ASSESSMENT OF SKILLS AND COMPETENCIES OFFERED BY BUILT ENVIRONMENT GRADUATES IN CONSTRUCTION FIRMS IN ABUJA

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JULY, 2023

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY (M.Tech) IN QUANTITY SURVEYING

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ABSTRACT

Literature on employability skills of built environment graduates shows that a gap exists between expected and possessed skills in graduates and employers have lost confidence in built environment graduates. This has resulted in high rate of unemployment amongst built environment graduates. In view of this, the study assessed the skills and competencies offered by built environment graduates in construction firms in Abuja, with a view to bridging the gap between academic knowledge and professional practice. Data were collected from 146 professionals in construction companies listed in the Abuja business directory using structured questionnaires with a response rate of 91.8%. Random sampling technique was adopted for the study. The analysis of data was carried out using descriptive statistics such as of percentage and Mean Item Score (MIS). The study identified 10 drivers of the development of skills and competencies for built environment graduates in construction firms in Abuja of which individual resources (MIS = 4.85) are the most significant. It was also revealed that financial difficulty (MIS = 4.85) and rapid technology advancement (MIS = 4.61) are the most significant barriers to the development of skills and competencies for built environment graduates, while verbal and written communication (basic skills) (MIS = 4.80) and entrepreneurship and managerial competencies (MIS = 4.71) are the most significant skills and competencies possessed by built environment graduates. The most important role of professional associations in the development of skills and competencies of built environment graduates is using course accreditation processes to ensure that University programme design focuses on the development of professionals (MIS = 4.76). The study also discovered that the most effective strategies for improving the skills and competencies of built environment graduates is that Curriculum must be relevant to the industrial needs (MIS = 4.90). It was however concluded that the skills and competencies of built environment graduates in construction firms in Abuja can significantly bridge the gap between academic knowledge and professional practice and enhance their level of employability provided certain strategies are effectively implemented. Major recommendation from the study was that academic institutions offering built environment courses should ensure that their curriculums are relevant with respect to industrial needs; graduates need to change their attitudes and personalities to be competitive; and government must be committed to assisting with employability skills training programs.

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CHAPTER ONE

1.0   **INTRODUCTION**

1.1   Background of the Study

The construction industry is widely regarded as a job creator on a global scale. The construction industry in Nigeria employs about 25% of the country's workforce along its value chain, making it the second-largest employer of labor after agriculture National Bureau of Statistics (NBS, 2015). In the first quarter of 2019, it also contributed 4.09% to real Gross Domestic Product (GDP) and about 70% of Fixed Capital Formation (Mailafia, 2020). Despite the potential and contribution of the construction industry to national growth, the built environment graduates are facing challenges in finding work (Bolaji, 2020). Recent official data on youth unemployment (age 15-35) in Nigeria shows that 29.7% of the youth are unemployed, and a further 25.7% underemployed, working below 40 hours a week (CNBC Africa, 2019)

The built environment refers to the man-made environment which includes the buildings in which people spend their time (such as home, school, workplace, factories, etc.) and their supporting infrastructure (Bolaji, 2020). The Built Environment Professions (BEPs) comprise several specialized disciplines in a bid to meet the changing needs of clients and cope with the complexities of modern construction (Bolaji, 2020). Professionals in the built environment include Estate Surveyors and Valuers, Land Surveyors, Civil/Structural Engineers, Builders, Mechanical and Electrical (M/E) Engineers, Town Planners, Architects, and Quantity Surveyors. Currently, there are 100 tertiary institutions producing thousands of built environment professionals annually for the nation's construction industry. This is made up of 47 Universities and 53 Polytechnics and a total of 502 approved academic programmes in built environment in Nigeria (Bolaji, 2020; Joint Admission and Matriculation Board, 2019).

In order to excel in today's diverse and competitive industry, Eldeen *et al.* (2018) established that employers in various countries including USA, Ireland, South Africa and Australia among others, expect graduates to possess skills other than mere subject knowledge skills. Saad and Majid (2014) blamed the educational system and practices in developing countries which focus on theoretical concepts rather than practical learning on the unemployment challenges, thereby reducing graduates' chances of meeting the demands of their employers. Also, Ahn *et al.* (2012) noted that in addition to a solid technological foundation in construction skills, graduates of built environment courses must also learn competencies such as teamwork, communication, innovation, and problem-solving skills. Employers demand a workforce with specific competences and personal talents in addition to strong academic credentials (Ogundele and Kayode, 2013). As a result, it is critical that graduates learn practical skills that will help them excel in the construction industry. Various studies have determined the relevant skills and competencies required of graduates in various built environment disciplines across the globe from the perspectives of both graduates and professionals, with the goal of transforming graduates into confident, aggressive, and purposeful individuals to bridge the gap between unemployment and job creation (Ahn *et al.,* 2012; Moreno *et al*., 2012).

Majority of current studies in Nigeria and elsewhere looked at competencies from the viewpoint of employers, and some of them reported similar skills emphasized by employers and experienced professionals in the built environment, with a few of them reporting some discrepancies that could be explained by environmental factors (Acheampong, 2013; Aliu and Aigbavboa, 2018; Maina, 2018; Maina and Daful, 2017). In the current literature, the perspectives of students and graduates, which can improve the consistency and balance of approaches to improving the situation, have been largely

ignored. It is within this perspective that this research assessed the skills and competencies offered by built environment graduates in construction firms in Abuja.

1.2 Statement of the Research Problem

Employability is matter of concern for students, universities, government and economy at large (Poon, 2014; Agnihotri *et al.,* 2021). This is due to employer's expectation of graduates to be equipped with necessary skills to perform a job with minimum supervision (Agnihotri *et al.,* 2021). Employers emphasize more on an individual's personal attribute and soft skills in comparison to his/her degree (McMurray *et al*., 2016) and technical/subject knowledge (Finch *et al*., 2013; Saeed, 2015; Agnihotri *et al.,* 2021), because they are concerned about what an individual can do rather then what he/she knows.

Employers want workers with many skills who can handle a wide range of responsibilities, but to thrive in such a dynamic and constantly changing technological world demands radical restructuring with the responsibility of impacting skills and knowledge on trainees (Mailafia, 2020). Laboissiere and Mourshed (2017) stated that industries cannot find graduates with the skills they want for entry-level work, and the industries complain about a lack of graduate preparation for entry-level employment. Undoubtedly, many industries have argued that graduates are not well trained to the benefit of national development and are inadequately trained, ill-equipped, or not properly prepared and trained for industrial jobs (Adebakin *et al.,* 2015). Unfortunately, employability skills have become an emerging issue for graduates from universities and industries. Adebakin *et al.* (2015), argued that graduates were poorly equipped and unprepared for a job due to the fact that the theoretical gap between education training in universities and the industrial match of jobs in the labour market was not collaborated. According to Adebakin *et al.* (2015), Pitan and Adedeji (2012), and Aloysius *et al.* (2018),

there are discrepancies between the skills requirements of industries and the acquired skills of university graduates in the labour market from the employers of labour. Development model was tendered to enhance the good representation roles of university graduates, educational institutions, and industries in enhancing employment provision and listing the employability skills graduates should possess. Educational adaptability and enhancement were not well explained and strategized to collaborate with other component theories (Aloysius *et al.,* 2018).

According to Ayoubi *et al.* (2017), the responsibility of developing and enhancing employability in graduates lies with higher educational institutes. But mostly higher education institutes are unaware of the employer's demand (Agnihotri *et al.,* 2021), and consequentially graduates are forced to accept inferior jobs so as to enter the job market. Agnihotri *et al.* (2021), attributed the high rate of unemployment among graduates to lack of requisite employability skills and competences. McMurray *et al.* (2016) opined that outdated school curricula and a lack of employability skills are the root causes of unemployment among graduates. This assertion was corroborated in a study of employers' expectation of employability skills of Estate Management graduates in Nigeria (Ayedun *et al.,* 2013) which revealed that employers expect certain basic skills from job seekers. Eldeen *et al.* (2018) established that employers in various countries, including the USA, Ireland, South Africa, and Australia, among others, expect graduates to possess skills other than mere subject knowledge skills.

Previously, competencies and professional skills were considered as a by-product of education process but now they are considered as an important part of a degree (Agnihotri *et al.,* 2021). The responsibility of developing employability skills in students lies with students, faculties, placement officers, industry professionals and higher educationalists. However, those skills and competencies are mostly required in practice and therefore, the

need to engage employers on their expectations. Existing literature pertaining to employability skills shows a gap between expected and possessed skills in students. This study filled an existing gap in previous studies by assessing the skills and competencies offered by graduates in the built environment profession with the goal of enhancing the quality of graduates and finding a balanced approach to improve the situation that has been majorly overlooked in the existing literature.

1.3 Research Questions

In order to address the research problem identified, this study provided answers to the following questions:

i. What is the current level of skills and competencies for built environment graduates in construction firms?

ii. What are the barriers to the development of skills and competencies for built environment graduates in construction firms?

iii. What are the drivers of the development of skills and competencies offered by the graduates of built environment professions in construction firms?

iv. What are the most important roles of professional association in the development of skills and competencies for built environment graduates in construction firms?

v. What are the strategies for improving the skills and competencies of built environment graduates in construction firms?

1.4   Aim and Objective of the Study

1.4.1 Aim

The aim of the study is to assess the skills and competencies offered by built environment graduates in construction firms, with a view to bridging the gap between academic knowledge and professional practice among built environment graduates.

1.4.2 Objectives

In order to achieve the aim of the study, the following objectives were pursued:

  i.   To examine the current level of skills and competencies offered by the graduates of built environment profession in construction firms.

  ii.   To identify the barriers to the development of skills and competencies for built environment graduates in construction firms.

  iii. To determine the drivers of development of skills and competencies for built environment graduates in construction firms.

  iv.   To assess the most important roles of professional association in the development of skills and competencies for built environment graduates in construction firms.

  v.   To propose strategies for improving the skills and competencies for built environment graduates in construction firms.

1.5   Justification for the Study

Previous studies have highlighted the significance of skills and competency development in various industries and the business world (Ahn *et al.*, 2012; Dalibi, 2017; Oladokun and Gbadegesin, 2017; Ruge and McCormack, 2017). Ahn *et al.* (2012) classified the skills and competences needed for USA construction graduates into four major clusters.

The study noted that graduates are required to be responsible and creative in leadership coupled with good collaboration and interpersonal skills.

In a study to assess the factors that affect employability of built environment graduates in Nigeria, Dalibi (2017) noted that skills such as communication, analytical and teamwork were ranked the most required from the employers' perspective. These skills have been found to be the most requisite skills in quite a number more studies in various industries (Ahmed, 2014; Adebakin *et al*., 2015; Oladokun and Gbadegesin, 2017). From the professional's perspective, the ability to handle uncertainty amongst other competencies are critical to graduates of the built environment due to the dynamic nature of work they are often involved in.

Graduates of the built environment should have a balanced and wide skill sets which as noted by Lazear (2004) develops their competency. In Nigeria, indications from past studies show that the high rate of unemployment experienced by university graduates is not only because of the unavailability of jobs, but also because of a dearth of candidates with employable skills that employers are looking for (Emeh *et al.,* 2014; Pitan, 2010; Pitan, 2015).

