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DEVELOPING THE HUMAN RESOURCE: THE MEDIATING ROLE OF STUDENTS INDUSTRIAL ATTACHMENT PROGRAMME AT CAPE COAST TECHNICAL UNIVERSITY

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ABSTRACT: *The general objective of the study was to examine the effect of the student's industrial attachment programme on Human Resource Development. The specific objectives were to: identify the factors that influence student's to select an industry for attachment, determine the challenges students encounter while on industrial attachment and assess the effects of industrial attachment on students' learning outcomes. The design was descriptive survey. A total of one hundred and eighty-eight (188) students and two (2) officials from the Industrial Liaison Unit participated in the study. Structured questionnaire and semi-structured interviews were used to obtain the responses from participants for analysis. Data was analysed using IBMSPSS version 22 for descriptive and inferential statistics and Braun and Clarke (2006) steps for thematic analysis respectively.The study revealed that factors that students consider when selecting an industry for attachment are; nearness of the organisation to place of residence, availability of accommodation in industry, industry with adequate machines and equipment for practice and the presence of industry-based supervisor. The study also revealed that the underlying reasons why students embark on attachment include; the need to gain experience on the job, the motivation to relate and understand concepts and theories learnt in the instruction process, the need to learn on the job, the desire to familiarise oneself with modern technology in industry and the chance to secure a job after graduation. Nonetheless, the study also revealed that factors which inhibit student's ability to choose an industry for attachment include: inadequate finances, lack of accommodation, long distance from home to industry, and the difficulty of getting access to transport to industry. It is recommended that the Industrial Liaison Unit, lecturers, heads of academic departments and management of the institution must liaise with industry and corporate bodies to secure placement for students. It is also recommended that a policy framework be developed to guide industrial attachment activities in the institution.*

KEYWORDS: human resource development; competencies; industry; attachment; pull factors; push factors.

INTRODUCTION

Student's industrial attachment programme is a key Human Resource Development programme that aims to equip and prepare students with practical on-the-job competencies for employment in industry. Several researchers have partly attributed the widening skill-gap between industry and

products from institutions of higher learning to lack of opportunities provided for students to practically learn on the job (Boden & Nedeva, 2010; Jackson & Chapman (2012). According to Collet, Hine & du Plessis (2015), Raza & Naqvi (2011) and Boden & Nedeva (2010), the existing skill gap between universities and industry is not a mere acquisition of theoretical concepts but lack of technical skills in manipulating and working with new technologies in the industry. To reverse the trend and bridge the shortfall in skills between industry and products from universities, embarking on industrial attachment becomes a critical factor to bridge the knowledge and skill gap. Many employers have advocated for the integration between theory and practice as the main way to bridge the shortfall in prospective employee's competencies (Collet, Hine & du Plessis, 2015).

Cape Coast Technical University has the mandate to equip and enhance the technical, managerial and personality's competencies of students for industry. To fulfil this mandate it has industrial attachment programme as an integral part in its learning programmes for the award of diplomas and degrees. Industrial attachment programme is a where students leave campus for a period not less than six weeks every academic year and are made to choose an industry of their choice to practice (Acheampong, Azu & Asamoah, 2014). The essence of the practice is to relate concepts and theories learnt in class to what transpires in the real world of work under the guidance of industry-based supervisors. The relevance of this activity is for the students to learn and gain the requisite job-related experiences for future job prospects and self-employment after graduation. This activity falls within the demand of the nation to bridge the skill gap differences between the products from higher institutions and industry.

Cape Coast Technical University is noted for its industrial attachment programme, however, the needed expected outcomes anticipated from the activity have not been fully realized in terms of students gaining the necessary experiences for future job prospects and for self-employment (Acheampong, Azu & Asamoah, 2014). Many investigators (e.g. Kiplagat, Khamasi & Karei, 2016; Collet, Hine and du Plessis, 2015; Renganathan, Ambri Bin Abdul Karim & Su Li, 2012; Boden and Nedeva, 2010; Donkor, Francis, Nsoh & Mitchual, 2009) have attributed the reasons to be multifactorial. This situation possesses a serious problem in trying to develop human resource for future job roles in the industry. Several studies (e.g. Rahman et al, 2009; Pillai and Yusoff, 2007; Donkor, Nsoh & Mitchual, 2009; Matamande et al, 2013, Acheampong, Azu and Asamoah, 2014) have focused on the perceptions of industrial attachment but none have investigated the effects of the industrial attachment programme on students learning outcomes at Cape Coast Technical University. It is against this background that this study is needful as it seeks to assess the effects of industrial attachment programme on students learning outcomes.

