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IMPROVING CONSTRUCTION EDUCATION: THE ROLE OF COLLABORATIONS BETWEEN HIGHER INSTITUTIONS AND THE CONSTRUCTION INDUSTRY

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Higher Education Institutions (HEIs) are developmental hubs that contributes to a country's economic growth through knowledge generation, dissemination and skills diffusion among students. For HEIs to maintain their roles in fostering construction education to equip students for the industry, the current traditional pedagogical approaches are simply not enough to deliver on its mandate. One of the many ways through which HEIs can improve the quality of construction education today is through collaborations with the construction industry. Through a structured questionnaire survey, this paper identified the possible roles that collaboration between HEIs and the construction industry will play in fostering construction education. The sample for this study consisted of one hundred and twenty-six (126) respondents drawn from professionals in the Nigerian construction industry. The study revealed that exposing construction students to the world of work, strengthening universities in conducting quality and relevant research and creating and training students with key skills industry require, are among the benefits of collaboration between the HEIs and the construction industry. The study found that there is an increased need for HEIs to collaborate with the construction industry to be progressive, relevant and produce skilled graduates who will spur the activities of the construction industry. This study recommends that HEIs seek collaboration with the industry so as to address the shortcomings of higher education in Nigeria and Africa in general.

Keywords: Higher education institutions, Higher education, Survey design, Mean item score, Construction professionals, Nigeria.

1 INTRODUCTION

The concept of collaborations between higher education and the construction industry has existed for quite a long time, principally in technology-driven regions. Ramakrishnan and Yasin (2011) state that collaborations were first made known in 1903 by the Sunderland Technical Knowledge in Northern England and was earlier known as the Sandwich Programme. Since then, collaboration all over the world has gained ground and has become one of the vital agencies of policy making in HEIs in a bid to sustain the future of the construction industry. In fostering construction education as well as strengthening graduate skills, collaboration plays a key role and its importance cannot be underestimated (Turhan and Akman 2013). Feng *et al.* (2011) state that these collaborations play a critical role in the development of any economy. Nowadays, driven by the influence of evolving technology, it is imperative for HEIs to establish a cordial

relationship with the construction industry in a bid to exchange ideas as well as create developmental strategies. Esham (2008) asserts that the construction industry looks forward to flourishing collaborations with HEIs to look out for adequately skilled students as they plan. This working relationship provides a constant flow of information and innovative ideas between both parties and its integration into the HEIs' curricula helps to meet the needs of the construction industry (Ishengoma and Vaaland 2016).

Advanced nations of the world today have also benefited immensely from the collaboration between HEIs and the construction industry. The linkages have been key in research and development coordination (R&D) agendas, and enhancement of relations between private and public sectors, amongst others (Guimón 2013). Its benefits are also recognizable in developing countries. According to Marotta *et al.* (2007), collaborations between HEIs and industry increases the tendency of industry establishments to create and introduce new innovations and inventions which in terms of patents can expand their exploration base. This collaboration stems from the fact that most industry firms constantly require skilled graduates because, the role of HEIs in technology impartation and diffusion makes it an important driver in economic development. Hence, it can be stated in this context that effective collaborations can offer solutions to the rapid increase of unemployment in developing countries (Guimón 2013).

According to Ramakrishnan and Yasin (2011), the results of collaborations can encourage more benefits which include generating new knowledge where industry professionals share their innovations and experiences by conducting lectures and seminars at HEIs; providing educational resources as students benefit from the hands-on and practical experience they are exposed to; providing students with up-to-date information on the industry as industry professionals can act as consultants to students; providing career planning tips to students which is key in defining their futures and providing students with the needs and requirements for industry employment (Ramakrishnan & Yasin 2011). From these benefits, it can be construed that collaborations can occur in various forms which include research and development, teaching and curriculum enhancement, as well as consultancy.

Furthermore, with the ever-growing demand for graduates to be equipped with more than just an academic degree, HEI-industry collaboration is fundamental. These collaborations help in the development of certain skills among graduates such as soft skills which include communications, critical thinking, leadership, time management skills, teamwork, interpersonal skills, management skills, and problem-solving skills (Aliu and Aigbavboa 2016). Hence, this study is significant because construction professionals of today are saddled with the responsibility of developing the built environment which improves the quality of life for any society. From the foregoing, the roles of collaboration between HEIs and the construction industry bodes well for the improvement of construction education and it is against this backdrop that this paper examines the benefits from a Nigerian perspective.