Taking the viewpoints of some employers of labour and Human Resources Managers, this study will provide an insight into the needs of the employers, that is, what they want from their employees, identify and discuss the gaps in their knowledge with a view to recommending possible solutions to this problem. This study will also give some insights on how graduates experience impact in education, training support needed and employability skills in the labour market. The perspective gives an insight into the role of the industry on how graduates' employability should be enhanced and support for career

development in the employability paradigm. Also, the study will contribute to existing empirical knowledge.

1.6   Scope of the Study

This study covered the employers of labour in medium and large construction firms that engage in building and civil engineering works in Abuja registered with the Abuja Business Directory and registered professionals from the identified firms in the built environment (Architect, Engineers, Quantity Surveyors, Builders, Estate surveyors). The choice of the study area is because of the huge number of Construction firms domicile in Abuja, and the influx of graduate to the city in search of employment.

<div align="center">**CHAPTER TWO**</div>

2.0 **LITERATURE REVIEW**

2.1 **The Concept of Employability**

The concept of employability is very wide in scope and encompasses all aspects of employment criteria which affects both society and individual. Employability has been researched and explained by many researchers such as Wickramasinghe and Perera (2010); Finch *et al.* (2013); Smith *et al.* (2015), Aloysius *et al.* (2018). These have been seen as the major criterion for skills acquisition and securing of different type of job or work. Saad *et al*. (2013) stated that how does an employer's opinion of specific skills as a major indicator of graduate's capacity to learn in a different area of work and study. Therefore, it is very essential to outline employability skills that effect of job security and its quality of knowledge, experience, skill, behaviour, characteristics, and attributes that would enhance graduates to be gainful employment and also fostered lifelong career objectives. Every university, industry, private, government and other stakeholders should have given various suggestions on how to increase and enhanced graduates' employability.

There is an assertion of development and prove of innovative processes to enhance graduate employability within the university training processes which collaborates with employability skill to maintain graduate skills assessment. There is clear evidence from previous studies that there is link exist among employability of university graduates and that of training, learning through different extra curricula activities graduates ought to acquire in the university programs (Sumanasiri *et al.*, 2015).

The aim and objective of universities, education and employability-skills have been criticized for many years and argued as lacking infrastructural facilities and social amenities required to advance and upgrade our university education system. Graduate

employability is seen as ability, self-confidence, competence and work performance to adapt into a new work environment challenge in career development, and adaptability has been recognized as essential ability or capacity in enhancing proactive, competence, employable graduates and sustainable comparative competitive of labour market merit (Chetty, 2012; Coetzee *et al.,* 2015; Ismail and Mohammed, 2015; Aloysius *et al.*, 2018). The role of university education is to train a graduate for specialized skills requirement meant for the general workforce. It means that there should be a career development and training opportunities among graduates to enable skill acquisition and prepared graduates for general work force.

2.2   Definition of Skill

Skill is defined as the ability to competently perform a particular task assigned or to perform a specified task at a certain level of expertise (UKCES, 2010; Shah and Burke, 2003; Trendle, 2008). Similarly, a skill can be described as the capability to carry out job assigned to a level of competence and this can be built upon through learning (OECD, 2011). Within the construction industry, skill therefore is an activity involving knowledge, judgement, accuracy and mastery, all of which are acquire as a result of long training and practice in a workplace (Odusami, 2002; Awe *et al.,* 2010). The concept of skill has been defined differently by writers in different forms. Skills could also be looked into from another perspective as being expert in area of specialization (Wood, 1989), having competence (Boyatzis *et al.,* 2002; Olaitan *et al.,* 2000) dexterity and knowledge of the workforce (Awe *et al.,* 2010; Mangham and Silver, 1986). In the same vein, due to some school of knowledge skill, is a special ability to perform duties, majorly acquired through formal or informal training (Tether *et al.*, 2005). Definition of skill according to some school of thought should entail the ability of the skilled artisan to work in various section of the industry or the workplace independently (Spenner, 1983; Olaitan *et al.,*

2000). It could be termed as capability to carry out jobs perfectly without supervision. Overwhelmingly, a skill, and various types of skills within the literature are linked to an activity or a job (Clarke and Winch, 2006).

As skill is linked with a particular task, a person who does not have skill is unlikely to be able to carry out a given job or will be less productive than somebody who possesses the skill. Skills are often linked and have some alliance with qualifications (Mawer and Jackson, 2005; Sattinger, 2012; Cappelli, 2014) and acquisition through formal education and training which is adequate in quality and quantity. Construction skills and training needs are continually changing. These alongside with the introduction of new business processes, organizing production and technical and vocational innovation which require the construction workforce to be more highly skilled in their various areas of expertise (Spenner, 1983; Mackenzie *et al*., 2000; Forde and MacKenzie, 2004).

2.3   Classification of a Skill

Skills could be classified into few different ways, though skill have many characteristics. In this study skills could be classified as been generic, technical skill or non-technical skill and hard skill (Ofori, 2004). Other skill categories include academic and cognitive and employability. Skills can be classified under a number of different skill types since these are overlapping categorization with varying relevance for specific job sector or roles. The classification will be discussed in this section with a view to creating a categorization relevant for measuring skills in the construction industry.

2.3.1   Academic or cognitive skills

These are basic academic skills needed to support learning in different subjects such as physics, English, mathematics, and biology among other subjects. Most importantly, it is mandatory for all secondary school students to have academic skills in other to further

their education in higher institutions of learning. These subjects are learned in school and it should be transferable to applications where needed. They are assessed using standardized test (Jayaram and Musau, 2017). Be that as it may, for graduates of technical training institutions to gain employment into the world of work or the construction industry, courses offered including the construction skills should be reviewed and updated. Employers in construction industry referred to some courses in which students are deficient to include communication skill, English, physics and host of other subjects which needed to be transferred for use in the real context, in writing letters and memos and other areas that needs calculation while on the field. Students should be well equipped in academics, in other to be able to interpret and use what they have learnt in the real context. It is well noted that deficiencies in mathematics and English affects graduates in solving statistical and mathematical problems where needed in construction works (Kearns, 2001; Jayaram and Musau, 2017).

2.3.2 Generic or specific skills

This is a combination of skills that deal with problem solving, communications, or teamwork. The combination of these skills are applicable for use across all jobs and are meant for use in all situations and across disciplines (Kearns, 2001; Pumphery, 2001). Other names for generic skills include general skills, key skills, employability skills, key competencies, core skills, necessary skills, transferable skills and essential skills. They are equally transferable across work settings. Generic skills have meaning in different work context.

Generic skills are multifarious in nature. They consist of analytical skills which is problem solving (the ability to both formulate a problem and execute what is required to solve the problem), communication skills (the written presentation that require ability to communicate in writing in an effective manner and in different formats and for various

types of recipients as well as, the oral presentation, which is to communicate, verbally in an effective manner for presentation for and at different groups and audience), and information skills (having the ability to know that there is a need for a certain type of information to complete a task, like information retrieval and information evaluation).

The social and ethical skills entail the ability to carry out the duties alone without supervision autonomously, and the ability to work with others in a group or in a teamwork, and finally having the ability to apply ethical judgement in various societal issues arisen from your workplace (Sorrell, 2017). The importance of generic skills is known all over the globe, it is well noted for use across disciplines and workplaces. Majorly technical and vocational education imbibe the use of generic skills in disseminating instructions to students, moreover all educational training institutions and workplaces passes instruction and use generic skills in daily routine of work-done and in real life situations. (Singh, 2015).

2.3.3 Technical skills

These are specific skills for use across professions which are technical in nature, to include academic subjects like mathematics, physics, chemistry, biology and other subjects applied in different programmes like, mathematics applied in plumbing works, physics applied in electrical installation with respect to equipment's and facilities (e.g. operation of a switch gear). Technical skills are defined as those skills acquired both at formal and non-formal institution of learning relating to the profession of one's choice as an apprentice, in the replica of the workplace for employment (Litecky *et al.,* 2004). They are always coded in job description and they are measured using standardized assessment (Sorrell, 2017). Technical skills are skills meant for an occupation in which the skilled worker has competency in his area of discipline or related profession which require the use of tools, in technical or engineering field (Medina, 2010). Technical skills issues

relating to the use of equipment's and tools meant for work and related issues are linked with technical skills. This could be learnt in educational training institutions and non-formal settings (Handler and Healy, 2009).

2.3.4 Soft-skills

Having possess soft skills are part of requirement that makes you qualified to successfully work as part of a growing industry. Soft skills are defined as an array of person's attributes and way of life to include goals, skills possessed, friendliness, reasoning, and motivation that makes an individual in life (Sorrell, 2017; Litecky *et al.,* 2004). Soft skills entail work ethics, attitude, and communication. It could be referred to such construct as motivation and dispositions (Jayaram and Musau, 2017). Soft skills could be evaluated using questionnaires and through individual impression.

2.3.5 Employability skills

These are set of skills acquired by individual in order to gain employment into a workplace. These skills are used for the development of oneself and for gaining employment into the world of work, these set of skills makes you to be successful and becomes competent in your field of discipline (Robinson, 2000). These skills could be acquired through formal and non-formal training institutions, the purpose of employability skills is numerous, part of which are to gain employment and also to make contribution to the development of the workplace, possessing employability skills is an advantage, it gives edge to who possess it during promotion exercise than other counterparts who does not have it (Curtis and McKenzie, 2001; Bridgstock, 2009). These skills comprise of some attributes employers are looking for in graduates seeking employment, they include; communication and interpersonal skills, working under pressure and to deadlines, problem solving skills, initiative and self-motivation, numeracy, team working, negotiation, ability to learn and adapt and valuing diversity and

difference, though these attributes differ from one workplace to another. These attributes if possessed by an employee is useful for all and sundry, even though these skills are found lacking in most graduates looking for employment and those already engaged in employment (Dacre and Sewell, 2007). Employability skills are divided under two, headings namely: interpersonal skills and generic employment skills. The aforementioned skills fall under these two categories and they are meant for use both in industry and in the newly recruited graduates. Newly recruited graduates are found to be deficient in employability skills, it is therefore, imperative to include these skills into the school curriculum (Yorke and Knight, 2006; Cranmer, 2006). Generally, most employers and organizations are looking for employees who possess the attributes of employability skills (Bagshaw, 1996; Sorrell, 2017; Jayaram and Musau, 2017; Jayaram and Engmann, 2017). It was observed that the requirements of the industry in terms of skill requirements kept on changing due to technology development, this suggest that education and training should look into the curriculum and review or make changes so as to include employability skill into the new curriculum (Yorke and Knight, 2006; Cranmer, 2006).

2.4 Drivers of the Development of Skills and Competencies for Built Environment Graduates in Construction Firms in Abuja

In order to better understand the questions surrounding employability, it is essential to examine its drivers.

2.4.1 Situational factors

The first important group of antecedents contains the situational factors. In a general way, situational factors constitute one part in the formation of the perception of a situation. The employability literature identifies three major categories of such situational factors: labour market structure, labour market opportunities, and organisational factors.