The scope of the study is on examining the merits associated with industrial attachment to students, industry and the university, examine factors associated with students' choice of industry for attachment and the effects of industrial attachment on students. This study aims to contribute to the existing body of knowledge on the strategies for developing human resources for industry.

REVIEW OF RELATED LITERATURE

Matamande, Nyikahadzoi, Taderera (2013) assert that the industrial attachment activity is geared towards providing opportunities for learners to familiarize themselves with the practices in the real world of work. Renganathan, Bin, Karim & Su (2012) reiterate that industrial attachment is a requirement that cannot be ignored if the gap between industry and institutions is to be reversed. Kiplagat, Khamasi & Karei (2016) posit that industrial attachment has become a fundamental ingredient for training new employees for industry. As managers and employers in industry demand for well-equipped and fully-trained learners, industrial attachment provides the platform to assimilate concepts, theories and practice (Matamande et al, 2013). To most students, the Industrial Attachment experience is unique in terms of exposure to unfamiliar technology, workplace expectations, work schedule, and the administrative/organizational structure.

Boden & Nedeva (2010), indicated that among the goals of industrial attachment are to expose learners to the manipulation of emerging technologies for production in industry and to reinforce learning by applying learning tools and equipment. Industrial attachment affords learners the opportunity to interact and establish professional relationship with expert from industry and to solicit for ideas and professional advice on matters such as career and professional development avenues, health and safety matters, labour and employment-related laws and to acquire new competencies and sharpen existing one by directly working and manipulating technologies related to their area of study (Jackson & Chapman, 2012)..

According to Renganathan, Bin, Karim & Su (2012); Pillai and Yusoff (2007), the attachment exercise enables learners to identify organizational related problems and appreciate the immense contributions of industry to the socio-economic development of nations. It also affords institutions of higher learning to recognize the shortfalls and deficiencies in existing curriculum and revise them to meet current and future job demands of industry (Donkor, Francis, Nsoh & Mitchual, 2009). Furthermore, the attachment activities offer opportunities to learners to apply theories studied during instructional periods and provides for learners on-the-job training as well as real-life job-related experiences, thereby making them more employment ready. The benefits of Industrial Attachment are further demonstrated by Matamande et al (2013) who established that industrial experience help students to have an appreciation of the real world, apply theory to practice, enhance communication skills and boost their confidence.

In spite of the numerous benefit associated with the conduct of industrial attachment for both the students, industry and the institution, there are several factors such as financial challenges, lack of accommodation in industry for students, long distance from place of residence to industry etc. have influenced a lot of students to choose certain industries for attachment that have no bearing on their field of study. According to Kiplagat, Khamasi & Karei (2016) the constraints are classified as pull factors that inhibit students from selecting the right industry for attachment. Some students have also ended up becoming errand staff without any opportunity to learn anything on the job. All these issues have contributed to making industrial attachment a non-beneficial activity for the

student and as a consequence make the industrial attachment programme difficult to realise its intended objectives (Pillai & Yusoff, 2007).

Kiplagat, Khamasi & Karei (2016) indicate several factors that influence students' selection of industry for attachment. Donkor et al (2009) identified students need and enthusiasm to learn, the prospects of future employment in the industry, the desire to familiarize oneself with modern technology in the industry, the need to relate theory learnt in school to practice and the possibility of establishing long-lasting links and networks with professionals as critical factors that will push students to locate specific industry for attachment.

According to Kiplagat, Khamasi & Karei (2016), though students may have the desire to attach themselves with the industry where they may learn on the job and take advantage of opportunities available to enhance skills acquired, and confidently prepare themselves for better job opportunities in the future..

METHODOLOGY

The research is located within the positivist philosophy. The study used the quantitative approach and the design was descriptive survey. The method of data collection was questionnaire administration and interviewing. The instrument was a structured questionnaire and semi-structured interview. The population of the study were all second and third-year students from the Secretaryship and Management Studies Department, Electrical and Purchasing and Supply Department and officials from the Industrial Liaison Unit. The first-year students were excluded because they had not had an opportunity at the time of the investigation to embark on industrial attachment and therefore, will not be able to contribute to the study. Stratified and simple random sampling techniques were used to select departments, year groups and participants to partake in the study. Purposive sampling was used to select key informants (2 officials). Yemane (1967) formula was used to calculate a sample size of 205 from a population of 422 for the study. In all 188 responses were retrieved representing 92 per cent. Two officials were selected for interviews from the Liaison Unit. Data obtained from the field was analysed using IBMSPSS version 21. Descriptive and inferential statistics were the basis for the analysis. Data generated was put in tables and interpreted accordingly. Beside, Braun and Clarke (2006) thematic analysis steps was used to analysed data from key informants.

