

# *Built environment education and research in West Africa*

Book or Report Section

Published Version

Conference paper

Laryea, S. (2011) Built environment education and research in West Africa. In: Laryea, S., Leiringer, R. T. F. and Hughes, W. ORCID: <https://orcid.org/0000-0002-0304-8136> (eds.) Proceedings of the West Africa Built Environment Research (WABER) Conference 2011. West Africa Built Environment Research (WABER) Conference, pp. 203-214. ISBN 9780956606020 Available at <https://centaur.reading.ac.uk/20828/>

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Publisher: West Africa Built Environment Research (WABER) Conference

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# BUILT ENVIRONMENT EDUCATION AND RESEARCH IN WEST AFRICA

**Samuel Laryea<sup>1</sup>**

*School of Construction Management and Engineering, University of Reading, P.O. Box 219, Reading, RG6 6AW, UK*

Built environment programmes in West African universities; and research contributions from West Africa in six leading international journals and proceedings of the WABER conference are explored. At least 20 universities in the region offer degree programmes in Architecture (86% out of 23 universities); Building (57%); Civil Engineering (67%); Estate Management (52%); Quantity Surveying (52%); Surveying and Geoinformatics (55%); Urban and Regional Planning (67%). The lecturer-student ratio on programmes is around 1:25 compared to the 1:10 benchmark for excellence. Academics who teach on the programmes are clearly research active with some having published papers in leading international journals. There is, however, plenty of scope for improvement particularly at the highest international level. Out of more than 5000 papers published in six leading international peer-reviewed journals since each of them was established, only 23 of the papers have come from West Africa. The 23 papers are published by 28 academics based in 13 universities. Although some academics may publish their work in the plethora of journals that have proliferated in recent years, new generation researchers are encouraged to publish in more established journals. The analyses of 187 publications in the WABER conference proceedings revealed 18 research-active universities. Factors like quality of teaching, research and lecturer-student ratio, etc count in the ranking of universities. The findings lay bare some of the areas that should be addressed to improve the landscape of higher education in West Africa.

Keywords: built environment, education, research, university, West Africa.

## INTRODUCTION

The aim of the paper is to explore the built environment programmes offered in West African universities; and research contributions from West Africa at an international and regional level. The specific objectives are:

- To identify major universities in West Africa (WA) that offer programmes and research contributions in the built environment;
- To examine the range of the built environment programmes offered in different universities and the nature of the programmes; and
- To explore research contributions from West Africa published in leading international peer-reviewed journals and proceedings of the West Africa Built Environment Research (WABER) Conference (2009-11).

The rationale of the paper is not to provide a ranking of schools in the region; the purpose is merely to offer some insights on universities in the region that are playing a

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<sup>1</sup> s.laryea@reading.ac.uk; salaryea@yahoo.com

leading role in the provision of academic programmes and research contributions in the built environment.

## METHOD

To achieve the study objectives, three main tasks were necessary. The first objective involved searching the websites of Education Ministries of all 16 WA countries to obtain a list of accredited universities. This was followed with a detailed searching of the websites of universities to identify the ones that offer built environment programmes such as architecture, building, engineering, quantity surveying, urban and regional planning, etc. Author addresses found in research publications in journals and database of the WABER conference also helped to identify some of the built environment departments. The second objective was achieved through analyses of data from websites of universities and firsthand information from academics. The papers by Vorster (2011), Abundayeh *et al.* (2000) and Oglesby (1990) provided some of the theoretical context for construction education in universities. The third objective involved analysing research publications of academics teaching on the built environment programmes. This involved analyses at both international and regional level. The online databases of six leading built environment-related journals were searched to identify papers originating from WA. The journals chosen were based on a paper by Chau (1997) on the ranking of construction management journals. Bibliometric information available in Journal Citation Reports; Scopus; Journal Impact Factors; Thomson Reuters Web of Knowledge; and journal ratings of the Excellence in Research for Australia initiative also gave an indication of leading journals in the field. 187 publications in the proceedings of the WABER conference were also examined and analysed to trace the institutions and countries of authors. By bringing together all of this data for the first time, it has been possible to obtain some insights into the higher education landscape in WA the built environment programmes in universities, and the research contributions of academics in WA universities.