2.4.2   Labour market structure

In terms of situational factors, it could be argued that the structure of the labour market is one of the most fundamental determinants of employability. If there were no jobs, it would be difficult for people to assess themselves as employable. Indeed, the total number of available jobs, as well as the percentages of part-time and full-time jobs and the percentages of temporary and permanent jobs available are examples of the structure-related factors within local and global labour markets that can affect individual's employability.

2.4.3   Labour market opportunities

However, it is not only the general supply of jobs that is of interest when discussing the situational factors that may affect employability. Several authors talk about a segmented labour market, where people in different segments have different opportunities. One such view concerns the dual labour market, where the labour market is seen as being divided into two segments, a primary and a secondary (von Hauffe *et al.,* 2015). Employees in the primary segment are characterised as having "high wages, good working conditions, employment stability, chances of advancement and equity" (von Hauffe *et al.,* 2015) whereas those individuals in the secondary segment could be described as having "low wages and fringe benefits, poor working conditions, high labour turnover, and little chance of advancement" (von Hauffe *et al.,* 2015). It is suggested that the secondary segment employees may be stigmatised, since it is difficult to advance from the secondary to the primary segment (von Hauffe *et al.,* 2015).

Similar to this is a theory by Atkinson (1984) which divides the labour market into a core section and a periphery section. Here, the core labour force is considered to be those with permanent contracts and good working conditions, while the peripheral labour force consists of the temporary workers, who have more instable working conditions (Atkinson,

1984). Studies have pointed out the significance of labour market positions for broader career opportunities (Pinto and Ramalheira, 2018). People holding a job close to the core of the labour market – the primary segment as it is referred to in the dual labour market theory – have better opportunities of gaining employment than those individuals positioned in the secondary or periphery segment (Von Hauffe *et al.,* 2015).

2.4.4 Organisational factors

Organisational factors are another type of situational factor that is held to be important for employability. These factors comprise what organisations do to make it easier for their employees to be employable, including the factors surrounding employees' entering and exiting of an organisation. The standards that companies apply when hiring people can influence how difficult or easy it is for a job applicant to enter the organisation. Once employed, certain factors may either encourage or hinder people's attempts to enhance their employability.

2.4.5 Individual resources

Even though situational factors are found important in the formation of the perception of employability, a number of individual factors are also viewed as important in the framework of perceiving situations. Hence, different individuals who are in the same situation may interpret their possibilities of getting new employment differently (Moolman & Wilkinson, 2014; Ali and Marwan, 2019). Accordingly, the same reasoning could be applied to the perception of employability. Thus, knowledge and skills, social capital, abilities and person-specific factors, demographics and dispositions have all been considered to be antecedents of perceived employability.

2.4.6 Knowledge and skills

In the literature, the most commonly referred to individual resources that are of importance for employability are knowledge and skills. Those individuals who have a higher formal education as well as a range of generic skills and labour market experience are supposed to have a better possibility of getting new employment. In the literature, knowledge and skills is a collective term that covers a wide range. For example, Prikshat *et al.* (2019) maintained that employability assets include knowledge, skills and attitudes, and they distinguish between three types of assets. The first, baseline assets, refers to one's basic skills and attributes, such as integrity, while intermediate assets encompass two kinds of occupational skills: those which are connected to the specific occupation, and generic skills, which are more general in nature. Finally, they argue that all individuals possess high level assets, which is the kind of knowledge that contributes to organisational success, such as team working and self-managing.

2.4.7 Social capital

In addition to knowledge and skills, social capital has also been regarded as important for an individual's ability to find employment. Social capital consists of a social structure that is productive in the sense that it facilitates the possibilities of undertaking certain actions that otherwise would not have been possible (Pinto and Ramalheira, 2018). In other words, social capital is an individual resource consisting of those contacts that are of value when finding employment. The social structure carries with it norms, trust, knowledge, relationships and nodes to other people and this structure forms an available network that is useful when searching for jobs (Pais-Montes *et al.*, 2019).

2.4.8 Attitudes

A third large group of individual-oriented factors that may affect employability are the attitudes of the individual. In a general way, attitudes are supposed to be crucial in the

determination of individuals' behaviour (Llanes *et al.,* 2019). However, attitudes refers to a group of factors that comprise many different types. In the context of employability, it is typically argued that attitudes towards work and how people approach their job seeking are vital aspects in the formation of employability.

2.4.9 Demographics

A group of determinants that are worth noting as individual factors, although they are not as easy to affect, are demographics factors. Age and gender are, in the literature, considered to have an influence on employability. In some studies, men are found to have better options in the labour market and are therefore viewed as more employable (McQuaid and Lindsay, 2005). Moreover, it has also been argued that the development of the labour market has gone in a direction that favours men's possibilities of finding employment (Van der Heijde and Van der Heijden, 2005). Concerning age, studies have found that older individuals have more difficulties than their younger counterparts in regard to finding employment (Van der Heijde and Van der Heijden, 2005).

2.4.10 Dispositions

Finally, a group of factors that should also be mentioned in this section are the dispositional factors. Several interactionist theories include the dispositions of neuroticism, affectivity, locus of control, self-esteem, and self-efficacy in their models of what forms the perception of a situation. For example, Ornellisi *et al.* (2019) refer to efficacy beliefs as important for the appraisal of the situation. How individuals look upon their possibilities to shape and affect their current situation is of importance when determining their appraisal of it. Furthermore, affectivity is repeatedly argued to be a vital factor in determining the perceptions people have of their environment (Ali and Marwan 2019).

2.5 Barriers to Development of Skills and competencies for Built Environment Graduates in Construction Firms in Abuja

Previous research by Obiegbu (2002) and Olaitan *et al.* (2006), among others, affirmed host of other components that combine together to cause skills gap part of which are: demand for multi-skill approach, demand for new skills, lack of educational training, rapid change in technology and inappropriate skills and inadequate training. It has been noted that the construction craftsmen have been criticized due to incompetency in their various disciplines and this has caused a bad impression on the kind of jobs produced and delivered. They are not regarded because of their low performance and poor work attitude which has an adverse effect on the industry.

Researches have been conducted in this regard and noted the challenges therein (Yang and Chang, 2005; SLIM, 2002; Chan and Kaka, 2003; Cotton *et al.*, 2005; Alinaitwe *et al.*, 2008; Nowak, 2005). These factors contributing to the skills barrier are further discussed below.

2.5.1 Demand for multi-skills approach

The Single skills approach is where workers master one specific craft trade. This is common in Nigeria and it is becoming increasingly inappropriate for the present-day industry. It is also among the factors that causes skills gap. Conversely, multiskilling is the ability of a worker to carryout various jobs learnt in formal and non-formal setting which involves acquisition of skills knowledge and attitude used in various roles in the workplace. Multiskilling according to Collins's dictionary is the act of training workers and entrants to engage in different roles and jobs. Ejohwomu *et al.* (2006) highlighted those parts of the benefit of multiskilling is that it validates for a longer period of employment and gives maximum rate of income, it equally allows longevity of

employment and also gives maximum income with reduced number of employees. Multiskilling have been discussed by different researchers to be very effective on issue of employment and job-related issues in area of skilled workers and craftsmanship (Lill, 2009).

Multi skilled workers have a variety of skills and these makes them to be competitive and they stay longer on project embarked upon (Lill, 2009; Ejohwomu *et al.,* 2006). There are some disadvantages of multiskilling. These include meeting license requirements, resistance to change and lack of training (Dada and Ekpe, 2006). Investigations in this area are still sparse in Nigeria (Murray *et al*., 2002). However skilled workforce in any construction trade arguably needs to be competent in one or more profession so to allow them to have the ability to operate and familiar with operations, and equipment's in use in construction industry (Ness, 2009).

2.5.2 Demand for new skills

Currently there is a call for new skills demand in construction industry, this was due to technological development and the introduction of information technology in construction industry, which is required in operating tools and equipment's by the labour pool for work (Mackenzie *et al.,* 2000; Cordery, 1989). Introduction of new technologies to the construction industry have redefined and called for new skills in other to improve performance and productivity (Wells and Wall, 2003). Introduction of new technology has greatly affected the performance of the craft men due to the out-of-date training they had previously acquired coupled with lack of various types of skills and showing lack of expertise as previously mentioned.

2.5.3   Lack of educational training

It is widely known and have been criticised that, most craft men are not competent and lack adequate skills in their profession. This has been traced back to education and training curriculum which needs to be reviewed according to (Oketch, 2007; Awe *et al.,* 2010). The lack of competence and adequate skills has contributed greatly to skills gap in Nigeria. The issue of education is a worldwide problem. Many researchers argued that even in developed countries, the issue of quality of education is dwindling and is a major concern for all. Therefore, it is considered by many studies as the main reason for the skills gap (Livanos, 2009).

The main reason for the unstable education is that the curriculum guiding the programme of study has not been reviewed and developed to suit the industry need for sometimes (Namuddu *et al.,* 2017). Inappropriate skills and inadequate training from non-experts to the craft trainees (Oketch, 2007; Olaitan *et al.,* 2000) has contributed greatly to skills gap challenges in the construction industry. In that vein Awe *et al.* (2010) attributes the laxity, on the part of educational body guiding the program of study. Looking at the vocational and technical education in Nigeria, it is vividly shown and specified in the curriculum that the number of hours assigned to teaching theory is much more compared to practice of skills which contributed to low impartation of skills in students (Awe *et al.,* 2010; Olaitan *et al.,* 2000). Invariably, the problem most times is not the curriculum, but the untrained instructors. Therefore, technical education board should make it mandatory to run a development programme for instructors so as enhance their knowledge in imparting the right attitude and skills into their students (Nicoleau and Sackman, 2017).

It is better to equip the technical training institutions as there are no well-structured and equipped laboratories/workshops for training. The existing laboratories are out of date and even stocked with grossly inadequate tools and equipment for training (Awe *et al.,*

2010). To be engaged into the construction industry as a skilled worker, requires the entrant to be versatile and be ready to adapt to changes in technological innovation, this requires the labour pool especially the craft men to be highly skilled in their various profession, therefore technical training institutions in Nigeria should make it mandatory to instill skills that are relevant to industry need, there is need for the worker to be expert in his profession (Awe *et al.,* 2010; Oketch, 2007; Mackenzie *et* al., 2000; Forde and Mackenzie, 2004).

2.5.4 Rapid technology advancement

Recently construction industry all over the world undergo technology advancement in every area of their work. There have been a lot of technological advancement in various places of work as a result of the effects of globalization and rapid revolution in information technology. The information technology compliance coupled with the advancement in technology has made it mandatory for everybody including the skilled workforce in the construction industry to adapt to changes. Regardless of the changes, yet industries and schools in the country are yet to comply with this trend and make it available for training. This, however, has a negative impact on performance and competency of the workforce (Ede, 2013; Femi, 2014). This calls for demand of new skills in the craft workforce.