2 RESEARCH METHODOLOGY

This study adopted a descriptive survey design. This design was deemed appropriate because it was effective in providing both quantitative and numeric description of the respondents on the issue of interest in the study. For this current study, the target population was construction professionals in the Nigerian construction industry, namely architects, builders, engineers, quantity surveyors, estate surveyors and valuers, land surveyors, and town planners. The selection of these construction professionals was made because they were likely to have a considerable amount of knowledge in contributing to the objectives of this study. This study adopted the random sampling technique and it was preferred to the cluster sampling, stratified

sampling or the sampling using multiple probability techniques. Random sampling gives all the participants an equal chance to be selected for the study with the same criteria which prompted this study to adopt this technique. The criterion for participation in this study was that each participant had to be a construction professional in the Nigerian construction industry. Most times, this method is used when the target population presents the same characteristics, or the sampling size is too large to represent the entire population efficiently and each member of the entire population has an equal chance of being selected as a sampling respondent. Hence, a total of 126 respondents took part in this study. The main instrument of data collection was a structured questionnaire which was designed by the researcher following a review of extant literatures. The instrument was validated by handing it to experts in the construction industry before using it for the study. In addition, focused group discussions were held with key stakeholders in HEIs including construction lecturers/educators and curricula planners. The data collected was analysed using the descriptive statistics. Also, closed-ended questions were used for the purposes of this study. This is because close-ended questions provided participants with a multiple of options to choose from without allowing them to put their opinions in their own words. The main advantage of using close-ended questions is the simplicity for data collection and analysis, thus less time consuming.

2.1 Mean Item Score

For the purpose of this study, mean item score (MIS) was used to analyse the data. MIS indicate the average level of agreement with an item. The Likert scales were transformed to a Mean Item Score (MIS) for each of the research objectives as applicable. The indices were then used to determine the rank of each item. These rankings made it possible to cross compare the relative importance of the items as perceived by the respondents. Following the mathematical computations, the criteria were then ranked in descending order of their relative importance.

3 FINDINGS AND DISCUSSIONS

3.1 Background Information of Participants

Respondents were requested to indicate the degree of importance of each of the roles of collaboration between the HEIs and the construction industry in upscaling construction education based on a five-point Likert scale (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5). One hundred and twenty-six complete questionnaires were received signifying an 84% response rate. Findings from the 126 usable questionnaires revealed that a total of 98 males took part in the study which represents 77.8 percent of the total population. A total of 22 females took part in the study which represents a total of 22.2 percent.

Also, 3.2 percent of the respondents were in the age group of 21-25 years old, 10.3 percent of the respondents were in the age group 26-30 years, 13.5 percent were in the age group 31-35 years, 17.5 percent were in the age group 36-40 years, 23.0 percent of the respondents were in the age group 41-45 years, 11.1 percent were in the age group of 46-50 years, 11.9 percent were in the age group of 51-55 years and 9.5 percent of the respondents were above 56 years old.

It revealed that 0.8 percent of the total respondents had less than a year's work experience and 4 percent had less than two years of work experience. It also revealed that 23.8 percent had experience that ranged from three to five years, 27 percent had experience in the range of six to ten years, 12.7 percent had experience that ranged from 11 to 15 years, 17.5 percent had experience that ranged from 16 to 20 years, 12.7 percent had experience that ranged from 21 to 25 years and 1.6 percent of the respondents had more than 25 years of industry experience. The

years of experience of respondents were sufficient to provide useful responses to achieve the purpose of the study as 95.3 percent of the respondents for this study had over three years of work experience in the construction industry.

3.2 Mean Item Score for Ranking of Roles of Collaboration between HEIs and the Construction Industry

The mean ranking of each attribute was presented to provide a clearer picture of the agreement reached by the respondents. A summary of the test result is shown in the table below. The mean for each variable included the standard deviation.

Table 1. Results of mean item score.

ROLES OF COLLABORATION	$\bar{x}$	σX	R
Exposing construction students to the world of work	4.66	0.635	1
Strengthening universities in conducting quality and relevant research	4.49	0.629	2
Creating and training students with the key skills industry require	4.48	0.629	3
Providing equipment and services to facilitate learning for students	4.48	0.641	3
Providing students access to updated technical information	4.43	0.650	4
Encouraging construction site visits and field trips for students	4.43	0.686	4
Enhancing job opportunities for graduates	4.42	0.663	5
Creating an entrepreneurship culture among graduates	4.41	0.719	6
Publicizing university activities relevant to industry	4.38	0.725	7
Setting-up of schemes to enable students to attend industry events	4.35	0.696	8
Incorporating open-days in universities to further sensitize future graduates	4.32	0.734	9
Visiting universities to organize workshop on products by industry players	4.30	0.648	10
Integrating some industry-specific courses into the university curriculum	4.29	0.633	11
Incorporating industry/academic mentoring plan for students	4.27	0.686	12
Establishing student chapters of professional institutions	4.26	0.683	13
Improving the overall university curriculum	4.23	0.609	14
Introducing construction project exercises to classrooms	4.17	0.538	15
Involving industry in university curricula design, planning and evaluation	4.14	0.576	16