## COUNTRIES AND UNIVERSITIES IN WEST AFRICA

The 16 countries in WA are developing countries that are pushing for socio-economic development (UN, 2010). Their average GDP is \$1,397 (IMF, 2010).

Table 1: Universities in West African countries

Country	Population (million)	Year of Independence	Official language	Number of universities
Benin	9	1960	French	3
Burkina Faso	16	1960	French	1
Cameroon	19	1960 (France) 1961 (Britain)	French and English	13
Cape Verde	0.5	1975	Portuguese	10
Côte d'Ivoire	21	1960	French	6
Gambia	2	1965	English	1
Ghana	24	1957	English	59
Guinea	10	1958	French	6
Guinea-Bissau	1.6	1973	Portuguese	4
Liberia	4	1847	English	9
Mali	15	1960	French	10
Mauritania	3.5	1960	Arabic	9
Niger	15.5	1960	French	1
Nigeria	152	1960	English	195
Senegal	14	1960	French	6
Sierra Leone	6.5	1961	English	2
Togo	7	1960	French	1
Total	320.6			336

There are at least 336 universities across WA for a total population of 320.6 million people (see Table 1). From its establishment in 1962, Ahmadu Bello University based in Zaria, Nigeria is the largest university in Sub-Saharan Africa. The University of Monrovia, opened as Liberia College in 1862, is the oldest degree-awarding institution in WA. The universities in WA offer a wide range of degree programmes in the arts, education, engineering, medicine, social sciences, law, physical sciences, built environment, etc. The interest of this paper lies in built environment programmes. As a simple way to define ‘built environment’, it encompasses buildings and infrastructure, in their planning, design, management, operation, maintenance and disposal stages (Hughes, 2010). The analysis of universities from this point forward focuses mainly on universities in Ghana and Nigeria. The two countries have the largest number of universities (76%) in the region (Table 1). However, less than 50 percent are public universities funded by the state. The majority of universities are private-owned ‘smaller’ institutions with most affiliated to public universities.

### BUILT ENVIRONMENT PROGRAMMES IN UNIVERSITIES

Tables 2 and 4 show some universities in West Africa that offer undergraduate and postgraduate programmes relating to the built environment.

Table 2: Built environment undergraduate programmes in some West African universities

University	Country	Year established	Architecture / Design	Building / Building Technology	Civil / Env. Engineering	Estate/Land Management	Quantity Surveying / Construction Economics	Urban and Regional Planning
Abubakar Tafawa Balewa University	Nigeria	1980	●	●	●			
Ahmadu Bello University	Nigeria	1962	●	●			●	●
Anambra State University	Nigeria	2000	●					
Covenant University	Nigeria	2002	●	●	●	●		
Enugu State Uni. of Science and Tech.	Nigeria	1979	●	●	●	●	●	●
Federal University of Tech., Akure	Nigeria	1981	●		●	●	●	●
Federal University of Tech., Minna	Nigeria	1982	●	●	●	●	●	●
Federal University of Tech., Owerri	Nigeria	1980	●					
Federal University of Technology, Yola	Nigeria	1983	●	●	●		●	●
Kwame Nkrumah University of Science and Technology, Kumasi	Ghana	1961	●	●	●	●	●	●
Nnamdi Azikiwe University	Nigeria	1991	●	●	●	●	●	
Obafemi Awolowo University	Nigeria	1962	●	●	●	●	●	●
Olabisi Onabanjo University	Nigeria	1982	●					●
Osun State University	Nigeria	2006			●			●
Rivers State Uni. of Science and Tech.	Nigeria	1979	●	●	●	●	●	●
University of Benin	Nigeria	1970			●			●
University of Ibadan	Nigeria	1948			●			
University of Ilorin	Nigeria	1975	●		●			
University of Jos	Nigeria	1975	●	●		●	●	●
University of Lagos	Nigeria	1962	●	●	●	●	●	●
University of Nigeria, Enugu	Nigeria	1960	●			●		●
University of Nigeria, Nsukka	Nigeria	1960	●			●		●
University of Uyo	Nigeria	1991	●	●	●	●	●	●
			86%	57%	67%	52%	52%	67%

Notes: Programmes may not have the exact titles in universities. Other programmes include Project Management, Real Estate, Surveying, etc. The data here is a combination of information taken from university websites and firsthand information obtained from built environment academics in the region.