2.5.5 Inappropriate skills and inadequate training

The lack of inadequate training and transfer of inappropriate skill has contributed to skills gap, coupled with textbooks that are out-of-date which the instructors use in transferring and imparting training to students (Udofia *et al.,* 2012). In that vein, Awe *et al.* (2010) stress that facilities for practical works in most technical colleges are obsolete and not functioning, coupled with non-availability of modern tools and equipment for vocational training. It has been noticed that the curriculum guiding the technical college disciplines

is not delivering much needed employment skills due to non-competency on part of the instructors and curriculum developers (Nicoleau and Sackman, 2017).

2.5.6 Staff being new on the role

Inexperience and poor workmanship on the part of the craft worker, contributed to the issue of skills gap coupled with being new on the job role. The inability to effect changes, and to fully operate and utilise the new technology and the intricacies of the new job role creates skills gap more than ever before (Awe *et al.,* 2010; Oketch, 2007; Mackenzie *et al.,* 2000; Forde & Mackenzie, 2004). The shortage of craft skilled workforce in the construction industry to adapt to changes with the recent advancement in technology with the use of tools and equipment have been problematic for a long time. This requires the education and training to collaborate with the construction industry to look into the challenges (Egan, 1998; Whittock, 2002).

2.6 Current Level of Skills Offered by the Graduates of Built Environment Professions

Job advertisements often contain job specifications, which describe what a job entails, minimum skills needed for a job, knowledge and abilities required to perform a certain job effectively. Those requirements are the attributes that determine the employability of a job applicant. The employer considers those requirements essential to satisfactory performance on the job. Job requirements may include specific skills, area and length of work experience, personal qualities, educational qualifications, professional certifications, or areas of knowledge (Doyle, 2019). Employability skills can be classified into transferable/functional skills (basic skills); personal traits/attitude (soft skills); and knowledge-based skills (hard skills). Hard skills comprise formal education or training in a particular field of study, and work experience. They are associated with competencies

in a specialized area, analytical ability (ability to use appropriate tools and techniques) and academic knowledge.

McMurray *et al.* (2016) reported that employer's value good relevant work experience. Work experience was also seen to improve soft skills, increase confidence, produce more rounded individuals and improve their connections to the labour market. Soft skills on the other hand are skills, abilities and traits that pertain to personality, attitude and behaviours rather than formal or technical knowledge. Majid *et al.* (2012) assert that soft skills are useful for social interaction as well as for career advancement while Swarna-Latha (2013) opined that soft skills provide and empower the young graduate with proper job etiquettes and abilities to get along well in the workplace. Soft skills can be broken into job readiness skill (related to job preparation process); job searching soft skills and job keeping soft skills.

Of all these types of soft skills, at recruitment stage, employers focus mostly on job preparation soft skills, which essentially involve skills that help an employee to make informed decisions, solve problems, think critically and creatively, communicate effectively and build healthy relationships. The top five important soft skills identified in Majid *et al.* (2012) are teamwork and collaboration, decision-making, problem solving, time management, and critical thinking skills. Akinyemi *et al.* (2012) listed other employability attributes to include verbal and written communication (basic skills), analytical and investigative abilities, entrepreneurship and managerial competencies, teamwork abilities, computer know-hows, time management capabilities, as well as drive and flexibility. A combination of the different categories of skills is important for employability.

Helyer and Lee (2014) highlight that more than half of the top graduate recruiter's states that due to the very obvious benefits of work experience to an individual's skillset, graduates with work experience are prioritised in their selection processes. In a study carried out to determine employers' demand for business and management graduates in the Scottish workforce, McMurray *et al.* (2016) found that first degree, relevant work experience, personal attitudes, relevant employability skills, and classifications of degrees are considered most important to employers during recruitment. In a related study of employability skills of engineering and Information, Communication and Technology (ICT) graduates, Saad *et al.* (2013) reveal that problem-solving, tool-handling competency, presentation skills and team working skills feature highly as important skills demanded of applicants by employers.

2.7   Roles of Professional Associations in the Development of Skills and Competencies for Built Environment Graduates in Construction Firms in Abuja

The roles of university in preparing graduates for the workforce is a long-standing and controversial (Barnette, 2000). It is compounded by the ever-charging needs and expectations of employers, who are increasingly interested in what their employees can do and less in what they know, recently there has been tension between universities and their curricula and employer expectations of graduates. Many employers and students believe that university education has the primary purpose of preparation for work and that it is possible to develop work-ready skills simply by undertaking three or four years of university education (Walker *et al.,* 2012). Individual perceptions and response of universities to needs and expectations of employers vary from one university to another. Understanding the roles that universities, employers, graduates and professional

association could play in the professional preparation of new graduates for work can help

the alignment of these expectations as shown in Table 2.1.

Table 2.1: The Roles of Stakeholders

Stakeholders	Responsibilities
University (Professional Faculties)	• Preparing graduates to face unfamiliar, unknown and unknowable situations. • Preparing graduates to cope with complex and dynamic work requirements. • Preparing graduates to learn how to learn. • Increasing students' knowledge and awareness of workplace environments. • Assisting graduates with initial job expectations. • Developing well-rounded global graduates. • Maximising and using diversity in university environments to assist graduates in developing social and cultural skills.
Employers	• Training new graduates when they commence work. • Facilitating workplace learning and organisational learning. • Increasing work socialisation. • Increasing students' exposure to industry through scholarships, internships and job ready programmes.
Professional associations	• Making recommendations to the government and employers on issues that matter most for their professionals and profession. • Using course accreditation processes to ensure that university programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach.
New graduates	• Developing professional skills both within and outside university studies. • Managing their career. • Managing themselves. • Self-assessing in the workforce.
Shared responsibilities	Certain professional skills can be developed only in practice sites. Stakeholders have to cooperate with each other to: • Link theory and practice and learning on the job. • Develop employability and work-ready skill sets. • Facilitate work placement experiences. • Encourage part time employment (in discipline specific areas or otherwise) in parallel to university studies. • Provide work-based learning opportunities.

Source: Jenny (2015)

Many universities are running focus groups with employers, surveying employers to

measure satisfaction with graduates, or involving employers and industry leaders on

coordinating committees or course advisory committees. Some professional bodies

accredit university programs, using their own established frameworks to do this.

Professional bodies have established links with the workforce through their membership; generally, they also have credibility with relevant faculties or schools within universities. A very good example of this is the accreditation of building courses in the Nigerian universities and polytechnic by council of registered builders of Nigeria (CORBON).

Some of the contributions and recommendations of the professional bodies to construction education includes:

1. To explicitly identify employability skills in all university and polytechnic curriculum.
2. To improve and increase access to Work Integrated Learning (WIL).
3. To enhance teaching and assessment of employability skills.
4. To offer students self-assessment options for employability skills
5. To ensure that construction education continually satisfies the requirements of construction managers.
6. To explicitly report on employability skills demonstrated through Work Integrated Learning.
7. To encourage more effective integration of employability skills in student e-portfolios.

Universities work to develop employability skills in their students by providing academic staff with relevant support and resources, integrating these skills into curriculum and course design (taking advice from construction managers), providing students with work placements and exposure to professional settings and providing advice and guidance through career services. Furthermore, universities offer students opportunities for developing themselves through participation in clubs, societies and university life. In addition to the part that universities play in developing students "employability skills, it

has been recognised that most students are concurrently developing these skills through part-time employment, volunteer work and community participation" (Abhishek, 2012).

2.8 Strategies for Improving the Skills and Competencies of a Graduate for Built Environment Graduates in Construction Firms in Abuja

2.8.1 Apprenticeship training

In combating the skills gap that is evident, Germany has taken the step of introducing a dual modern apprenticeship model. To develop a world first class workforce and resolve the challenges that are prevailing, vocational technical education is the answer in Germany (OECD, 2011). Apprenticeship training programme have been organized and identified by the vocational and education training as a route of providing successful and highly skilled workers. The workforce is employed in various workplace of interest where the apprentice becomes an expert in a chosen profession. Development and training of the skilled labour pool is of paramount importance to German government (Zwick, 2007). Many companies in different countries to include Japan, Canada and USA have imitated the idea of running an apprenticeship training programme to build a skilled workforce who will become experts in their various chosen fields (Zwick, 2007). The companies in-charge of the apprenticeship training program collaborate with the education and training to develop a curriculum guiding their program of study in relevant areas, the training of the instructors and issuing of certificates are solely the responsibilities of education and training. It was noted that in many countries in Europe, over half of the students are enrolled in vocational technical education program (OECD, 2011).

Presently, dual apprenticeship has been adopted by other countries like Switzerland, Denmark and Austria. In these countries' students spend an average of three days outside with the company they have intention to work with relative to the training acquired in the

workplace. At BMW, Porsche, and Mercedes Benz for example, students learn the physics, engineering and maths required to design and build luxury cars (Zwick, 2007).

The results analysed from 17 countries concluded that to most teenagers, vocational education is the most effective way to learn (OECD, 2011). OECD (2011) also found that this approach better facilitates the student's entry into the labour market. In that vein, U.S. research by Holzer and Lerman (2007) suggested that apprenticeships also help to close skills gap. Apprenticeship is another form of system used, to transfer skills within the skilled labour pool and other working group, which is basically based on implicit knowledge. Despite the advantages of apprenticeship form of training, it has its limitations to include, lack of a formal curriculum to guide the apprenticeship training, there is no formal assessment as it operates in the formal training, skills learnt is through imitation and hands on practice in the replica of where the apprentice choose to work (Attwell, 1997; Rauner and Smith, 2010; Lerman, 2010; Lerman *et al.,* 2009).

According to Holzer and Lerman (2007) the body that makes up the construction industry in some states attest to the fact that apprenticeship as a form of training has improve the quality and competence of trained skilled craft men. The apprenticeship scheme has been yielding positive results. They emphasized that college degrees and internship don't produce the same quality of worker as intensive on the job apprenticeship. An apprenticeship is a real job while internship involves a slight amount of work. Germany serves as a role model in solving issue of skills gap, and they have proffered solution in closing the skills gap that exist among the workforce: - to include making investment in the education and training of craft men, preparing them for employment by issuing them certificates after graduation.

This was given to neighbouring schools and colleges to imbibe the idea of introducing apprenticeship training to young students who has developed flair for programme in craft construction as alternative to secondary and high schools training in general studies only. Several companies all over the globe adhered to the instruction and advice of running apprenticeship training scheme, knowing the benefits accrued there-in to train and build competent skilled workforce of the private sector/state/local government in developing new programmes which help modernize their employee's skill sets (Brockmann *et al.,* 2008).

2.8.2 The use of constructivist model

The model of learning-by-doing is proposed by the constructivist and is commonly adopted in vocational and technical education. Some of the most skills intensive professions in developed countries use the same form of learning. It was observed and noted that students who receive some vocational training at the same time as they are taking academic courses tend to do better in those courses than students taking only academic courses (Kelly and Kellam, 2009).

