

Industry-University linkage to Impart Appropriate Skills on Learners in Ugandan Public Universities: Analysis of BIS and BIT Graduates of Muni University, Arua, Uganda

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Abstract: *There is need to enhance Industry-University link for appropriate skills on learners particularly in Ugandan Public Universities including Muni University. The main objective is to investigate the relevance of Bachelor of Information Systems and Information Technology Curricula of Muni University alumni in equipping graduates with skills that are required by the world of work. Specifically, the study addresses the relevance, challenges, and experience of BIS and BIT programmes of Muni University alumni students with the world of work using a mixed research design protocol. A sample of 36 alumni was selected using stratified, purposive, and simple random sampling from the three consecutive years of graduation from 2017 to 2019. Qualitative data was collected by Interview guide while quantitative data by questionnaires using both online and face to face method. Qualitative data was analyzed thematically while quantitative by descriptive statistics using SPSS version 23 tools. The results of the study indicated curriculum development and review should focus on: course applicability, training of lecturers, Industry-university link, introduction of new courses, and course priority. The results of the study will inform curricula developers and reviewers in Universities to link learning objectives with the industrial set up for appropriate skills on learners.*

Keywords: *Curriculum Development, Curriculum Review, Industry-University, Appropriate Skills, Muni University Alumni, Ugandan Public Universities*

1. Background

Education institutions have set up standards including curricula development and review to provide proper pedagogical quality control of academic programmes before commencement. Developed countries

including England and Australia have successfully embraced the industry-university link while developing countries are still crippling (Ssebuwufu, et al., 2012; Skilbec, 1996). The academic programmes developed in Ugandan Public Universities are managed by the government curriculum governing institutions including National Council for Higher Education. However, the intuitions may not adequately govern the developing and review of programmes a situation that can affect the quality of education and hence the outcome of graduates (Anastasiu, et al., 2017). Empirical literature asserts that there is need to introduce guidelines and procedures required for to fulfil the needs of the learners, Universities, the industry partners, and other stakeholders (Gulbrandsen, 2009). Gulbrandsen (2009) emphasizes that the academic institutions should create a link between learners and the industry to resolve the valley of death trap. According to Nita Temmerman (2016), the University-Industry linkage has loosened specifically when it comes to curricula design in comparison with time when industries used to fund learners. It is further asserted that students when allowed to network and associate with others in the industry, can resolve problems (Herle, 2020). It is further asserted that students when they are allowed to network and associate with others in the industry, they can resolve problems (Herle, 2020; Gulbrandsen, 2009).

Muni University, located in Arua is the sixth (6) Ugandan Public University out of nine (9) and was started in 2014 with two (2) programmes; Bachelor of Information Systems (BIS) and Bachelor of Information Technology (BIT) whose students graduated in the years 2017, 2018, and 2019. Muni University, like any Ugandan Public University has its programmes approved by National Council of

higher Education. The researchers conducted an investigation to find the Industry-University linkage of BIS and BIT Graduates of Muni University to the world of work. The Industry-University link in Ugandan Public Universities is loose (Glenda, et al., 2012) leading to learners obtaining insufficient skills leading to employment failure by the company or self. The researchers were motivated to get insight into developing and reviewing Muni University Programmes including BIS and BIT for both company and self-employability of graduates. Furthermore, the results can be used by other universities, government governance curricula institutions, and researchers among others. This paper presents an investigation of the Industry-University linkage of BIS and BIT Graduates of Muni University to the world of work. It specifically addresses, the experience, challenges, and relevance of BIS and BIT alumni of Muni University in the World of Work. The results of the study will be used by Universities to develop and review curricula to bridge the Industry-University gap. Researchers, curriculum developers and stakeholders might utilize the results while seeking employability by companies and self of graduates. The results will also act as a guide for Researchers, curriculum developers and stakeholders among others to know the employability of graduates.

2. Review of Related Literature

2.1. Industry-University Curriculum Development and Review

There is need to establish a collaboration between the industry and University during the curriculum development and review process in order for universities to produce graduates that have relevant skills to the industry. Addressing curriculum development and review processes requires capturing current issues related to the industry and professional bodies otherwise known as professional learning(PL). This requirement should be encouraged by universities and pedagogy governance institutions of any economy (Lawson, et al., 2011). It establishes deep learning among learners while promoting

quality in a pedagogical spectrum in addition to industrial inclusion.