## Undergraduate programmes

Table 2 shows some universities in WA and their built environment programmes. BSc programmes include Architecture, Building, Civil Engineering, Development Planning, Estate Management, Geoinformatics, Land Economy, Planning, Quantity Surveying and Construction Economics, Real Estate, Surveying and Urban and Regional Planning. Some universities also offer a combination of technical and vocational education programmes. The duration of BSc programmes in Ghana is four years. However, the duration of programmes in Nigeria is five years. For architecture, the duration tends to be for four years in the first instance plus one or two additional years for the Post Graduate diploma or MSc in Architecture. Much of the programme contents examined reflects little change over the years, but educational programmes should develop based on research into the phenomena we observe (Hughes, 2010), current trends and future directions. An approximation of lecturer-student ratios on built environment programmes in some universities is presented in Tables 3-7. The lecturer-student ratio gives a measure of the staffing level; this is often a criterion considered when ranking institutions. In the UK, staff-student ratio in institutions is calculated by the Higher Education Statistics Agency (HESA). A ratio of 1:10 is often considered as the benchmark for excellence.

Table 3: Built environment programmes at Obafemi Awolowo University

Programmes /Departments	No. of Lecturers	No. of Students	Lecturer/Student ratio
Architecture	20	235	1:12
Building	16	333	1:21
Estate Management	13	538	1:41
Quantity Surveying	09	272	1:30
Urban and Regional Planning	13	323	1:25
Total	71	1701	

Table 4: Built environment programmes at Federal University of Technology, Minna

Programmes /Departments	No. of Lecturers	No. of Students	Lecturer/Student ratio
Architecture	25	401	1:16
Building	14	383	1:27
Estate Management	20	660	1:33
Quantity Surveying	16	479	1:29
Surveying and Geoinformatics	11	320	1:29
Urban and Regional Planning	24	585	1:24
Total	110	2828	

Table 5: Built environment programmes at Kwame Nkrumah University of Science and Technology

Programmes /Departments	No. of Lecturers	No. of Students	Lecturer/Student ratio
Architecture	15	281	1:19
Building Technology	17	474	1:28
Land economy	11	457	1:20
Planning	17	528	1:31
Total	60	1740	

Table 6: Built environment programmes at Enugu State University of Science and Technology

Programmes /Departments	No. of Lecturers	No. of Students	Lecturer/Student ratio
Architecture	14	326	1:23
Building technology	7	411	1:59
Estate Management	13	428	1:33
Quantity Surveying	6	198	1:33
Surveying and Geoinformatics	7	143	1:20
Urban and Regional Planning	8	184	1:23
Total	55	1690	

Table 7: Built environment programmes at Federal University of Technology, Akure

Programmes /Departments	No. of Lecturers	No. of Students	Lecturer/Student ratio
Architecture	21	454	1:22
Estate Management	13	476	1:37
Industrial Design	11	324	1:29
Quantity Surveying	16	469	1:29
Surveying and Geoinformatics	2	13	1:7
Urban and Regional Planning	16	427	1:27
Total	79	2163	

The analyses in Tables 3-7 show that the average lecturer-student ratio on built environment programmes in selected WA universities is around 1:25. A lower lecturer-student ratio is often better in tertiary education context. A lecturer-student ratio of 1:25 may seem reasonable. However, a clear need for improvement becomes evident when the 1:25 statistic is compared to that of institutions where academics achieve prolific research publications. At the School of Construction Management and Engineering at University of Reading, for example, the lecturer-student ratio is 1:14. Improvements in lecturer-student ratio can enable staff and students to engage more effectively; reduce students' demand on staff time; and enhance time spent by staff on teaching preparation, personal development and research work if appropriate support is available. The findings by Aregbeyen (2010) on students' perceptions of effective teaching and effective lecturer characteristics in Nigeria should be addressed. Generally, many lecturers are not 'trained teachers' per se, although most have a PhD or equivalent qualification. To improve quality of teaching on programmes, the concept of teaching training for lecturers can be introduced by higher education councils and universities. This will provide opportunity for lecturers to acquire and develop teaching skills and techniques. In the US, training requirements for lecturers teaching civil engineering in universities are explored by Quadrato *et al.* (2005). In the UK, a postgraduate teaching qualification accredited by the HEA is almost compulsory for new university lecturers.