RESULTS AND DISCUSSIONS

Table 1: Demographic Characteristics

Variable		Frequency	Percentage
Age	18 – 27	178	94.7
	28 – 37	8	4.3
	38 – 47	1	.5
	Above 47	1	.5
Gender	Male	58	30.9
	Female	130	69.1
Departments	Sec & Mgmt.	62	33.2
	Electrical	23	11.8
	Purchasing & supply	103	55.1

Source: field survey, 2019

Table 1 depicts the demographic characteristic of respondents for the study. The table indicates the age, gender and departments of respondents. From the data, 178 participants who represented 94.7 per cent fell within the ages of 18-27, 8 respondents were within 28-37 years and only one fell within 38-47 and one above 47 years. It can be said that the majority of the students were within the 18-27 years.

As regards gender, the data revealed that 58 participants representing 30.9 per cent were males while 130 which stood for 69.1 per cent were females. The data indicated that the majority of the participants for the study were females. In the study, 62 (33.2%) were from the Secretaryship and Management Studies Department, 22 (11.8%) were in the Electrical Department and 103 (55.1%) were from the Purchasing and Supply Department. The study found that the majority of the students who were selected for the study were from the Purchasing and Supply Department.

Factors that Influence Students Selection of Industry for Attachment

The study sought to investigate the factors that influence participants to choose an industry for attachment. The independent variables that were investigated included the need to practice what was learnt in the classroom, the chance of getting a job after graduation, the need to establish a link and build a relationship with professionals and the ability to familiarize oneself with modern technologies in the industry.

Table 2: Chance of Getting a Job

Responses	Frequency	Percentage
Strongly Disagree	20	10.6
Disagree	13	6.9
Uncertain	25	13.3
Agree	66	35.1
Strongly Agree	64	34.0
Total	**188**	**100**

Source: Field survey, 2019

The data generated shows the possibility of a student gaining a job from the industry after attachment as a key variable that would influence their decision to choose an industry for attachment. Students were requested to respond to question on Likert Scale whether they either strongly disagreed, disagreed, uncertain, agreed or strongly agreed on the variable. The data generated showed that 20 (10.6%) participants strongly disagreed that the chance of getting a job in the industry would not influence their decision to choose an industry for attachment, 13 (6.9%) disagreed, 25 (13.3%) uncertain, 66 (35.1%) agreed that the likelihood of getting a job after attachment would influence their decision to select a particular industry for attachment while 64 (34%) strongly agreed that their decision to select an industry for attachment would be influenced by the ability of the industry to employ them after the attachment. The data, therefore, suggests that greater proportion of the students (69%) were in agreement that they would be greatly influenced to choose an industry that is likely to employ them after graduation for industrial attachment.

Table 3: The Need to Relate Theory to Practice

Responses	Frequency	Percentage
Strongly Disagree	7	3.7
Disagree	10	5.3
Uncertain	12	6.4
Agree	73	38.8
Strongly Agree	86	45.7
Total	**188**	**100**

Source: Field survey, 2019

As regards the decision of students to choose an industry based on the need to practice what is learnt in school (relate theory to practice). Table 3, revealed that as much as 86 (45.7%) of the study participants strongly agreed and affirmed that they would prefer to select an industry that would offer them the opportunity to relate theory to practice. Also, 73 (38.8%) of the participants indicated their preparedness to select an industry that they would be able to practice what is learnt

in class. Also 12 (6.4%) showed they were unsure whether the industry to be selected would influence them to relate theory to practice. However, 10 (5.3%) and 7 (3.7%) respectively indicated disagreed and strongly disagreed which presupposes that they would never be influenced by an industry ability to help them relate theory to practice to choose that industry for attachment. The results, therefore, showed that most students would prefer to choose an industry that would offer them the opportunity to relate theory to practice.

On the issue as to whether students familiarising themselves with modern technologies in the industry would influence their decision to choose an industry for attachment, 44.68 per cent of the students strongly agreed, while 38.83 per cent agreed and 7.45 per cent were undecided. Notwithstanding, 5.9 and 3 per cent of the students did not agree that getting the ability to familiarize themselves with the modern technologies in industry will influence them to select an industry for an attachment. Regardless of the later revelations, most of the students agreed that getting the opportunity to familiarize themselves with modern technologies in industry will influence their decision to select that industry for an attachment.