On the other hand, industry may require to fund students on courses specified within the curriculum, a situation that might promote employability and productivity of learners. Temmerman (2016) states that the way the Industries and Universities think varies culturally. Industries think they can get University graduates who are already trained by the respective universities to be deployed for work. According to the Association of African Universities (AAU) project report (Ssebuwufu, et al., 2012), the responses from African Universities that participated in the study indicated that although the African Universities are taking their effort to strengthen the link with industry, many gaps still exist specifically in research infrastructure, necessary skills, and funding. The report further indicated that many African Universities who have undertaken initiatives to implement Industrial link have found various challenges including inadequate intellectual property right management, entrepreneurial experts, and marketing strategies with many lacking corresponding and helpful policies and mechanism that would actually regulate the interactions with the industry. Anastasiu, et al., (2017) highlighted a misalignment between the university and the employers' anticipations that might a cause of unemployment as well as an over qualification for jobs in the world of work regarding graduates. For proper management of curricula in universities, an interdisciplinary module system was emphasized for mentors to teach from industries involved teach courses and applications in areas where they have expertise (Anastasiu, et al., 2017). Empirical literature indicates the need for defining graduates' capability in specific work setting by establishing a competency model for each occupation or job by the Industry-University (Tessema. 2017). The following subsection speculates the advantages of Industry-University curriculum review link.

2.2. Advantages of Industry-University Curriculum Development and Review Process

The Industry-University curriculum development and review link offers several benefits if properly managed including: employability, economic growth, increased productivity in terms of research and production, supports relevancy both curriculum and courses (Ishengoma & Vaaland ,2016; Muriisa, 2014).

3. Methods and Data

The literature review was undertaken to establish the relevance of ISM and ITM programmes together with the challenges, and experiences of BIS and BIT alumni of Muni University in the world of work. In the initial literature review, various websites, search engines, and libraries were visited. The researchers also used the leading English papers including the University World News that have open access to allow readers get information from their databases. The search strategy included documents that had

information on curriculum development and review, Industry-University link and challenges, and Professional Learning. The sources used all were useful. The researchers obtained, the relevance, challenges and experiences from respondents using interview and questionnaire instruments defined under quantitative and qualitative research protocol via online and face to face methods. Stratified, purposive, and convenient sampling techniques were applied as respondents' selection created. Thematic analysis until saturation was used to analyze qualitative while descriptive statistics with SPSS version 23 was used for quantitative. Ethical consideration, data coding, and data cleaning was correctly followed while tables were used to present the results.

4. Results

Out of thirty-six (36) respondents contacted, twenty-seven (27) responded giving a rate of 75 percent with one female (4%) and male respondents were the majority (96%). Tables 1 to Table 6 under indicate quantities and qualitative results of the study.

4.1 Quantitative Results of Muni University Graduates: 2017,2018, and 2019

Table 1: Employment Status of BIS and BIT Graduates of Muni University

Respondents Employment Category	Year in which Responding Student Completed Programme of Study			Percentage (%) of Respondents
	2017	2018	2019	
Employed by Company	2	6	8	59
Self Employed	0	2	4	22
Not Employed	0	0	4	15
Left the Job	1	0	0	4

The results in Table 1 above indicate the employment of BIS and BIT graduates of Muni University, 2017, 2018, and 2019, with the status of Employed by Company (59%), self Employed (22%), Not Employed (15%), and Left the Job (4%).

Table 2: Relevance of BIS and BIT Curriculum of Muni University to the World of Work

Relevance	Year in which Responding Student Completed Programme of Study			Percentage (%) of Respondents
	2017	2018	2019	
Irrelevant	0	0	1	4
Some What Relevant	1	1	1	13
Relevant	0	4	5	39
Very Relevant	2	3	5	44

In Table 2 above, the findings show the relevance of BIS and BIT curriculum of Muni University, 2017, 2018, and 2019 graduates to the field of world as Very Relevant (44%), Relevant (39), Some What Relevant (13), and Irrelevant (4%).