### Postgraduate programmes

Most universities in Table 2 offer MSc and PhD programmes. The postgraduate (PG) programmes offered in some universities are shown in Table 8.

Table 8: Built environment postgraduate programmes in some WA universities

University	MSc/MPhil programmes	PhD programmes
Ahmadu Bello University, Nigeria	Building Services, Construction Management, Construction Technology, Building, Facilities Management, Landscape Architecture, Urban Design	Building Services, Construction Management, Construction Tech., Building, Facilities Management
Kwame Nkrumah University of Science and Technology, Ghana	Architecture, Construction Management, Development Planning and Management, Development Policy and Planning, Land Economy	Architecture, Development Studies; Planning, Building Technology
Obafemi Awolowo University, Nigeria	Architecture, Building, Civil Engineering, Estate Management, Quantity Surveying, Urban and Regional Planning	Architecture, Building, Civil Engineering, Estate Management, Planning
University of Lagos, Nigeria	Environmental Design, Landscape Architecture, Architecture, Construction Management, Construction Technology, Project Management, Estate Management, Urban and Regional Planning, Urban Design, Environmental Management, Environmental Design, Building Services, Facilities Management	Architecture, Building, Estate Management, Urban And Regional Planning

*The duration of MSc programmes is officially two years and PhD is three years. Table 8 gives an idea of the range of academic programmes and staff expertise available at the postgraduate level.*

## RESEARCH CONTRIBUTION OF UNIVERSITIES IN LEADING JOURNALS AND WABER CONFERENCE PROCEEDINGS

Table 9: Research contribution from West Africa in six leading international journals

Author(s) institution	Journal	Year	Research focus
Kwame Nkrumah University of Science and Technology, Kumasi, Department of Building Technology, Ghana	IJPM	2011	Effect of integration on project delivery team effectiveness
University of Benin, Faculty of Engineering, Benin City, Nigeria	JME	2009	Unethical practices in Nigerian firms
Kwame Nkrumah University of Science and Technology, Kumasi, Centre for Settlements Studies, Ghana	ECAM	2009	Project management competencies
Ahmadu Bello University, Department of Quantity Surveying, Nigeria	ECAM	2009	Finance for healthcare facilities
Federal University of Technology, Akure, Department of Quantity Surveying, Nigeria	CME	2006	Time-cost model
Obafemi Awolowo University, Department of Quantity Surveying, Nigeria			
Kwame Nkrumah University of Science and Technology, Kumasi, Department of Building Technology, Ghana	CME	2005	Strategic planning by construction firms in Ghana
Osun State College of Technology, Department of Building, Nigeria	CME	2004	Non-financial incentives
Obafemi Awolowo University, Department of Building, Nigeria			
University of Lagos, Department of Building, Nigeria	IJPM	2002	Project leadership, team composition, performance
Obafemi Awolowo University, Department of Quantity Surveying, Nigeria	IJPM	2002	Effect of delay on project delivery
University of Lagos, Department of Building, Nigeria	JME	2002	Project leadership skills
Federal University of Technology, Owerri, Department of Project Management Technology, Nigeria	JCEM	2001	Methodology for determining price variation in project execution
Abubakar Tafawa Balewa University, Engineering and Quantity Surveying programme, Nigeria	JCEM	2001	Time-overrun factors in Nigeria
Ahmadu Bello University, Department of Civil Engineering, Zaria, Nigeria	BRI	1997	Solid soilcrete blocks for low-cost buildings
University of Benin, Department of Civil Engineering, Nigeria	JCEM	1995	Causes of high costs of construction in Nigeria
University of Benin, Department of Civil Engineering, Nigeria	CME	1995	Business environment of construction
Abubakar Tafawa Balewa University, Department of Civil Engineering, Nigeria	JCEM	1993	Construction cost factors in Nigeria
Obafemi Awolowo University, Faculty of Env. Design and Management, Nigeria	CME	1992	Cost information management
University of Jos, Department of Building, Nigeria	CME	1991	Evaluation and selection of projects
University of Ilorin, Department of Management Sciences, Nigeria	JCEM	1990	New approach to construction management
Obafemi Awolowo University, Department of Building, Nigeria	CME	1989	Production outputs in building trades
Obafemi Awolowo University, Department of Building, Nigeria	CME	1989	Operative productivity
University of Benin, Department of Civil Engineering, Nigeria	CME	1987	Contract arrangements
University of Ife, Building Department, Nigeria	BRI	1985	Pipe-Type Solar Water Heater