$\bar{x}$ = Mean item score; σX = Standard deviation; R = Rank

Table 1 reveals the respondents' rankings of the possible benefits of collaborations between HEIs and the industry in improving construction education. The table shows that, with a mean score (M) of 4.66 and standard deviation of (SD) = 0.635, 'exposing construction students to the world of work' was ranked the most important role of collaborations between HEI and the

Nigerian construction industry. 'Strengthening universities in conducting quality and relevant research' was ranked second with (M = 4.49; SD = 0.629); 'creating and training students with the key skills industry require' and 'providing equipment and services to facilitate learning for students' were ranked third with (M = 4.48; SD = 0.629) and (M = 4.48; SD = 0.641) respectively. 'Providing students access to updated technical information' and 'encouraging construction site visits and field trips for students' were both ranked fourth with (M = 4.43; SD = 0.650) and (M = 4.43; SD = 0.686) respectively; 'enhancing job opportunities for graduates' was ranked fifth with (M = 4.42; SD = 0.663); 'creating an entrepreneurship culture among graduates' was ranked sixth with (M = 4.41; SD = 0.719); 'publicizing university activities relevant to industry' was ranked seventh with (M = 4.38; SD = 0.725); 'setting up of schemes to enable students to attend industry events' was ranked eighth with (M = 4.35; SD = 0.696); 'incorporating open-days in universities to further sensitize future graduates' was ranked ninth with (M = 4.32; SD = 0.734); 'visiting universities to organize workshop on products by industry players' was ranked tenth with (M = 4.30; SD = 0.648); 'integrating some industry-specific courses into the university curriculum' was ranked eleventh with (M = 4.29; SD = 0.633) and 'incorporating industry/academic mentoring plan for students' was ranked twelfth with (M = 4.27; SD = 0.686). Furthermore, the table revealed that 'establishing student chapters of professional institutions' was ranked thirteenth (M = 4.26; SD = 0.683); 'improving the overall university curriculum' was ranked fourteenth with (M = 4.23; SD = 0.609); 'introducing construction project exercises to classrooms' was ranked fifteenth with (M = 4.17; SD = 0.538) and 'involving industry in university curricula design, planning and evaluation' was ranked the least with (M = 4.14; SD = 0.576).

4 IMPLICATION OF FINDINGS

From the empirical study, it was revealed that collaborations between the HEIs and the construction industry will enable students to attend industry events, thereby exposing them to the world of work. The ever-growing demand for graduates to be equipped with more than just an academic degree makes collaboration between HEI and the construction industry significant. Through collaborations, the integration of some industry-specific courses into the university curriculum is possible and aimed at preparing students for the world of work. Furthermore, findings also reveal that collaborations should be encouraged as they lead to the generation of new knowledge in cases where industry professionals are willing to share their innovations and experiences by conducting lectures and seminars at HEIs. These lectures and seminars help develop non-academic skills among students such as communication skills, leadership skills, teamwork, interpersonal skills and problem-solving skills.

5 LESSONS LEARNED AND CONCLUSIONS

HEIs act as an important driver of economic development, considering its roles in education and technology absorption, adaptation, and diffusion. It has also become a reliable source of knowledge for innovation which has stimulated the interests of the construction industry as firms and companies seek ties with HEIs to tap into the knowledge generated by academic research. In improving construction education, one of the effective approaches widely practiced is the collaborations between the HEIs and the construction industry. Various findings from literature describe it as a powerful tool in strengthening the ability of HEIs in conducting relevant and quality research which improves graduate employability for the construction industry. It also provides construction students with industry exposure and experience which acts as a foundation for their future professional careers. It is through collaborations that HEIs have developed into

catalysts for economic growth as their roles in improving construction education for the future has become more significant. Future research can ensure the selection of a larger sample that cuts across more states and involves more construction industry employers in Nigeria. This will provide a better insight into the perceptions of HEI-industry collaboration. This will further allow for the generalisation of results to the greater population.

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