Table 3: BIS and BIT Course Applicability to the World of Work

Academic Year	Academic Semester Courses															
	BIS								BIT							
	Semester I				Semester II				Semester I				Semester II			
	AP	%	NAP	%	AP	%	NAP	%	AP	%	NAP	%	AP	%	NAP	%
Year I	12	71	5	29	10	59	7	41	7	70	3	30	6	60	4	40
Year II	12	71	5	29	14	82	3	18	8	80	2	20	9	90	1	10
Year III	7	41	10	59	9	53	8	47	10	100	0	0	10	100	0	0

AP=Applicable, NAP=Not Applicable, %=Percentage

The results of Table 3 above indicate applicability of the courses under BIS and BIT curriculum of Muni University: 2017, 2018, and 2019 graduates with Year I, Semester I (71%, AP; 29%, NAP); Year I, Semester II (59%, AP; 41%). Year II, Semester I and Year II, Semester II has (71%, AP; 29%, NAP) and (82%, AP; 18%, NAP); Year III, Semester I and Year III, Semester II (41, AP; 59%, NAP) and (53%, AP; 47%, NAP) applicability status respectively for BIS curriculum. On the Other hand, BIT courses have an applicability status of Year I, Semester I (70%, AP; 30%, AP), Year I, Semester II (60%, AP; 40%, AP); Year II, Semester I (80%, AP; 20%, AP), Year II, Semester II (90%, AP; 10%, AP); Year III, Semester I (100%, AP; 0%, AP), Year III, Semester II (100%, AP; 0%, AP).

Table 4: Ease of Getting Jobs for BIS and BIT

Ease of getting a job	Year in which Responding Student Completed Programme of Study						Percentage (%) of respondents
	2017		2018		2019		
	BIS	BIT	BIS	BIT	BIS	BIT	
Not Easy	2		4	0	2	6	61
Easy	1		1	2	3	0	30
Very Easy	0		0	1	1	0	9

The results in Table 4 above further indicate the ease of getting a job by BIS and BIT, 2017, 2018, and 2019 graduates of Muni University indicated as Very Easy, (9%), Easy (30%), and Not Easy (61%).

Methods of Getting a Job	Year in which Responding Student Completed Programme of Study						Percentage (%) of Respondents
	2017		2018		2019		
	BIS	BIT	BIS	BIT	BIS	BIT	
Advert: News Paper	1	0	1	3	1	3	39
Friend	0	0	2	0	2	2	26
University	0	0	0	0	1	0	4
Self	0	0	0	0	0	1	4
Not Indicated	2	0	2	0	2	0	26

Table 5: Methods of Getting Job

Additionally, Table 5 shows the results of BIS and BIT Muni University graduates methods of getting jobs with Advert: News Paper (39%), Friend (26%), University (4%), Self (4%), and Not Indicated (26%).

4.2 Qualitative Results of Muni University BIS and Graduates: 2017,2018, and 2019

Table 6: Major Themes and Respondents of the Qualitative of the Qualitative Inquiry

Question	Major Themes	Respondents	Conclusion
Using your Experience at the world of work, advise on BIS and BIT Curriculum of Muni University	1. Applicability of Courses to the field	5	Curriculum development and review for promoting organizational and self-employment of graduates
	2. Experience of Lecturers	9	
	3. Industrial-University link	10	
	4. Need for Hands on Practice	15	
	5. Introduction of New Courses	5	
	6. Remove/Make core/Merge courses	11	

The findings of Table 6 above indicate the qualitative inquiry results showing the recommendations from experience of graduates of BIS and BIT graduates of Muni University, 2017, 2018, and 2019 regarding the respective curriculum. The results indicate the need for: hands on practice (15); removal of courses, make core, and merger courses (11); Industry-University (10); experience and Experts were the leading concerns followed by introduction of new courses (5) and application of courses (5) to the world of work.

5. Discussion

The qualitative inquiry results were used to supplement the quantitative findings for high breed results (Creswell, 2012). Majority of the BIS and BIT graduates of Muni University: 2017, 2018, and 2019 are employed by companies while others are self-employed as stipulated by the results. The employability concurs with good results of students with hands on practice to suit the world of work (Anastasiu, et al., 2017; Lawson, et al.,2011). Employability is exemplified by Muni University BIS and BIT curriculum being relevant to the world of work as revealed in the results. ManpowerGroup (2018) asserts that the main cause of unemployment is lack of relevant skills to the world of work. The results further reveal that while the courses for BIS programme in Year I, Semester I&II; Year II, Semester I&II; and Year III, Semester II are relatively applicable, Year III, Semester I courses are not. All BIT programme courses for Year I, Semester I&II; Year II, Semester I&II; and Year III, Semester I&II are relatively applicable.

