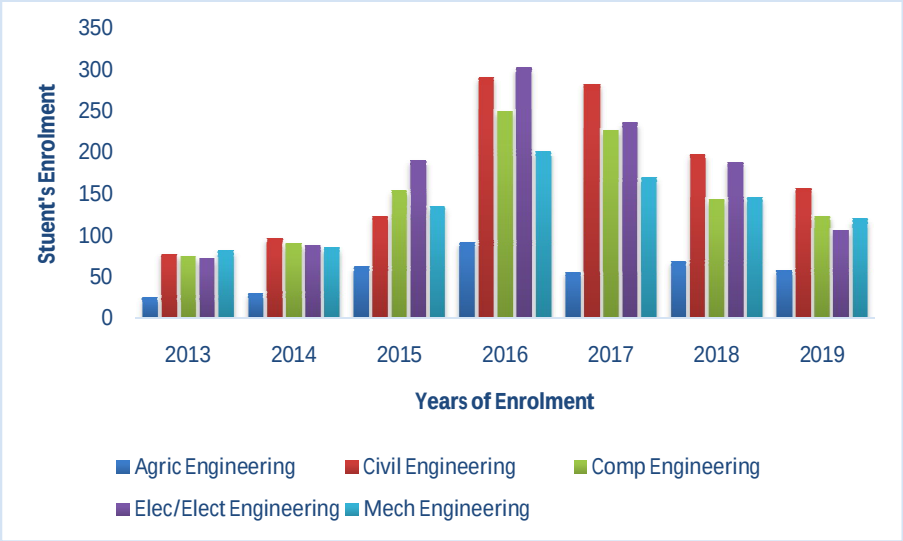

Fig. 1: Students' enrolment for the National Diploma Programme in the Faculty of Engineering (2013-2019)

Students' Enrolment in the Faculty of Engineering (Higher National Diploma)

The trend of enrolment into the various departments for the Higher National Diploma (HND) programmes in the Faculty of Engineering of Rufus Giwa Polytechnic for the academic years 2013-2019 is as shown (Fig. 2). In the year 2013, students' enrolment figure for the department of Agricultural Engineering was 18, while the average number of students for the other four departments (Mechanical, Electrical/Electronic, Civil and Computer) was 66 and the highest intake in the faculty was in Electrical/Electronic Engineering department which was put at 80 students. In this wise, the department of Agricultural Engineering recorded just a little above 6% of the total enrolment for the year.

Moreover, in the year 2014, students' enrolment figure in the department of Agricultural Engineering increased to 26 students, although it was still far less than the average number of students for other four departments which was put at 70. Meanwhile, the highest students' enrolment figure of 96 was recorded in the department of Electrical/Electronic Engineering. However, Agricultural Engineering leap-frogged a little in the percentage of the students' enrolment in the faculty which was over 8% for the year.

The year 2015 particularly recorded generally low enrolment as the department of Agricultural Engineering had only 23 students, while the

average number of students for the other four departments was 66, and the highest intake in the faculty were from the departments of Mechanical and Computer Engineering with 71 students each. Yet, out of about 287 students enrolled for the year, those in the department of Agricultural Engineering constituted about 8%.

Also in the year 2016, a total number of 31 students got enrolled into the department of Agricultural Engineering, while the average students' enrolment for the other four departments was 57 students, and the highest intake in the faculty was from the department of Computer Engineering with 72 students.

For the year 2017, only 21 was recorded as students' enrolment in the department of Agricultural Engineering, while the average enrolment for the other four departments was 61 students, and the highest intake of 71 was recorded in the department of Electrical/Electronic Engineering. In the year 2018, with just 25 students, the enrolment figure was not significantly different from those of the previous years in the department of Agricultural Engineering, whereas the average number of students' enrolment for the other four departments was 52, and the highest intake in the faculty was from the department of Electrical/Electronic Engineering with the total number of 70 students.

In the year 2019, same scenario played out as the total number of students enrolled in the department of Agricultural Engineering was 26, while the average number of students for the other four departments was 69 students, and the highest intake in the faculty was from the department of Electrical/Electronic Engineering with a total number of 92 students. This result put the percentage enrolment in the department of Agricultural Engineering at about 8.6%. The result also followed the trend observed for the ND students' enrolment.

