

# System Assimilation of E-Skills in Tertiary Institutions to Empower Graduates in South Africa

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## Abstract

The value of system assimilation is to improve working relationships between tutors and learners while increasing workflow efficiency among tertiary institutions with low operational costs. E-skills could be described as electronic education development, to assist ICT professionals to reach their future career goals and aim to help users boost their ICT skills. In a society that is expanding, it is also a crucial issue to take into account. Researchers have turned their attention to this topic because of its significance and contribution to the empowerment of graduates in digital education. Many scholars have proposed many methods for integrating e-skills into society with impressive results, but the rising rate of graduate unemployment in South Africa is gradually becoming a big worry in our society. A model based on Activity Theory (AT) and e-skills will be developed in our tertiary institution to equip graduates with skills that will increase their employability and provide more individualized work opportunities as part of this study's effort to solve this issue. With the use of the Statistical Package for the Social Sciences (SPSS) and Cronbach's Alpha for validity and reliability testing, the study will create an experimental performance to assess the approach taken to measure e-skills in tertiary institutions to empower graduates in South Africa. The study established that system development and e-skilled models for tertiary institutions are growing gradually, especially in South African institutions, that empower graduates with profitable employability with experiences to improve work operation in the industries. In conclusion, system development and e-skills are very demanding but important to empower graduate employability to determine competency in the professional workforce.

## Keywords

System Integration, E-Skills, Empower Graduate, Tertiary Institution, Activity

## 1. Introduction

This study begins with the concepts of structure assimilation development of e-skills, basic system usage, and technological advances, and their impact on students in developing skills for improvement in professional organizations. This paper explores an experimental research study and provides the detailed context in which it was developed. However, it is of great importance that e-skills increase the employability of graduates and improve the economic situation of the country [1]. System development usually, integrates the use of information systems components to support, hardware, software, telecommunication networks, system development, information technological advancement, and an integrated set of components for collecting, storing, and processing data [2]. E-skills are the knowledgeable concept that is needed for effective consumption and is determined to increase the capability to grow any country's economy, essential to improving the digital learning environment and providing entrepreneurs better opportunities in technology understanding in creating jobs to grow their business [2] [3]. Systems integration promotes the brightest future of education, supports the learning frameworks offered, determines knowledge skills, enhances student attitudes, and values to their needs, and successfully shapes their future in the shape of the global market [4], which will inspire the world to support and build on. However, this system will serve as a strategic operational system and enable them to achieve sustainable growth. Information and communication technology (ICT) promotes the sustainable development of organizations, boosts national economic growth, creates employability, contributes significantly to the availability of a skilled workforce, and enhances multifactor productivity [5] [6]. However, the idea is to rebuild teaching capacity, which enables tracing teaching evaluation and increases the potential skills incongruities between the output from tertiary Institutions and the need for employers able to reduce operational costs and the costs companies should cut [4]. The face of economic sectors has changed in recent years, with banking sectors, finance, healthcare, airlines, agriculture, SMEs, hospitality, fast-moving consumer goods, and retail driving investments in ICT, while emerging markets. They have already felt the need and have started to introduce ICT into their ecosystems [4]. E-skills motivate organizations widely to recognize the need to implement systems integration development able to empower graduates. There is a need for fundamental ICT skills, which are commonly referred to as e-skills, among employees [5]. These e-skills are identified as necessary to fully understand, explore, and use ICT-enabled business applications and internal processes [6].

Many multinational corporations are operating in diverse physically remote regions of the world [7]. These businesses require personnel with e-skills and a

fundamental understanding of how businesses operate as they try to use ICT-based integrated systems to bridge the gap between their respective marketplaces [8]. According to research by [9], system integration development and e-skilled talent are essential for organizational performance in today's knowledge-based economy. These writers also contend that companies with technological resources may outperform their rivals and save a ton of money on staff training. According to [7], companies believe that they can thrive better in the digital economy by combining brilliant e-skilled individuals, highly trained technology specialists, and technology-savvy executives. Although systems integration can aid firms in gaining strategic and competitive advantages as well as improve job seekers' employability, e-skills alone are not the basis of organizational development [9]. A study by [10] suggests that universities should encourage graduates to pursue careers in IT systems support, software development, and systems analysis so that they can acquire basic e-skills for new technologies.