2.8.3 Retaining the aging workforce

Dantong *et al.* (2011) believes that the experience gathered on the job by the aging skilled workforce helps in combating the skills gap that exist, the organizational training and retaining of the aging workforce helps in combating the skills gap faced by the industry. The newly recruited craft men do not possess the adequate skill and training that will be useful for the construction industry, because of the poor workmanship possessed by the newly recruited craft men, this will hinder the progress of the industry in terms of GDP. The construction industry in sub-Saharan Africa retains skilled employees in work after retirement age, mainly to overcome labour shortages, because of skills possessed in which experience acquired is a replacement for evaluating proficiency (Haupt, 2001; Hailstone,

2002). Smallwood and Haupt (2005) reported that the older skilled workers were resourceful to the construction industry in that they possess experience and produce better quality of work than younger skilled workers. They don't really require training, though the ageing workforce may not possess the latest skills as new technologies emerge but due to the acquired experience on the job, they are more quickly responded to training than the younger workers they could benefit from skills training (Smallwood and Haupt, 2005).

2.8.4 Training and retraining the skilled workforce

Training and retraining of the workforce will contribute to closing the skills gap, as training and retraining all refer to the process of imparting skills on the workforce (Bokinni, 2005). The training could be inform of classroom training as recommended by (Solomon *et al.,* 2012), trade group training by (Solomon *et al.,* 2012), apprenticeship training recommended by (Zou, 2008) on the job training as recommended by (Awe *et al.,* 2010) and coaching and mentoring by (Umar, 2005; Ugwuja, 2010; Odesola & Idoro, 2014), as they all contribute to combating the skills gap.

2.8.5 Introduction of robots

Robots have been introduced into the construction industry to perform excellently well in place of humans, they can conform to different kinds of jobs ranging from installation, fixing and erecting pillars within and around the construction site (Warszawski, 1984; Jackson, 1990).The robots possess some economic potentials to include saving the number of employees recruited into the industry, the robots work especially under unsafe, laborious and demanding environment, and they produce superior kind of job. The application of robotics to construction to date have been very limited in scope (Jayaraj and Divakar, 2018). Robots are used in every area of construction work to include Electrical installation for high voltage transmission lines, obstacle recognition for power

transmission line inspection among other installations both in Electrical domestic and industrial installations (Jayaraj and Divakar, 2018). Though robots are very effective in improving the quality of the work done, it equally increased profitability, increase efficiency and some other factors, despite this advantages, it has its limitations to include type of tasks the machine can carry out in terms of performance, the robot does not have every function built into it, so for robots to perform excellently well, the use of good trusted robot integrators must be applied (Jayaraj and Divakar, 2018).

2.9   Employability Skills on Government Perspective

The ongoing research is enhancing to paint a clear picture of graduates' employability challenges, and how we can begin to solve them (Moss, 2017). In 2005 the Nigerian government has seen the importance to adopt a system of wide reform; it was absorbed and implemented under Nigeria/UNESCO Science, Technology and Innovation (STI) initiative. Nigeria has ascribed many development initiatives such as (MDGs) aimed at poverty reduction, (WSSD) the World Summit on Sustainable Development, (BCRA) the Blair Commission Report for Africa, (NEPAD) the new partnership for Africa development triggered to re-enforce Africa economy and the mission to be achieved in not later 2015. Nigeria government has entered into various initiatives to enhance framework for the development of science and technology (S&T), and the initiative has linkages through public -private partnership (PPP). The human capital theory enhances educational paradigm anchored to uphold, promote and expand the university educational system within governmental policy created to enhance positive economic effects, progressing and development of any country like Nigeria as a concept known as driven economic based knowledge. University links with the government to enhance sources of public funding to enable improvement in technology transfer and human training activities (Barnes *et al.*, 2002).

The findings have been anchored much on graduate education is based on a generalized conception of how to get a good job and still remain as best qualified; have greater work opportunities (Johnes, 2006). Nigeria has been underpinned to take a major review of their national standard of education provision after graduation to provide Nigeria Higher Education on Graduation Statement (NHEGS). The main benefit of employability of government perspective is to look into reward incentives as an essential mechanism that shapes the kind of invention that are transferable employability skills in the labour market through researcher interviewed in these studies foster to rank lack of facilities; and research finding as one of the most critical factors that affects university performance. Employability Skills on Individual Perspective. The importance of employability and reason is to understand the value of individual ability, characteristic and performance towards work ethics; and there is a need to link with one another assigned into the transition of the workforce. Gert and Roulin (2009) show the evidence to develop skills through employability skills and discussed an importance of career development. This describes a method for improving your resume and cover letter, graduates who are interested in attending the meeting, will involve much abstract problem and not employment skills. The availability of training opportunities at job leads to a rise in the overall job quality (Eurofound, 2016). As part of the measures to achieve, Nigeria graduates require general skills for more specialized work and collaborative learning that would enable the graduate to improve sandwich and extra training or lifelong learning. The role of universities assumes adding an essential value within the industrial system through an individual system of innovation (Frontes, 2003).

The self-efficacy is the norm and values of the ability to budget, plan, implement, organize and execute the plan of the active drives to management applicant condition and situation. The learning enhances new ideas for combining experiences (Hakansson,

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1987). Therefore, it is necessary to empower graduates who have good communication skills, be able to reach out through his/her speech which is fluent and eloquent, the organization; work with people as a team and have a critical thinking; and work to solve industrial problems. According to Odigbo (2013), students who are empowered to perform better and have a better relationship with the staff.

2.10   Built Environment Professional Skills

Construction projects involve teamwork and, depending on the type and nature of construction operation, different built environment professionals are involved at various stages of a project (Owolabi and Olatunji, 2014). Prior to project initiation, the land surveyor and the Town/Urban planner play vital roles. The land surveyor is concerned with the size, topography, location, features on and beneath the land upon which any development is built, including issues related to land ownership and property boundaries (Anyanwu, 2013). No proper, effective and accurate planning, design and execution of building projects can be carried out without the input of the land surveyor. The Town/Urban planner's principal role on the other hand is that of development control which has to do with physical, social and economic planning of development within regions and sub-regions, layout plan, transportation plan, processing building plans for proposed projects among others (Waldigit, 2013).

From project initiation through procurement to handover, the Architect, Civil/Structural Engineer, and Mechanical/Electrical (M/E) Engineer are responsible for their respective designs, while the Builder/Construction Manager and Quantity Surveyor play managerial roles at the construction stage.   The Architect helps the client to formulate his requirements in an understandable form, bearing in mind the statutory conditions that may apply, and prepare, detailed working drawings and specifications besides other roles. The Structural Engineer carry-out structural analysis to produce structural drawings of

foundation, columns, and beams among other structural elements; specifications; schedules and other relevant data that may be required for the overall structural integrity of the project. Building services experts perform the mechanical and electrical engineering services in construction. Their roles essentially involve making buildings comfortable and safe for people to live, work or learn in. They work with the Architect and Structural Engineer to ensure a building is in the right temperature, and it is well-ventilated and well-lit among others thus ensuring functionality (Hussin and Omran, 2009). The professional at the heart of the physical construction of buildings is the Builder. Hussin and Omran (2009) assert that the builders' role in building development process in general is to translate designs, working drawings, schedules and specifications into a physical structure.

According to Anyanwu (2013), the builder brings his production management expertise to bear on the necessary resources on the site for execution of building projects. The Builder's role in building development process starts from the planning/design stage but takes prominence at the construction stage. The Quantity Surveyor render essential services to the client as he is responsible for measurement of quantities, preparation of preliminary estimates, bill of quantities, procurement advice, contract administration and cost control throughout the construction process. The Estate Surveyor and Valuer is involved right from the conception stage of a project especially when the project is being undertaken for investment purposes, and it is necessary to conduct feasibility and viability study to protect the investment. He is also involved in land acquisition and land optimization prior to project initiation. His involvement also extends to the operational stage of a project, where he is involved in facilities management, and property valuation.

2.11 Human Capital Theory

The theoretical framework of this study can be explained by the Human Capital theory. This theory according to Schultz (1963) emphasizes the role of investment in education to boost economic and social achievement. Human capital theory equally suggests that education or training raised the productivity of workers by imparting useful life skills on the individuals (see Figure 2.1). In line with the above, Becker (1964) believed that the height of workforce production have positive relationship with the educational and training form in which the higher the educational and training form a person gets, the higher the productivity/achievement of an individual. According to Lange and Topel (2004), a person with great skills will be able to increase employers or the workplace productivity. It is believed that by virtue of this theoretical framework, students need to possess employability skills that will enable them to function effectively and efficiently in the world of work.
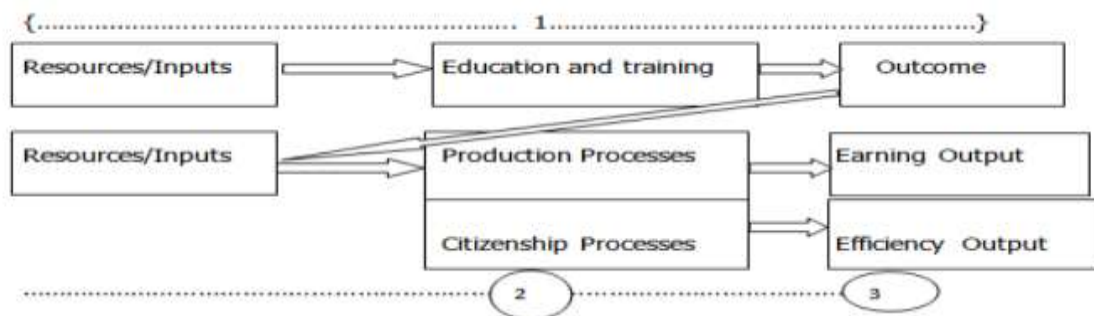
Figure 2.1: A model of Human Capital Theory (Swanson and Holton, 2001)
Source: Oluwakemi and Adeolu (2017)

The diagrammatic representation of the human capital theory above presents the key relations in human capital theory. The first relationship 1 represents the concept of production as applied in education and training. This relationship means that investment in education and training results in increased learning (Imeokparia and Ediagbonya, 2012). The relationship 2 presents the relationship between learning and increased productivity. This means that increased learning can result to an increased productivity.

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This relationship emphasizes the human capital relationship that exists between increased productivity and increased wages and business learning.

This relationship 3 pointed out that an increased productivity does result in increased wage for individuals. The human capital theory is a replicate of the human resource development theory which places emphasis on the investment in the training and development of human resources. Therefore, according to human capital theory, it can be concluded that when adequate resources are committed to the development of human capital which is the stock of competencies, knowledge, habit, social and personality attributes of the society, the nation will witness growth and development. This theory is of relevance because when governments at all levels are committed to the development of human capital through provision of qualitative education, the employability of Nigerian universities output will improve.

2.12   Summary of Reviewed Literature

This chapter has provided a working definition for skill and employability and also a theoretical framework on which this study hinged on. It gave an account of the concept of employability, definition of skill, and classification of a skill, Furthermore, the chapter discussed and duly considered drivers of the development of skills and competencies for built environment graduates in the Nigerian construction industry. Based on the reviews, there will be an outstanding support for studies that proffers strategies for improving the skills and competencies of a graduate for built environment graduates in construction firm in Abuja. Therefore, it is expected that the study would identify, examine the barriers to the development of skills and competencies for built environment graduates in construction firm in Abuja, determine the current level of skills and competencies offered by the graduates of built environment professions in construction firms in Abuja and

determine the most important roles of professional association in the development of skills and competencies for built environment graduates in construction firms in Abuja.. This chapter has successfully reviewed these core concepts in this research and the theme emerging from literature that needs further contextual investigations.