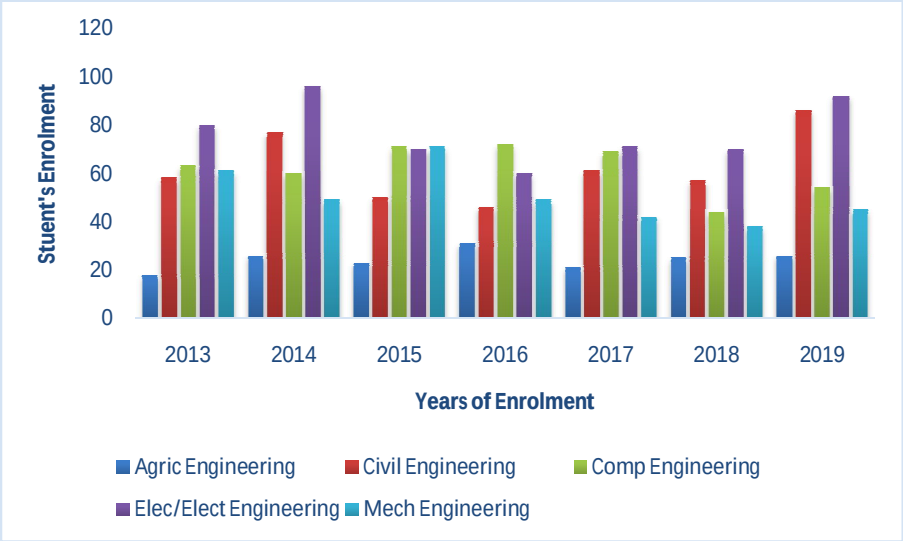

Fig. 2:Comparison of ND students' enrolment in the Faculty of Engineering (2013-2019)

From the foregoing, it can be generally inferred that students' enrolment for Agricultural Engineering was far below what was obtained in the other four departments of the faculty of engineering in the Polytechnic during the period 2013-2019. Since all the departments belong to the same engineering family, one may rightly suggest that many admission seekers may have preferred other courses in the Faculty to Agricultural Engineering because of the word 'agriculture' that is attached to it. This is because, studies (e.g. Obayelu et al., 2019; Omotesho et al., 2017) have shown that many youths of nowadays are contemptuous of anything related to agriculture. However, the result is contrary to the findings of Tabie and Yunus (2014) in their study at the Wa Polytechnic, Ghana in which Agricultural Engineering recorded the highest enrolment figure among the various engineering courses in the Polytechnic for the years 2008-2013.

Effects of Students Perception of Agricultural Engineering on Enrolment

From the results of the questionnaire administered and the interview conducted, about 83.3% students enrolled in other departments of the faculty responded that they did not consider Agricultural Engineering as a career, because of a perceived poor prospect for job opportunities after graduation. Some others (about 75%) also averred that their lack of interest in anything agriculture informed their decision to select their respective course of study in lieu of Agricultural Engineering. This

particular set of students perceived erroneously that by studying Agricultural Engineering, they will definitely end up in the farm which is not in line with their social orientation. Moreover, a sizeable percentage of the students felt that the course, Agricultural Engineering, is not as famous as other engineering field in the society, thus they rather preferred other more 'dignified' fields of study. Another set of the respondents (80%) perceived government policies with respect to agriculture as discouraging which also led to their negative perception of any field of agriculture including Agricultural Engineering. However, respondents (about 72.3%) amongst the students enrolled in the department of Agricultural Engineering averred that they also had negative perception of the course before their admission, but such perception gradually disappeared as they progressed with the programme. Finally, only about 21% of the students enrolled in the department had positive perception towards Agricultural Engineering given the poor attitude of the general public towards Agricultural Engineering and other related agricultural courses.

CONCLUSIONS AND RECOMMENDATIONS

Many students in the department of Agricultural Engineering found themselves in the department by chance as they never applied to study the course in the first instance. This is due to the word 'agriculture' that is attached to it. From this study, we can rightly conclude that perceived poor prospects for job opportunities, lack of interest in agriculture, poor social recognition, discouraging government policies, amongst others, are the major factors responsible for the poor enrolment of students for Agricultural Engineering which also translates to low number of persons taking Agricultural Engineering as a career choice in Nigeria. Therefore, we recommend well-targeted awareness campaigns and social re-orientation to encourage more students into the department. Additionally, provisions of incentives such as reduced school fees, may help in attracting more applicants into the department and other agricultural related programmes. Finally, government should create enabling environment for investors to invest into agriculture and agro-allied industries.

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