## 2. Background of Research Problem

This study critically investigates the cause of the youth unemployment rate in South Africa. The level of unemployment in South Africa has been identified and become a major issue in our society. However, this study examined some factors that can contribute to the incompetence and lack of e-skills among graduates in South Africa. These factors are determined by poor infrastructure, inadequate funding, government mismanagement, management unrealistic, corruption, inadequate technology, lack of information technology technical tools, ineffective professionalism development, external factors, low self-efficacy, unskilled employees, and internal factors. However, good governance, software development, stakeholder engagement, and information technology project management can enhance system integration development and e-skills, making it possible to empower the graduates for future careers, by increasing workflow efficiency among tertiary institutions with low operational costs and promoting employment [11]. The study established a framework that has been developed to evaluate system integration development and e-skills that are needed to support the employability of graduates and reduce the rate of unemployment in South Africa [12]. This study revealed South Africa is also part of the countries struggling to reduce the unemployment of graduates, and yet trying to create job opportunities relevant to improving system integration development and e-skills at the tertiary level should be established to improve the employability of university graduates in the South African context.

## 3. Literature Review

This paper summarizes the many developments in this field of study and concludes what still needs to be done in our society to address graduate unemployment. Although significant, this does not ensure employment. Numerous economic reasons contribute to this issue, and many studies have suggested system

integration of e-skills to address it and increase graduates' employability [13]. According to research done in [12] by [13], the adoption of e-skills in society boosts Uganda's economy and the development of these abilities is a crucial part of the country's advancement. To improve on the lessons learned in South Korea, a strategic approach to system integration for e-skills implementation in Uganda leverages ICT technological progress. The Advanced ICT Society, which began in the 1980s, increased system integration in Korea [6]. The major objectives were to progress ICT and make infrastructure and government services for Korean residents better. Their use of technology is centered on a venture known as the National Basic Information System (NBIS). Two phases will be used to accomplish the project. The initial phase was completed between 1987 and 1991. They aimed to create a huge database of government positions involving citizens, money, and real estate. To simplify the sharing of administrative information, the second phase, which lasted from 1992 to 1996, concentrated on the targeted networking of para-national entities [13]-[15]. The fast expansion of the Korean economy, and particularly the degree of communication among public workers, has been further accelerated by these two processes, which have brought about several developments and improvements [14]. Although this was a significant social advancement, research done in 2000 revealed that persons with disabilities, farmers, fishermen, and housewives utilized computers and the Internet less than other socioeconomic categories like public workers [14]. The poll also showed that since poor individuals are unwilling to learn and advance their ICT, the gap between the two categories is expanding [15]. The government responded by implementing measures that benefited them. They sought to improve accessibility at the building. However, the government has created a fully functional broadband infrastructure for them in several establishments, including schools, military, and post offices that served as centers for teaching people [16]. The major goal of this group's instruction was to increase their capacity for finding and using the knowledge that was pertinent to their everyday lives. They will become more productive as a result and develop personally. As poverty declines, it also enhances the nation's overall economic growth. A study, of [17] looked at how ICT expertise affected employment growth and employability in Latin American nations. The study examined how e-skills affected the labor market in two Latin American cities, Buenos Aires and Bogota. The implementation of information and communication technology is widely recognized as a creative strategy to boost economic development, nevertheless. To reduce poverty in society, the report recommends new trends in technological progress that offer e-skills and competencies to generate work possibilities, e-business, and e-health care. The study suggested that ICT e-skills might improve market operations inside a business and aid in establishing job possibilities to successfully contribute to the aims of the organization [18]. This finding motivates people to further their careers by obtaining ICT e-skills that would significantly increase their ability to get employment. The study highlights the significance of information

technology development in assessing ICT use capabilities in Latin America to fight poverty and increase employability in the field. A study conducted by [19] demonstrated the importance of employability and skills in the workplace and suggested the difficulties that companies in all industries confront. They concluded that ICT has had a significant impact on economic growth recently, which has helped the development of e-skills and the educational system. They did, however, recognize the value of e-skills and establish graduate unemployment as a result of their inability to run ICT-operated tools, machines, and apps that have lately been produced as a result of technological breakthroughs. Similar to this, research by [20] investigates the significance of ICT graduates in Ghana. Concerns concerning unemployment among college graduates, particularly ICT graduates in Ghana, were highlighted by this study. They cited the lack of quality e-skilled graduates with specializations in software development, system integration programming language, robotics, and support systems as the reason why employers were not recruiting graduates. Their findings provided insight into the e-skills and training that graduate students are encouraged to pursue to lower Ghana's unemployment rate. The concept makes it possible for ICT graduates to become more competent and gain knowledge to enhance organizational strategy plans with e-skills that are advantageous to the business and aim to employ new graduates with ICT e-skills [21].