*Notes: BRI = Building Research and Information; CME = Construction Management and Economics; ECAM = Engineering, Construction and Architectural Management; IJPM = International Journal of Project Management; JCEM = Journal of Construction Engineering and Management; JME = Journal of Management in Engineering. 23 papers in all from West Africa. The criterion for including a paper is the author(s) affiliation. The full citation for the papers can be found in the list of references. Frequency: 1980-1990 (4); 1990-2000 (7); 2000-present (12).*



The third objective of the study was to explore the research contribution of built environment academics teaching on the programmes from an international and regional perspective. At an international level, the journals examined for papers from West Africa are: Building Research and Information; Construction Management and Economics; Engineering, Construction and Architectural Management; International Journal of Project Management; Journal of Construction Engineering and Management; and Journal of Management in Engineering (see Tables 9 and 10).

Table 10: Frequency of research publications from Ghana and Nigeria

<b>Journal</b>	<b>Contributions from Ghana</b>	<b>Contributions from Nigeria</b>
Building Research and Information (1973-date)	0	2
Construction Management and Economics (1983-date)	1	8
Engineering, Construction and Architectural Management (1994-date)	1	1
International Journal of Project Management (1983-date)	1	2
Journal of Construction Engineering and Management* (1957-date)	0	5
Journal of Management in Engineering (1985-date)	0	2
Proceedings of the West Africa Built Environment Research (WABER) Conference (2009-date)	62	127
Total	65	147

\*The *Journal of Construction Engineering and Management* has been published since the late 19<sup>th</sup> century i.e. for 137 years under different titles (see Pietroforte and Stefani, 2004: 441)

The basis for the journal selection is explained in the introductory section of the paper. This was based primarily on a journal paper by Chau (1997) on the ranking of construction management journals; bibliometric information on journals; and journal ratings in research quality assessment frameworks. All data was collected through a rigorous search of online databases of the six journals. The author address was a primary factor used to identify the location and institution of the paper author(s).

Table 11: Frequency of research publications from institutions

<b>Institution</b>	<b>Publications in Journals</b>	<b>Publications in proceedings of the WABER conference</b>
Abubakar Tafawa Balewa University, Nigeria	2	2009 (1)
Ahmadu Bello University, Nigeria	2	2009 (5); 2010 (17); 2011 (16)
Anambra State University, Nigeria	-	2011 (2)
Covenant University, Nigeria	-	2009 (5); 2010 (1); 2011 (3)
Federal University of Technology, Akure, Nigeria	1	2010 (7); 2011 (18)
Federal University of Technology, Minna, Nigeria	-	2009 (1); 2010 (4); 2011 (8)
Federal University of Technology, Owerri, Nigeria	1	-
Federal University of Technology, Yola, Nigeria	1	2011 (1)
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana	3	2009 (2); 2010 (9); 2011 (6)
Obafemi Awolowo University, Nigeria	7	2010 (4); 2011 (7)
Olabisi Onabanjo University, Nigeria	-	2011 (1)
Osun State College of Technology, Nigeria	1	-
Osun State University, Nigeria	-	2010 (1)
Rivers State University of Technology	-	2011 (2)
University of Benin, Nigeria	4	2010 (3)
University of Ilorin, Nigeria	1	-
University of Jos, Nigeria	1	2009 (3); 2011 (2)
University of Lagos, Nigeria	2	2009 (7); 2010 (8); 2011 (17)
University of Nigeria, Enugu	-	2011 (2)
University of Uyo	-	2011 (1)
Total	25*	2009 (25); 2010 (57); 2011 (91)