CHAPTER THREE

3.0   **RESEARCH METHODOLOGY**

3.1   **Research Design**

According to Uji (2009), research design is the program that guides the researcher in the process of collecting, analyzing, and interpreting observations. This study was carried out using a quantitative research design approach. This research was broadly divided into two parts. The first part of this work includes a literature survey undertaken to provide the background information required for this research, while the second part comprised of the use of a questionnaire to obtain data from construction firms in Abuja.

3.2   **Target Population**

A research population is referred to as a collection of all cases that conform to some carefully chosen set of criteria (Kothari, 2008). The population elements are the unit members of a population, for example, people, social situations, social actions, places, events, time, or things (Wimmer and Dominick, 2011). This study population is construction professionals. A professional per construction companies registered with the Abuja Business Directory was used to determine the actual number of respondents. The firms considered are those involved in building and civil Engineering works and function within the city. There are 255 construction companies listed in the Abuja Business Directory (2021). The unit of analysis is made up of human resource manager in charge of employment who are also professionals from the identified firms in the built environment (Architect, Engineers, Quantity Surveyors, Builders, Estate surveyors).

3.3   **Sample Frame**

This study's sample frame is a list of construction companies registered with the Abuja Business Directory in Abuja. Samples were selected from the list in order to determine

the study's sample size and information on construction companies that are registered with Abuja Business Directory. As a result, the population size that was utilized is 255. The research population was also made up of professional in charge of graduate's supervision and assessment. One questionnaire was administered per firm.

3.4   Sample Size

A sample is a small proportion of a population selected for observation and analysis. The sample size of the respondents was calculated using a simplified formula proportion as illustrated by Glenn (2013).

$$n = \frac{N}{1+N\,(e)^2} \qquad\qquad (3.1)$$

Where;

n = Sample size

N = Population size in the sample unit

e = Level of precision which is + 5% (0.05)

$$n = \frac{225}{1+225\,(0.05)^2} = 159$$

In order to arrive at a sample size that served as a representative of the entire population in the study area. The 255 construction companies listed in the Abuja business directory was substituted in equation (1) and an estimated sample size of 159 respondents was arrived at a respondent from a firm. Therefore, the sample size for the study was 159.

3.5   Sampling Technique

Sampling is the process of selecting sample groups (Shanti and Shashi, 2017). It is the process of selecting a group of people or products that is used as a representative or

random sample (Shanti and Shashi, 2017). The goal of sampling is to provide a realistic means of enabling the data collection and processing component of research to be carried out (Shanti and Shashi, 2017). The sampling technique that was adopted in selecting the respondents was simple random sampling because it provides each individual or member of a population with an equal and fair probability of being chosen.

3.6   Method of Data Collection

Data was obtained with the use of a structured questionnaire in the close-ended response format. The questionnaire was designed on a five-point Likert Scale format. The questionnaire was made up of two sections. The first section addressed the issues concerning the general profile of respondents. The other sections addressed issues concerning the research objectives respectively. The questionnaires were self-administered on 159 construction professionals in selected construction companies in Abuja out of which 146 were returned and used for analysis. This gives a response rate of 91.8%. This section presents the profile of the respondents considered for data collection.

3.7   Method of Data Analysis

The data collected for this study was analysed using descriptive statistical tools only. The frequency counts and percentages were employed to analyse the profile of respondents. While Mean Item Score (MIS) was employed to analyse the data collected on the research objectives. The use of Microsoft Excel and SPSS was employed to aid the analysis of data in this study.

MIS, also known as weighted aggregate score, is defined as the sum of the product of the response rating and the number of responses divided by the total number of responses in the group. The MIS, also known as the arithmetic, mean or mean score, is the measure of

central tendency for determining the position of a particular variable among other ones. The MIS for each criterion for the analysis of this study, based on the Likert scale of 1 to 5, was determined as follows:

$$Mean\ Item\ Score = \frac{5n5+4n4+3n3+2n2+n1}{(n5+n4+n3+n2+n1)}\ \text{------------------}\ (3.1)$$

Where: n_1 = number of respondents who answered very low

n_2 = number of respondents who answer low

n_3 = number of respondents who answer average

n_4 = number of respondents who answer high

n_5 = number of respondents who answer very high

The decision rule adopted for the MIS analysis is shown in Table 3.1 while the method of data analysis is shown in Table 3.2.

Table 3.1: Decision Rule for MIS Analysis

Scale	Cut-off points MIS	Remarks/ Decision Importance	Significance	Effectiveness
5	4.50 -5.00	Very important	Severe	Very Effective
4	3.50 -4.49	Important	Significant	Effective
3	2.50 -3.49	Fairly Important	Moderate	Fairly Effective
2	1.50 -2.49	Less Important	Minor	Less Effective
1	1.00 -1.49	Least important	Insignificant	Least Effective

Source: Adapted and modified from Morenikeji (2006); Agumba and Haupt (2014); Shittu *et al.,* (2015)

Table 3.2: Methods of Objectives and Data Analysis

S/N	Objectives	Sources of data	Instrument of collection	Method of data analysis
1.	To examine the current level of skills and competencies offered by the graduates of built environment professions in construction firms.	Primary source	Questionnaire	Descriptive
2.	To identify the barriers to the development of skills and competencies for built environment graduates in construction firms.	Primary source	Questionnaire	Descriptive
3.	To determine the drivers of the development of skills and competencies for built environment graduates in construction firms.	Primary source	Questionnaire	Descriptive
4.	To assess the most important roles of professional association in the development of skills and competencies for built environment graduates in construction firms.	Primary source	Questionnaire	Descriptive
5	To propose strategies for improving the skills and competencies for built environment graduates in construction firms.	Primary source	Questionnaire	Descriptive

CHAPTER FOUR

4.0   **RESULTS AND DISCUSSIONS**

4.1   Presentation of Respondents' Profile

4.1.1   Gender of respondents

It was shown from Table 4.1 that out of the 146 respondents sampled, 122 (83.56%) were

male, while 24 (16.44%) were female. This study was thus, of necessity, biased in favour

of males, based on the peculiar structure of the construction firms, where females are few

in number.

Table 4.1: Gender of Respondent

Gender of respondent	Frequency	%
Male	122	83.56%
Female	24	16.44%
Total	**146**	**100%**

4.1.2   Profession of respondents

Table 4.2 shows that out of the 146 respondents considered for the study, 54 were

Quantity Surveyors, 38 were Architects, 45 were Engineers (Structural, Electrical and

Mechanical), 7 were Estate Valuers and 2 were Land Surveyors. Majority of respondents

(54%) were Quantity Surveyors.

Table 4.2: Profession of Respondents

Profession of respondents	Frequency	%
Quantity surveyors	54	36.99%
Engineers	45	30.82%
Architects	38	26.03%
Estate valuers	7	4.8%
Land surveyors	2	1.36%
Total	**146**	**100%**

4.1.3 Education attainment of respondents

Table 4.3 shows that 69.86% of the respondents are Master's Degree holders. This is followed by Bachelor's Degrees (BTech/BSc) and Holders of Higher National Diplomas (HND), which represent 28.08% of the respondents. PhD holders, representing the minority of the respondents, constitute 2.06% of the population of respondents. This shows that the respondents have the requisite educational qualifications to give reliable responses required for the study.

Table 4.3: Education attainment of respondents

Education attainments	Frequency	%
MSc	102	69.86%
HND/BSc	41	28.08%
PhD	3	2.06%
Total	**146**	**100%**

4.1.4 Work experience of respondents

Table 4.4 indicates that 43% of the respondents have between 16 and 25 years working experience; 38% of the respondents have between 5 and 15 years working experience; 14% of the respondents have more than 25 years of experience, and 5% of the respondents, representing the minority, have less than 5 years of experience. This shows that the respondents are experienced enough to give reliable information needed for the study.

Table 4.4: Work Experience of Respondent

Work experience of respondent	Frequency	%
16 yrs – 25 yrs	63	43.2%
5 yrs – 15 yrs	55	37.7%
More than 25 yrs	21	14.4%
Less than 5 yrs	7	4.7%
Total	**146**	**100%**

4.2 Drivers of the Development of Skills and Competencies offered by Built Environment Graduates in Construction Firms in Abuja.

In order of importance, the study arranged the Mean Index Score (MIS) of the drivers of the development of skills and competencies offered by built environment graduates in construction firms in Abuja. Table 4.5 shows that the most significant drivers for the development of skills and competencies for built environment graduates in construction firms in Abuja are: individual resources (MIS = 4.85); labour market opportunities (MIS = 4.76); and labour market structure (MIS = 4.56). Other drivers for the development of skills and competencies for built environment graduates are also significant and moderately significant. These range from situational factors (MIS = 4.37) to demographics (2.94). Averagely, all the drivers for development of skills and competencies for built environment graduates in construction firms in Abuja are significant (average MIS = 3.91).

In support of this study findings, Moolman and Wilkinson (2014), Von- Hauffe et al. (2015), Pinto and Ramalheira (2018), Ali and Marwan (2019), in their study identified individual resources, labour market opportunities, labour market structure, situational factors, organisational factors and social capital as the drivers for development of skills and competencies for built environment graduates.

Table 4.5: Drivers of the Development of Skills and Competencies

S/No.	Drivers	MIS	Rank	Decision
1	Individual resources	4.85	1st	Very significant
2	Labour market opportunities	4.76	2nd	Very significant
3	Labour market structure	4.56	3rd	Very significant
4	Situational factors	4.37	4th	Significant
5	Organisational factors	4.23	5th	Significant
6	Social capital	3.83	6th	Significant
7	Knowledge and skills	3.48	7th	Moderately significant
8	Attitudes	3.04	8th	Moderately significant
9	Dispositions	2.95	9th	Moderately significant
10	Demographics	2.94	10th	Moderately significant
	Average MIS	*3.90*		*Significant*

4.3   Barriers to the Development of Skills and Competencies for Built Environment Graduates in Construction Firms in Abuja

The use of MIS to explain the barriers to the development of skills and competencies for built environment graduates in construction firms in order of significance. Table 4.6 reveals the result of MIS for the eight identified barriers to the development of skills and competencies for built environment graduates in construction firms. It was shown that the most significant barriers are financial difficulty, rapid technology advancement, and inappropriate skills, and inadequate training, with MIS values of 4.85, 4.61, and 4.18, respectively. While Staff being new to the role, was identified to be insignificant with MIS values of 2.47. On average, all the identified barriers to the development of skills and competencies for built environment graduates in construction firms in Abuja are significant (average MIS = 3.69).

This study findings is in line with findings of Obiegbu (2002), Olaitan *et al.* (2006), that affirmed the barriers to the development of skills and competencies for built environment graduates are Lack of educational training, rapid change in technology, inappropriate skills, and inadequate training are in support of the finding of this study by establishing that the financial difficulty and staff being new to the role have contributed to the skills gap, coupled with textbooks that are out-of-date, which the instructors use in transferring and imparting training to students (Udofia *et al.,* 2012).