#### **4. Theoretical Framework Development**

The study developed theories on the impact of e-skills in tertiary institutions to empower graduates in South Africa, the theoretical aspect developed activity theory to empower graduates with e-skills that improve their employability and create more jobs. The development of activity theory is developed through a model in information system environments that influences techniques and behaviours to achieve specific goals [22]. This action includes skills, knowledge, tools, machines, and computers. The basic ground of activity theory, however, describes the connection to the performance as process actions taking place in our work environment. However, the connection between the subject and the work environment is made possible by digitalization [21] [22]. This offers a platform for human change throughout the development of the activity since the storyline and instruments are incorporated into the social structure [23]. This implies that the technologies and tools that shape interactions between people, things, and communities are what drive cultural and historical change. According to [22] and [24], activity theory has a set of guidelines that regulate how it affects the workplace. The first rule is a collection of circumstances that guide how and why someone might behave as a result of social training. The division of labour is the second rule. It stands for actions and deception in a workplace setting. As a result, activity theory often relates to our environment and the activities and processes that take place in it [25]. The process of human activity and effort to attain a goal is described by activity theory. A work activity system,

according to [26], is made up of the following elements: tools, teachers, objects, rules, communities, division of labor, and outcomes. Additionally, knowledge and skills for enhancing organizational performance are included in activity theory [27]. This is an easy way to support national economic development [28]. A study based on the applicability of activity theory in the application of learning to support by technologies from diverse communities of practice was developed [21] and [23]. Since activity theory had already been developed, it appeared appropriate to be taken into account as a prospective analytical framework [24]. However, the research cooperation incorporates two distinct communities—programmers (software developers) and learning communities—as well as web-based learning (students, colleagues, and tutors). Similarly, to how 23 utilized ethnographies to support and strengthen results [28] in scientific development, they too employed activity theory as an analytical tool in research development.

## 5. Philosophy of Activity Theory

An e-skills model created to increase the employability of graduates in South Africa was evaluated using activity theory. Activity theory excels at explaining how individuals engage with one another to achieve particular results and sets of goals. The study's findings were based on the major activity hypothesis of e-skills for graduates' and interns' employability. Research suggests a system between computer programs and software programs was created in research by [29] to improve teaching and learning in the subject matter expert. Mistakenly believing that interface designers who interfere with system development are content specialists (skill trainers) [30]. However, the group came up with a fundamental idea for education that required developing learning apps that used technology. These disputes prompted the creation of e-skill training programs that enable instructors to experience educational software [31]. Tutors should be encouraged to understand cognitive learning theory, motivation, better design across communication, usability, multimedia learning concepts, and technology-based learning applications, according to [30] and [32]. The study's findings indicate that a wide variety of e-skills are needed for technology-enabled teachers of learning apps to transmit the information that would equip graduates with skills. The abilities would enhance work in novel ways. In research by [33], knowledge to act was enhanced by employing a learning tool in a high school to improve teaching and learning techniques with the creation of a system to act remotely. Activity theory is a paradigm in the context of information systems that affects technology and behavior to achieve certain goals, according to research [34]. This action involves knowledge, abilities, apparatus, tools, and computers. Activity theory, however, views technological performance as process actions occurring in our workplace [33]. Because actions and instruments are integrated into social systems, this builds a foundation for human change while the activity is being developed [35]. This means that the tools and technology that impact interactions between people, things, and communities enable processes dictate

how culture and history evolve. Likewise, activity theory is recognized as a set of guidelines guiding labour impacts in research by [36] and [37]. The first rule is a collection of circumstances that guide how and why someone might behave as a result of social training. The division of labour, on the other hand, is the second rule that controls behaviour and business practices inside a company. As a result, activity theory often relates to our surroundings and the ways that social interactions use technology to improve communication, analyze human activity in natural settings, and consider the role of tools in everyday activity [38]. The process of human activity and effort to attain a goal is described by activity theory [39]. Meanwhile, activity theory makes it possible to record how individuals (or groups) investigate, evaluate, apply, and change novel workplace solutions [40]. This is a prerequisite for simplifying these individuals' operations. Help workplace designers and decision-makers foresee future important use patterns by providing them with tools and resources [36] [39].