Notes: \*Papers with authors from multiple universities were credited to each institution

Table 9 shows an audit of papers of WA origin in the six leading international journals since each of them was established (see Table 11). From a regional perspective, publications in the proceedings of the WABER Conference (i.e. 2009-2011) were examined and analysed. This provided additional insights into the research contributions of built environment academics in WA. The data in Table 5 shows that the 23 papers in leading journals are published by 28 academics based in 13 West African universities in a period of 25 years (1985-2011). The data in Table 11 shows that Obafemi Awolowo University plays a leading role in terms of research contributions at an international level although not in the last five years. Some academics at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana have made strong contributions in recent years. There has also been a strong contribution from some academics at University of Benin, Nigeria.

It should be emphasised that the construction management or built environment field is primarily a field of application (Hughes, 1999). The ARCOM book edited by Langford and Hughes (2009) gives an international overview of the development of the construction management discipline. Built environment researchers tend to use theories from mainstream academic disciplines (such as economics, mathematics, law, management, organisational science, geography, engineering, physics, chemistry, etc.) to analyse and interpret their observations and phenomena of what happens in construction. An even better publishing achievement will be to publish some of our research papers in leading journals of mainstream disciplines. Construction may be different from other industries because of the way a set of factors interact simultaneously to have influence on projects (as explained in a textbook on economic theory and the construction industry by Hillebrandt, 2000). However, the underlying scientific, economic, management, organisational theories governing construction work is not too different from theories governing work in other industries. Publishing in leading built environment journals should be a reasonable starting point. However, built environment researchers should also aspire to publish in mainstream journals. Current themes like sustainability, innovation, digital practices, etc. should provide an increased opportunity to contribute towards mainstream thinking and theory.

## **DISCUSSION OF FINDINGS**

Four main points are discussed in connection with the research objectives and findings. First, the data on development of tertiary education institutions in WA is interesting. As demonstrated in Table 2, most universities in WA were established by the state in the post-independence era. From the start of the colonial period in 1850 to 1948 when the University of Ghana was founded as the University College of the Gold Coast, no higher education institution was established in West Africa in almost 400 years of colonial rule. This situation created a serious educational and development backwardness for people in the region. Between 1957 when Ghana became the first Sub-Saharan Africa country to gain independence, and now, more than 336 universities have been established in WA in the last 50 years alone. Most universities were traditionally established and funded by the state. Nowadays, the private sector is playing an increasingly greater role in the provision of access to higher education. Lagos City Polytechnic, established in 1990, is the first private tertiary education institution in Nigeria. In Ghana, the Central University College, established in 1998, is the first private tertiary education institution. Since the establishment of these pioneering institutions, several private tertiary institutions have

proliferated in Ghana, Nigeria and other WA countries, and a significant number of them are owned by religious establishments. It is, however, important to mention that some of the new universities owned by the private sector are competing well with the public universities established long before them.

Second, there are several universities in WA that offer programmes and research contributions in the built environment (see Table 2). The dominant built environment programme areas are Architecture, Building, Civil Engineering, Estate Management, Land Management, Quantity Surveying, Surveying and Geoinformatics, and Urban and Regional Planning. With time, academic staff expertise and increasing specialising of practice in the construction sector, new and specialised undergraduate and postgraduate programmes are likely to emerge alongside the traditional degree programmes. A paper on construction education by Oglesby (1990) discusses some of the possible approaches for expanding university programme offerings in built environment studies. Universities like Ahmadu Bello University (Nigeria); Federal University of Technology, Akure (Nigeria); Kwame Nkrumah University of Science and Technology, Kumasi (Ghana); Obafemi Awolowo University (Nigeria); University of Benin (Nigeria) and University of Lagos (Nigeria) are the ones playing a leading role in the region when it comes to the provision of academic programmes and research contributions in the built environment. Unsurprisingly most of these universities are ranked among the top 100 universities in Africa (<http://www.4icu.org/>). On programme quality and relevance, it is important to update built environment programmes from time to time in line with changing national and global needs and trends (see paper by Abudayyeh *et al.*, 2000 which explores a wide array of issues on construction engineering and management undergraduate education). In the area of quantity surveying for example, a book by Cartlidge (2002) shows new aspects of quantity surveying practice arising from industry changes and new procurement methods in the UK.