Reasons Students Embark Industry for Attachment

Cronbach alpha on 6 items on reasons students embark on industrial attachment was .720. The figure obtained for the Cronbach alpha was high and it is an indication that the variables were reliable.

Table 4: Means of Reasons Students Embark on Industrial Attachment

Students Reasons for Embarking on Industrial Attachment	**Mean**	**Std. Deviation**
To Gain Experience	4.2713	1.07267
To Better Understand Things Learnt In Class	4.2394	.89630
To Practice What Is Learnt In Class	4.2447	.96668
The Need to Learn On the Job	4.2926	.89833
The Need to Familiarize Myself with Modern Technology	4.1596	1.01120
The Chance of Getting A Job	3.7500	1.28598

Scale: 1-strongly disagree, 2-disagree, 3-uncertain, 4-agree and 5 strongly agree
Source: Field Survey, 2019

The results from Table 4 shows the means and standard deviations of reasons why students embark on industrial attachment. From the table, all the responses obtained a very high score with almost all respondents agreeing to the responses. The results from descriptive statistics found the need to learn on the job with a mean of 4.2926 as the leading factor that will influence students to embark on industrial attachment, followed by the need to gain experience with a mean of 4.2713, then the need to practice what is learnt in course content 4.2447. This was followed by the need to better understand things learnt in class 4.2394, then the need to familiarize oneself with modern technology 4.1596. The findings indicate that the students desire to get a job was the least in the

mean score 3.7500. In conclusion, students desire to learn on the job was the key motivating factor that inspires most of them to embark on industrial attachment.

Challenges Students Encounter in Choosing an Industry for Attachment

Cronbach alpha on 4 items on challenges students face in choosing industry for attachment .841. The coefficient obtained for the Cronbach alpha was high therefore, the questions were reliable.

Table 5: Means of Difficulties Students Face on Industrial Attachment

Difficulties of Face on Industrial Attachment	**Mean**	**Std. Dev**
Lack of Money	3.6809	1.44202
Lack of Accommodation	3.1968	1.42873
Long Distance from House to Place of Attachment	3.9464	1.22249
Inability to Easily Get Transport to Place of Attachment	3.6333	1.35172

Scale: 1-strongly disagree, 2-disagree, 3-uncertain, 4-agree and 5 strongly agree
Source: Field Survey, 2019

As regards the means of the challenges that influence student's choice of industry for attachment, the result realized a mean of 3.9464 which correspond to long distance from place of resident to industry as the most challenging factor that influence their choice of industry. This was followed by lack of money with the mean of 3.6809, inability to get access to transport to industry 3.6333 and lastly lack of accommodation (3.19968) as the least factor that influence their choice for selecting an industry for attachment.

Table 6: Gender and Industrial Attachment Gives Experience and Exposure

		Gender					
		Male	**%**	**Female**	**%**	**Total**	**%**
Industrial attachment gives Experience and exposure	SD	3	5.2	7	5.4	10	5.3
	D	3	5.2	4	3.1	7	3.7
	U	5	8.6	3	2.3	8	4.3
	A	10	17.2	50	38.5	60	31.9
	SA	37	63.8	66	50.8	103	54.8
Total		**58**	**100**	**130**	**100**	**188**	**100**

Source: field survey, 2010 $X^2 = 11.133$, df = 4 and P-value .025

Table 5 presents cross-tabulation of responses obtained on gender and experience gained during industrial attachment. Using a scale of 1 strongly disagree (SD), 2 disagree (D), 3 uncertain (U), 4 agree (A) and 5 strongly agree (SA). The result indicates 7 females and 3 males strongly disagree, 3 males and 4 females disagree, 5 males and 3 females were uncertain, 10 males and 50 females agree and 37 males and 66 females strongly agreed that industrial attachment provides them with

experience. Test for association at 0.05 significance level showed an association between gender and experience gained on attachment. The result produced a chi-square (X^2) = 11.133, degree of freedom (df) = 4 and P-value .025. Since the p-value is less than alpha, the result is statistically significant. Therefore, it can be concluded that both males and females gain experience when they embark on industrial attachment.