Furthermore, getting a job is not easy although majority of the graduates get the advertised jobs through the News Papers as indicated by the results. On the other hand, the qualitative inquire results stipulate that Curriculum development and review for promoting organizational and self-employment of graduates should focus on: Applicability of Courses to the field; Experience of Lecturers; Industrial-University link; Need for Hands on Practice; Introduction of New Courses; and removal, prioritization, & merging of courses. From the results, Hands on practice, application of courses, experience of lecturers, and merge course all are related to and defined under industry Industry-University link. This concurs with empirical literature that curricula in universities should include mentors from Industries to provide expatriate to both lectures and students (Anastasiu, et al., 2017).

Furthermore, introduction, removal, and merger of courses may strengthen industrial link as a concern raised in the results. Some working respondents answered, "Scrap off the course" to indicate that courses need to be removed as they are not well related to the world of work. A situation which indicates from the results that learners are also important during curriculum development and review as they are the ones that provide the skills to the industry. The results also indicate the need for review of BIS and BIT programmes of Muni University. The present research encourages curriculum review and development includes basically five (5) factors: Industry, Implementers, Courses, Learners,

and stakeholders. The three (3) objectives to: Analyze the relevance, Assess the challenges, and Analyze the experience of BIS and BIT alumni of Muni University in the World of Work were achieved. The BIS and BIT programmes of Muni University: 2018, 2018, and 2019 alumni are relevant although review is necessary. Majority of the graduates are employed in companies while others are self-employed with a few unemployed as revealed by the research. However, the results indicated hands on practice, curriculum review, and Industry-University link as essential for promotion of organizational and self-employment. Curriculum management institutions in Ugandan including National Council for Higher Education should ensure that the process of curriculum development and review is simplified, followed, and involves industry link. Stakeholders including Universities, government, curriculum development institutions should put emphasis on the Industry link. On job training of curriculum implementers in Universities including lectures, as raised by the alumni, is significant specifically in the field of technology for update purposes in the industry. Finally, the results indicate a need for curriculum review of BIS and BIT programmes of Muni Muni University basing on: Course applicability; experience and expertise of lecturers; by inclusion of Industry-University mentor experts; emphasizing hands practice, inclusion of new courses; removing, and making major courses core.

6. Limitations

The study was limited by a few number of respondents of which there was only on one female respondent. Inclusion of more female alumni of BIS and BIT would balance the respondents' responses. Additionally, collecting the data was not easy because of COVID 19 pandemic. Accessing respondents took long because of the standard operating procedures(SOPs) imposed to protect the people. Furthermore, the number of BIS alumni was more than BIT. It would improve on the responses and thus data collected if the numbers were equal.

7. Conclusion

The present research encourages curriculum review and development includes basically five (5) factors: Industry, Implementers, Courses, Learners, and stakeholders. The three (3) objectives to: Analyze the relevance, Assess the challenges, and Analyze the experience of BIS and BIT alumni of Muni University in the World of Work were achieved. The BIS and BIT programmes of Muni University: 2018, 2018, and 2019 alumni are relevant although review is necessary. Majority of the graduates are employed in companies while others are self-employed with a few unemployed as revealed by the research. However, the results indicated hands on practice, curriculum review, and Industry-University link as essential for promotion of organizational and self-employment. Curriculum management institutions in Ugandan including National Council for Higher Education should ensure that the process of curriculum development and review is simplified, followed, and involves industry link. Stakeholders including Universities, government, curriculum development institutions should put emphasis on the Industry link. On job training of curriculum implementers in Universities including lecturers, as raised by the alumni, is significant specifically in the field of technology for update purposes in the industry. Finally, the results indicate a need for curriculum review of BIS and BIT programmes.

8. Recommendations

The curriculum implementers of BIS and BIT programmes need to consider hands on practice, industrial link, and course priority in the field of work as revealed by the study among others. Researchers used a small number of respondents for the study, a larger number can be used for subsequent studies. It is further recommended that an equal number of respondents be used for all the respondents of BIS and BIT programmes. Furthermore, it is recommended that Muni University uses the results of this study to review the BIS and BIT curriculum for students to compete favorably in the in the world of Work.

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