Third, the data shows that built environment academics in WA are clearly research active. The dominant broad focus of the journal papers from West Africa has been on cost, time, project teams, contract arrangements, business environment of projects, productivity, incentives and business practices in firms (see Table 9). The frequency of publication of papers from WA in the six journals has proved to be increasing (see Table 9): 1980-1990 (4); 1990-2000 (7); 2000-present (12). However, this is a relatively small fraction compared to more than 5000 papers published in the six journals since each of them was established. Further details of regions where most journal papers originate from can be seen in a review paper by Abudayyeh *et al.* (2004). To increase research activity and contributions in journals and conferences will require greater collaboration with industry for research funding and access to data. Tables 10 and 11 show the frequency of publication of 212 papers from Ghana and Nigeria in journals (11%) and proceedings of the WABER conference (89%). For journal publications, the ratio of contributions from Ghana and Nigeria is 1:7. In interpreting the result, it is imperative to take the 1:7 population ratio of the countries into account including the 1:4 ratio of number of universities (see Table 1).

Fourth, the overall research statistics in Tables 10 and 11 shows a low level of high quality research output from the region. This conclusion has been earlier demonstrated in analyses of construction management research publications in papers by Abudayyeh *et al.* (2004); Pietroforte and Stefani (2004) and Pietroforte and Aboulezz (2005). Although academics in West African institutions may publish their work in the plethora of other journals that have proliferated in recent years, it would

clearly be worthy for them to direct some of their high quality research output for publication in the more established journals as this can enhance their research profile. As articulated in a keynote paper by Hughes (2005) on the publication process for refereed journal papers, “The most important feature of an academic CV is the list of publications. It is not just the quantity that matters, but where they are published.” It is fair to suggest that bibliometric information freely available in Journal Citation Reports; Scopus; Journal Impact Factors; Thomson Reuters Web of Knowledge; etc. should give researchers an indication of leading journals in the field and the best places to publish high quality work. Research quality counts in the ranking of universities and the academic environment in a university. Universities should support their academics to develop their research profile and output. Academics should also make a conscious effort to do and publish their research work in the best outlets. In institutions and environments where researchers may not have direct access or subscription to the literature in leading journals, collaborations with colleagues elsewhere can provide a useful means for overcoming the challenge.

## CONCLUSIONS

The aim of the paper was to explore the built environment programmes offered in universities in West Africa; and some of the research contributions of academics teaching on the programmes. Academic programmes in 20+ universities were explored. The major programmes are Architecture, Building, Civil Engineering, Estate Management, Quantity Surveying, Surveying and Geoinformatics, and Urban and Regional Planning. Academics teaching on the programmes are clearly research active with some having published in leading international journals. However, the publication statistics of papers from West Africa shows that there is plenty of scope for improvement especially at the highest international level. Although some academics may publish their work in the plethora of journals that have proliferated, it would be worthy to publish high quality research output in more established journals. The analyses of 187 publications in the proceedings of the WABER conference, 2009-11, revealed 18 research-active universities.

The interpretation of the results flowing from this work requires careful consideration of its limitations. First, the analysis of research papers in journals was limited to six leading international journals. Another point is that the six journals examined here may not cover all areas of the built environment. There are a plethora of other journals that also provide an outlet for the dissemination of built environment research findings. Second, the conference papers examined and analysed were based on only papers published in the proceedings of WABER conference (2009-11). There may be other conferences that West African academics attend and get their papers published in the proceedings. Third, apart from information that was obtained directly from built environment academics in the region, some of the information examined in this paper was taken from the official websites of universities where there is a risk that some of the information might not have been updated to cover current information on programmes. Regardless of the study limitations, the need to refresh and improve built environment academic programmes in tune with current and future national and international trends and standards is clear. Participation in forums like the WABER conference can help. The WABER conference provides an ideal opportunity for built environment researchers in West Africa to interact, develop their research profile and disseminate their research work. The conference also provides an opportunity for researchers to develop new knowledge and collaborations with colleagues based

elsewhere. Through these objectives, the WABER conference serves a major vehicle for developing built environment education and research in West Africa.

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