Table 6: Department and Industrial Attachment Experience

		Departments							
		Sec & Mgmt.	**%**	**Electrical**	**%**	**Purchasing & Supply**	**%**	**Total**	**%**
Industrial attachment Experience	SD	1	1.6	0	0.0	9	8.7	10	5.3
	D	0	0.0	1	4.5	6	5.8	7	3.7
	U	0	0.0	3	13.6	5	4.9	8	4.3
	A	25	40.3	2	9.1	32	31.1	59	31.6
	SA	36	58.1	16	72.7	51	49.5	103	55.1
Total		**62**	**100**	**22**	**100**	**103**	**100**	**188**	**100**

Source: field survey, 2010 X^2 = 22.755, df = 8 and P-value .004

The study also sought to ascertain the association between departments and students experience during industrial attachment. From table 6, one and nine respondents respectively from Secretaryship and Management Department and Purchasing and Supply Department indicated they strongly disagreed that they gain experience during attachment, none from the Electrical Department strongly disagreed to the statement. On whether respondents disagreed to industrial attachment providing them with experiences, none from Secretaryship and and Management disagreed however, 1 and 6 respondents correspondingly from the Electrical and Purchasing and Supply Department disagreed that industrial attachment provides them with experience. No respondent from Secretaryship and Management disagreed with the statement. Also, while 5 and 3 study participants from Purchasing and Supply, and Electrical Departments were found to be uncertain about the experience industrial attachment provide for them, none of the participants from Secretaryship and Management was uncertain. Besides, 25, 2 and 59 respondents from Secretaryship and Management, Electrical and Purchasing and Supply department respectively, agreed that industrial attachment provides them with job-related experience. Lastly, 36, 16 and 103 from Secretaryship and Management Studies, Electrical and Purchasing and Supply departments strongly agreed to the statement that industrial attachment provides them with job-related experience.

A chi-square test conducted established an association between industrial attachment experience and departments with X^2 = 22.755, df = 8 and P-value .004. Since the p-value is less than alpha

0.05, it can be concluded that there is an association between industrial attachment and student's ability to gain job-related experience from the various departments.

Besides, interview responses from some study participants revealed the university get to appreciate employers demand and the quality of graduates needed for jobs in industry. It also provides opportunity for the university to access training equipment, machines and facilities and other resources from the industries.

Beyond the scope of this study, a probe in interaction through interviewing revealed there is no policy framework/guideline for industrial attachment programme in the institution.

Summary

The key findings obtained from the study showed that factors that influence students to embark on industrial attachment include: the need to gain experience on the job, the need to relate and understand concepts and theories learnt in instruction periods. Also, the need to learn on the job, and the desire to familiarise oneself with modern technology in industry and a chance to secure a job after graduation influence students decision to embark on industrial attachment.

Factors that inhibit student's ability to choose an industry for an attachment include inadequate finances, lack of accommodation, a long distance from home to industry, and the difficulty of getting access to means transport to industry.

The study also revealed there is a relationship between gender and experience students gain during industrial attachment. It also found an association between departments and industrial attachment experience among students.

There is also an absence of a policy framework or guideline for industrial attachment activities.

CONCLUSIONS

From the findings, it can be concluded that industrial attachment is critical to the development of the human resource (students) since it provides them with the needed job-related experience for the future employment. However, the success of this industrial experience is hindered by challenges such lack of accommodation, inadequate finances, lack of access to transportation from home to industry and long distances students have to travel before they get to industry. Besides, the industrial attachment activity has significant impact on students learning outcomes. Notwithstanding, there is an absence of a policy guideline on industrial attachment.

Recommendations

Based on the conclusions, it can be recommended that:

1. Since the study found that students have diverse challenges associated with locating an industry for industrial attachment, it is recommended that the Industrial Liaison Unit, heads

of academic department, lecturers and the management through collaboration with industry, support students to find places for attachment.

2. Since the study revealed industrial attachment provide students with job-related experiences, it is suggested that more opportunities must be provided for students to embark on industrial attachment since, this will enhance their skills, boost their confidence and provide them with the requisite competencies for job after graduation.

3. Since the industrial attachment programme is a learning activity that enables students to relate concepts and theories learnt to the real job situations, it is recommended the programme should continue and be intensified, and if possible the duration for industrial attachment be extended to eight weeks.

4. Though the industrial attachment programme is a regular activity at the university, other side findings showed an absence of industrial attachment policy guideline for industrial attachment activities. This study therefore, recommend a policy document to guide the activities of industrial attachment programme in the institution.

Suggestions for Further Studies

The scope of the study was on ascertaining the effects of industrial attachment on developing the competencies of students for future employability. Other investigations could be conducted to determine the effectiveness of supervision during industrial attachment.

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