Table 4.6: Barriers to the Development of Skills and Competencies for Built Environment Graduates in Construction Firms in Abuja

S/No.	Barriers	MIS	Rank	Decision
1	Financial difficulty	4.85	1st	Very significant
2	Rapid technology advancement	4.61	2nd	Very significant
3	Inappropriate skills and inadequate training	4.18	3rd	Significant
4	Lack of Educational Training	3.86	4th	Significant
5	Demand for new skills	3.52	5th	Significant
6	Demand for multi-skills approach	3.27	6th	Significant
7	Poor educational system	2.80	7th	Moderately Significant
8	Staff being new on the role	2.47	8th	Less Significant
	Average MIS	*3.69*		*Significant*

4.4 Current Level of Skills and Competencies Offered by the Graduates of Built Environment Professions in Construction Firms in Abuja

The results of MIS employed in rating the current level of skills and competencies offered by the graduates of built-environment professions in construction firms. Table 4.7 indicates that the levels of verbal and written communication (basic skills) and entrepreneurship and managerial competencies are the most significant current levels of skills and competencies offered by the graduates of built-environment professions in construction firms (MIS = 4.80 and 4.71 respectively). This is followed by the job readiness skills (related to the job preparation process), relevant employability skills, computer know-hows, teamwork and collaboration, problem solving, and time management, which are also significant current levels of skills and competencies offered by the graduates of built environment professions (MIS = 3.97, 3.92, 3.85, 3.78, 3.68, and 3.53 respectively). The least ranked current level of skills and competencies offered by the graduates of built-environment professions in construction firms is analytical and investigative abilities (MIS = 2.47). On average, the current level of skills and

competencies offered by the graduates of built-environment professions in construction firms appears to be moderately significant (Average MIS = 3.51).

The current level of skills and competencies as revealed in this study agrees with the study by Akinyemi *et al*. (2012), where it was listed that other employability attributes include verbal and written communication (basic skills), analytical and investigative abilities, entrepreneurship and managerial competencies, teamwork abilities, computer know-how, time management capabilities, as well as drive and flexibility. A combination of the different categories of skills is important for employability. In addition, the studies of Saad *et al.* (2013), Helyer and Lee (2014), and McMurray *et al*. (2016) also discovered that problem-solving, tool-handling competency, presentation skills, and team-working skills feature highly as important skills demanded of applicants by employers.

Table 4.7: Current Level of Skills and Competencies

S/No.	Current level of skills and competencies	MIS	Rank	Decision
1	Verbal and written communication (basic skills)	4.80	1st	Very significant
2	Entrepreneurship and managerial competencies	4.71	2nd	Very significant
3	Job readiness skill (related to job preparation process)	3.97	3rd	Significant
4	Relevant employability skills	3.92	4th	Significant
5	Computer know-hows	3.85	5th	Significant
6	Teamwork and collaboration	3.78	6th	Significant
7	Problem solving	3.68	7th	Significant
8	Time management	3.53	8th	Significant
9	Critical thinking skills	3.14	9th	Moderately Significant
10	Teamwork abilities	3.14	9th	Moderately Significant
11	Time management capabilities	3.13	11th	Moderately Significant
12	Decision-making	2.99	12th	Moderately Significant
13	Drive and flexibility	2.91	13th	Moderately Significant
14	Classifications of degree	2.66	14th	Moderately Significant
15	Analytical and investigative abilities	2.47	15th	Less Significant
	Average MIS	*3.31*		*Moderately Significant*

4.5 Roles of Professional Associations in the Development of Skills and Competencies for Built Environment Graduates in Construction Firms in Abuja

The MIS analysis results of the most important roles of professional associations in the development of skills and competencies for built environment graduates in construction firms. Table 4.8 shows that the most important roles of professional associations in the development of skills and competencies of built environment graduates in construction firms are: using course accreditation processes to ensure that University programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach (MIS = 4.76); and explicitly identifying employability skills in all university and polytechnic curriculum (MIS = 4.61). Other roles of professional associations in the development of skills and competencies offered by a built environment profession Graduate are also important. These range from measures to ensure that construction education continually satisfies the requirements of construction managers. To offer students self-assessment options for employability skills (3.58). Averagely, all the roles of professional associations in the development of skills and competencies offered by graduates of the built environment professions are important (average MIS = 3.72).

In support of this finding, Jenny (2015) opined that professional bodies have established links with the workforce through their membership; generally, they also have credibility with relevant faculties or schools within universities. A very good example of this is the accreditation of building courses in Nigerian universities and polytechnics by Council of Registered Builders of Nigeria (CORBON).

Table 4.8: Roles performed by Professional Associations

S/No.	Roles performed by Professional Associations	MIS	Rank	Decision
1	Using course accreditation processes to ensure that university programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach.	4.76	1st	Very important
2	Explicitly identify employability skills in all university and polytechnic curriculum.	4.61	2nd	Very important
3	To ensure that construction education continually satisfies the requirements of construction managers.	4.37	3rd	Important
4	Developing professional skills both within and outside university studies.	4.16	4th	Important
5	Making recommendations to the government and employers on issues that matter most for their professionals and profession.	3.88	5th	Important
6	To explicitly report on employability skills demonstrated through Work Integrated Learning.	3.61	6th	Important
7	To offer students self-assessment options for employability skills	3.58	7th	Important
8	To enhance teaching and assessment of employability skills.	3.18	8th	Fairly Important
9	To encourage more effective integration of employability skills in student e-portfolios.	2.53	9th	Fairly Important
10	Improve and increase access to Work Integrated Learning (WIL).	2.52	10th	Fairly Important
	MIS	*3.72*		*Important*

4.6 Strategies for Improving the Skills and Competencies of Built Environment Graduates in Construction Firms in Abuja

This section shows the result of the analysis undertaken on the strategies for improving the skills and competencies for built environment graduates in construction firms. Table 4.6 shows that of the twelve (12) strategies for improving the skills and competencies of built environment graduates in construction firms, Curriculum must be relevant with industrial needs (MIS = 4.90); Graduates change their attitudes and personalities to be competitive (MIS = 4.66); and Government must be committed in assisting employability skills training (MIS = 4.52) are the most effective strategies. On the average, all the identified strategies for improving the skills and competencies of a graduate for effective

career take-off in built environment professions in construction firms are effective (average MIS = 3.76).

In line with this finding, Ugwuja (2010) argues that the curriculum must be relevant to industrial needs and apprenticeship training as effective strategies for improving the skills and competencies of a graduate for effective career take-off. Also, in support of the finding of this study and in the Nigerian context, Odesola and Idoro (2014) identified graduates' changing attitudes and personalities to be competitive, and the government must be committed to assisting employability skills training programs and minimizing unemployment as the most effective strategies for improving the skills and competencies for built environment graduates in construction firms.

Table 4.9 Strategies for Improving the Skills and Competencies of Built Environment Graduates in Construction Firms in Abuja

S/No	Strategies	MIS	Rank	Decision
1	Curriculum must be relevant with industrial needs	4.90	1st	Very effective
2	Graduates change their attitudes and personalities to be competitive	4.66	2nd	Very effective
3	Government must be committed in assisting employability skills training programs and minimize unemployment	4.52	3rd	Very effective
4	Employer involvement in training programs and education	4.17	4th	Effective
5	Focus more on skills development	4.13	5th	Effective
6	Industry must recognize training programs	4.02	6th	Effective
7	Initiate appropriate training programs based on demands and needs	3.64	7th	Effective
8	Apprenticeship Training	3.56	8th	Effective
9	The use of Constructivist Model	3.02	9th	Fairly Effective
10	Retaining the Aging Workforce	3.01	10th	Fairly Effective
11	Training and Retraining the Skilled Workforce	2.83	11th	Fairly Effective
12	Introduction of Robots	2.76	12th	Fairly Effective
	Average MIS	*3.78*		*Effective*

4.7   Summary of Findings

Based on the findings from the results of data analyses undertaken in this study, the following are the major findings:

i.   The study identified ten (10) drivers of the development of skills and competencies for built environment graduates in construction firms of which individual resources (MIS = 4.85); labour market opportunities (MIS = 4.76); and labour market structure (MIS = 4.56) are the most significant drivers. The least significant drivers are of the development of skills and competencies are Dispositions (MIS = 2.95) and Demographics (MIS = 2.94). On the average, all the drivers for development of skills and competencies for built environment graduates in construction firms are significant (average MIS = 3.91).

ii.   The study identified eight (8) barriers to the development of skills and competencies for built environment graduates in construction firms out of which financial difficulty (MIS = 4.85) and Rapid technology advancement (MIS = 4.61) are the most significant. The least significant barriers to the development of skills and competencies for built environment graduates are Poor educational system (MIS = 2.80) and Staff being new on the role. On the average, all the barriers to the development of skills and competencies for built environment graduates in construction firms in Abuja are significant (average MIS = 3.69).

iii.   The most significant level of skills and competencies offered by built environment graduates in construction firms are Verbal and written communication (basic skills) (MIS = 4.80) and Entrepreneurship and managerial competencies (MIS = 4.71). The least significant level of skills and competencies is significant level of skills and competencies (MIS = 2.47). On the average, all the level of skills and

competencies of built environment graduates in construction firms are moderately significant (average MIS = 3.31).

iv. The most important roles of professional associations in the development of skills and competencies of built environment graduates in construction firms are using course accreditation processes to ensure that University programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach (MIS = 4.76); and explicitly identifying employability skills in all university and polytechnic curriculum (MIS = 4.61). The least important roles of professional associations in the development of skills and competencies of built environment graduates are to encourage more effective integration of employability skills in student e-portfolios (MIS = 2.53) and improve and increase access to WIL (2.52). On the average, all the roles of professional associations in the development of skills and competencies of built environment graduates are important (MIS = 3.72).

v. The most effective strategies for improving the skills and competencies of built environment graduates in construction firms are Curriculum must be relevant with industrial needs (MIS = 4.90); Graduates need to change their attitudes and personalities to be competitive (MIS = 4.66); and Government must be committed to assisting with employability skills training programs and minimize unemployment (MIS = 4.52). The least effective strategies for improving the skills and competencies of built environment graduates are Training and Retraining the Skilled Workforce (MIS = 2.83) and Introduction of Robots (MIS = 2.76). On the average all the strategies for improving the skills and competencies of built environment graduates in construction firms are effective (average MIS = 3.78).

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study assessed the skills and competencies offered by built environment graduates in construction firms in Abuja, with a view to bridging the gap between academic knowledge and professional practice. Data were collected from professional in charge of Graduates in 146 construction companies listed in the Abuja business directory using structured questionnaire with a response rate of 91.8%. The analysis of data was carried out with the use of percentage and Mean Item Score. The results of the analysis carried out led to the conclusions reached in this Chapter.

The most significant drivers for the development of skills and competencies of built environment graduates in construction firms are individual resources; labour market opportunities; and labour market structure. On the average, all the drivers for development of skills and competencies for built environment graduates in construction firms are significant. The most significant barriers to the development of skills and competencies for built environment graduates in construction firms are financial difficulty and Rapid technology advancement. On the average, all the barriers to the development of skills and competencies for built environment graduates in construction firms are significant. The most significant level of skills and competencies offered by built environment graduates in construction firms are Verbal and written communication (basic skills) and Entrepreneurship and managerial competencies. On the average, all the level of skills and competencies of built environment graduates in construction firms are moderately significant.

The study also found that the most important roles of professional associations in the development of skills and competencies of built environment graduates in construction firms are the use of course accreditation processes; to ensure that University programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach. In addition, the explicit identification of employability skills in all university and polytechnic curriculum. On the average, all the roles of professional associations in the development of skills and competencies of built environment graduates are important. Finally, it was revealed that the most effective strategies for improving the skills and competencies of built environment graduates in construction firms are that the Curriculum must be relevant with industrial needs; Graduates need to change their attitudes and personalities to be competitive; and Government must be committed to assisting with employability skills training programs and minimize unemployment. On the average all the strategies for improving the skills and competencies of built environment graduates in construction firms are effective. It can therefore be concluded that the skills and competencies of built environment graduates in construction firms can significantly bridge the gap between academic knowledge and professional practice and enhance their level of employability provided certain strategies are effectively implemented.

5.2   Recommendations

As a result of the conclusions made in this study, the following were recommended:

i.   Built environment graduates should pay more attention to individual resources; labour market opportunities; and labour market structure in order to build up a better driving force for enhancing their level of employability.

ii. Built environment graduates should strengthening their skills and competencies in the areas of verbal and written communication; entrepreneurial skills; and technology know-how in order to overcome the barrier rapid technology advancement so as to enhance their level of employability.

iii. Professional associations should be more pro-active in the areas of using course accreditation processes to ensure that University programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach; and explicitly identifying employability skills in all university and polytechnic curriculum, to improve skills and competencies of built environment graduates.

iv. The academic institutions offering built environment courses should structure a course structure that will ensure that curriculum must be relevant with industrial needs; graduates need to change their attitudes and personalities to be competitive; and government must be committed to assisting with employability skills training programs and minimize unemployment.

v. Built environment graduates should focus more attention on the implementation of the strategies for improving their skills and competencies especially with regards to the change of attitude and personalities towards competitiveness, so as to enhance their level of employability.

5.3 Contribution to Knowledge

The study has made following significant contributions to the body of knowledge:

i. The study discovered that the drivers for development of skills and competencies for built environment graduates in construction firms are significant and the most

important drivers are individual resources; labour market opportunities; and labour market structure are the most significant drivers (MIS = 4.56 – 4.85).

ii. The study also throws to light the fact that financial difficulty (MIS = 4.85) and Rapid technology advancement (MIS = 4.61) are the most significant barriers to the development of skills and competencies for built environment graduates in construction firms.

iii. It was also shown that Verbal and written communication (basic skills) (MIS = 4.80) and Entrepreneurship and managerial competencies (MIS = 4.71) are the most significant level of skills and competencies by built environment graduates in construction firms.

iv. The study also brought to the understanding of professional associations that their most important roles in the development of skills and competencies of built environment graduates in construction firms are through course accreditation processes. This is to ensure that University programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach (MIS = 4.76); and explicitly identifying employability skills in all university and polytechnic curriculum (MIS = 4.61).

v. The study also revealed to the academic institutions and the Government that the most effective strategies for improving the skills and competencies of built environment graduates in construction firms are that Curriculum must be relevant with industrial needs (MIS = 4.90); Graduates need to change their attitudes and personalities to be competitive (MIS = 4.66); and Government must be committed to assisting with employability skills, training programs and minimize unemployment (MIS = 4.52).

vi.   The study revealed that the construction industry can achieve high productivity and efficiency from graduates whose skills and competencies are fully developed.

5.4   Areas for Further Studies

In the light of the limitations of this study, the following areas are suggested for further research:

i.   Evaluation of employer's perspective of skills and competencies expected of built environment graduates in construction firms in Abuja.

ii.   Comparative analysis between employers' perspective and skills and competencies expected of built environment graduate.

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APPENDIX

RESEARCH QUESTIONNAIRE COVER LETTER

Department of Quantity Surveying,
School of Environmental

Technology,

Federal University of Technology,
P.M.B. 65, Minna, Niger State.
Date:

…………………………………

Dear Participant,

RESEACH QUESTIONNAIRE: Assessment of Skills and Competencies Offered by Built Environment Graduates.

My name is **UMAR, Aniefon Suleiman** a Master's Degree student of Quantity Surveying**,** Department of Quantity Surveying, School of Environmental Technology, Federal University of Technology Minna, Niger State. I am conducting research on *''Assessment of Skills and Competencies Offered by Built Environment Graduates in Construction firms in Abuja''.*

Your participation in filling the attached questionnaire will be crucial to the successful conclusion of this research. Please note that all information provided will be used for academic purposes only, and no personal identity information is required. Therefore, you do not need to include your name or telephone number in your response.

If you have questions or observations at any time about the survey or procedures, please make use of the contact information below:

Thank you very much for your support.

Name:	UMAR, Aniefon Suleiman	Dr. A. A. Shittu.
Position:	Researcher	Supervisor
Contact information:	+234- 080-3588- 0079	

ASSESSMENT OF SKILLS AND COMPETENCIES OFFERED BY BUILT ENVIRONMENT GRADUATES IN CONSTRUCTION FIRMS IN ABUJA

Section A: Demographic information on respondents

Please provide information about the respondent as requested by selecting one of the options provided. Thank you.

A	Age of respondent	1	Less than 25 yrs	
		2	25 yrs – 35 yrs	
		3	36 yrs – 45 yrs	
		4	More than 45 yrs	

B	Gender of respondent	1	Female	
		2	Male	

C	Profession of respondent	1	Architect	
		2	Engineer	
		3	Quantity surveyors	
		4	Estate valuer	
		5	Land surveyors	

D	Education attainments	1	OND/NCE	
		2	HND/BSc	
		3	MSc	
		4	PhD	

E	Work experience of respondent	1	Less than 5 yrs	
		2	5 yrs – 15 yrs	
		3	16 yrs – 25 yrs	
		4	More than 25 yrs	

1.   Kindly identified the type of skill a graduate (new entrant) of the built environment professional should possessed?

   i.   Academic or Cognitive Skills (a) Yes (b) No (c) Not necessary
   ii.   Generic or Specific Skills (a) Yes (b) No (c) Not necessary
   iii. Technical Skills (a) Yes (b) No (c) Not necessary
   iv.   Soft-Skills (a) Yes (b) No (c) Not necessary
   v.   Employability Skills(a) Yes (b) No (c) Not necessary

SECTION B: Drivers to the Development of Skills and Competencies offered by Built Environment graduates in construction firms in Abuja

2. Kindly use this five-point scale to rate the drivers to the development of skills and competencies offered by built environment graduates: KEY: SE= Severe (5), SI= Significant (4), M = Moderate (3), MI= Minor (2) and IS = Insignificant (1)

Drivers to the development of skills and competencies	5 SE	4 SI	3 M	2 M	1 IS
1. Situational factors					
2. Labour market structure					
3. Labour market opportunities					
4. Organisational factors					
5. Individual resources					
6. Knowledge and skills					
7. Social capital					
8. Attitudes					
9. Demographics					
10. Dispositions					

SECTION C: Barriers to the Development of Skills and Competencies offered by Built Environment Graduates in construction firms in Abuja

3. Kindly use this five-point scale to rate the barriers to the development of skills and competencies of built environment graduates: KEY: SE= Severe (5), SI= Significant (4), M = Moderate (3), MI= Minor (2) and IS = Insignificant (1)

Barriers to the development of skills and competencies	5 SE	4 SI	3 M	2 M	1 IS
1. Demand for multi-skills approach					
2. Demand for new skills					
3. Lack of Educational Training					
4. Rapid technology advancement					
5. Inappropriate skills and inadequate training					
6. Staff being new on the role					
7. Poor educational system					
8. Financial difficulty					

SECTION D: Current Level of Skills Offered by the Graduates of Built Environment Professions in the Nigerian construction industry

4. Kindly use this five-point scale to rate the current level of skills offered by graduates of built environment profession: KEY: SE= Severe (5), SI= Significant (4), M = Moderate (3), MI= Minor (2) and IS = Insignificant (1)

	Current level of skills offered by graduates of built environment profession	5 SE	4 SI	3 M	2 M	1 IS
1.	Job readiness skill (related to job preparation process)					
2.	Teamwork and collaboration					
3.	Problem solving					
4.	Time management					
5.	Critical thinking skills					
6.	Decision-making					
7.	Verbal and written communication (basic skills)					
8.	Analytical and investigative abilities					
9.	Entrepreneurship and managerial competencies					
10.	Teamwork abilities					
11.	Computer know-hows					
12.	Time management capabilities					
13.	Drive and flexibility					
14.	Relevant employability skills					
15.	Classifications of degree					

16. Others --

SECTION E: Most Important roles of Professional Association in the Development of Skills and Competencies for Built Environment graduates in construction firms in Abuja

5. Kindly use this five-point scale to identify the most important roles of professional associations in the development of skills and competencies for built environment graduates: 5 (VI) = Very Important ; 4 (I) = Important; 3 (FI) = Fairly Important; 2 (LI) = Less Important; 1 (LIS) =Least Important .

	Most important roles of professional associations in the development of skills	5 VI	4 I	3 FI	2 LI	1 LIS
1.	Explicitly identify employability skills in all university and polytechnic curriculum.					
2.	Improve and increase access to Work Integrated Learning (WIL).					
3.	To enhance teaching and assessment of employability skills.					
4.	To offer students self-assessment options for employability skills					
5.	To ensure that construction education continually satisfies the requirements of construction managers.					
6.	To explicitly report on employability skills demonstrated through Work Integrated Learning.					
7.	To encourage more effective integration of employability skills in student e-portfolios.					
8.	Making recommendations to the government and employers on issues that matter most for their professionals and profession.					
9.	Using course accreditation processes to ensure that university programme design focuses on the development of professionals rather than using a strictly curriculum-driven approach.					
10.	Developing professional skills both within and outside university studies.					

SECTION F: Strategies for Improving the Skills and Competencies offered by Built Environment graduates

6. Kindly use this five-point scale to rank the strategies for improving the skills and competencies offered by built environment graduates: 5 (VE) = Very Effective; 4 (E) = Effective ; 3 (FE) = Fairly Effective; 2 (LE) = Less Effective; 1 (LSE) = Least Effective

Strategies for improving the skills and competencies	5 VE	4 E	3 FE	2 LE	1 LSE
1. Apprenticeship Training					
2. The use of Constructivist Model					
3. Retaining the Aging Workforce					
4. Training and Retraining the Skilled Workforce					
5. Introduction of Robots					
6. Graduates change their attitudes and personalities to be competitive					
7. Initiate appropriate training programs based on demands and needs					
8. Focus more on skills development					
9. Employer involvement in training programs and education					
10. Industry must recognize training programs					
11. Curriculum must be relevant with industrial Needs					
12. Government must be committed in assisting employability skills training programs and minimize unemployment					