Activity theory merges these several hierarchies into one activity state: Activity, Action, Operation, Motivation, Goal, and State [40]. It may be described as the processes taking place at the level of states leading to various actions). Theoretically, activity is the act of a subject (*i.e.*, an individual or a group) moving in the direction of an object to produce some outcome (Figure 1). The activity theory's summary form is displayed below.

The model identifies the three collective connections that are engaged in each action, as shown in the schematic in Figure 2 below. The following elements are included in work activity systems, [1]: tools, teachers, objects, rules, communities, division of labor, and outcomes. Additionally, knowledge and abilities to enhance organizational performance are included in activity theory. This is a simple way to improve employment opportunities and contribute to national economic progress [41]. Activity theory's guiding premise and core value were to use people's capacity for success to determine objectives through knowledge, norms, communities, and outcomes [42]. Furthermore, Activity theory Organizations with expertise in many work performance areas, such as hiring, e-skills, education, management, culture, and employment, have been driven by activity theory [42]. Some scholars accept this theory as an information system that

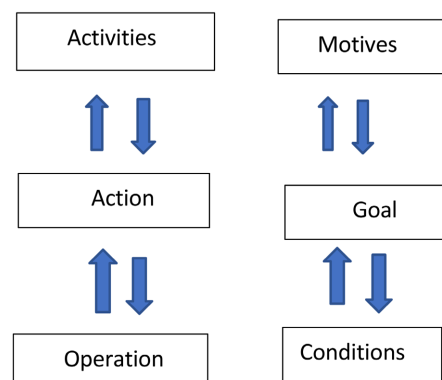
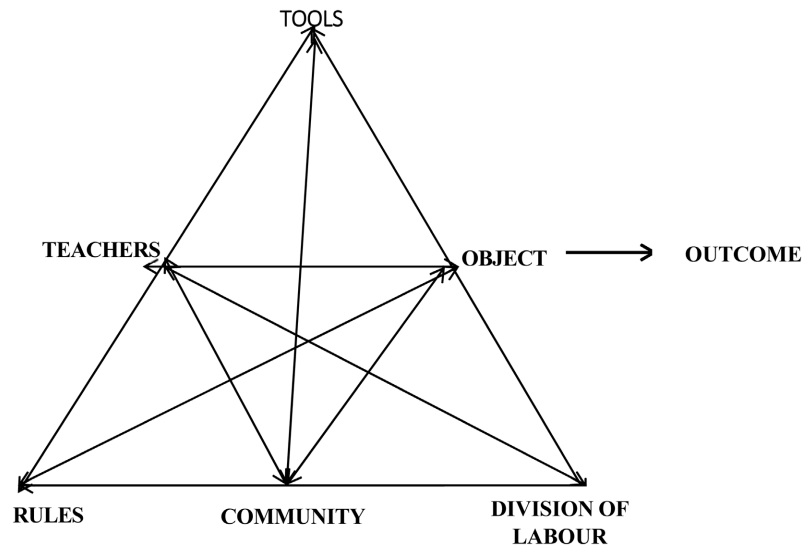


Figure 1. The principle of activity's hierarchical stages [37].



**Figure 2.** The activity theory summary form displayed.

governs our understanding of how people use advanced tools to do things together in complex and dynamic environments [40] [41] [43]. The components of the activity system are described below.

- Objective-oriented: Organizational characteristics have a greater impact on physical characteristics than on people. It is not only assets that constitute this reality, but also those seen as our social and cultural environment.
- Development: innovation to develop new basic research methodologies in activity theory experiments. This experiment combines active participation and monitoring of research progress.
- Evolution: Activity Theory serves as a model for the evolving performance of business applications. However, it emphasizes human activities through tools in the broadest sense, that accumulate and transmit knowledge.
- Objective-oriented: Organizational characteristics have a greater impact on physical characteristics than on people. It is not only assets that constitute this reality, but also those seen as our social and cultural environment.
- Development: innovation to develop new basic research methodologies in activity theory experiments. This experiment combines active participation and monitoring of research progress.
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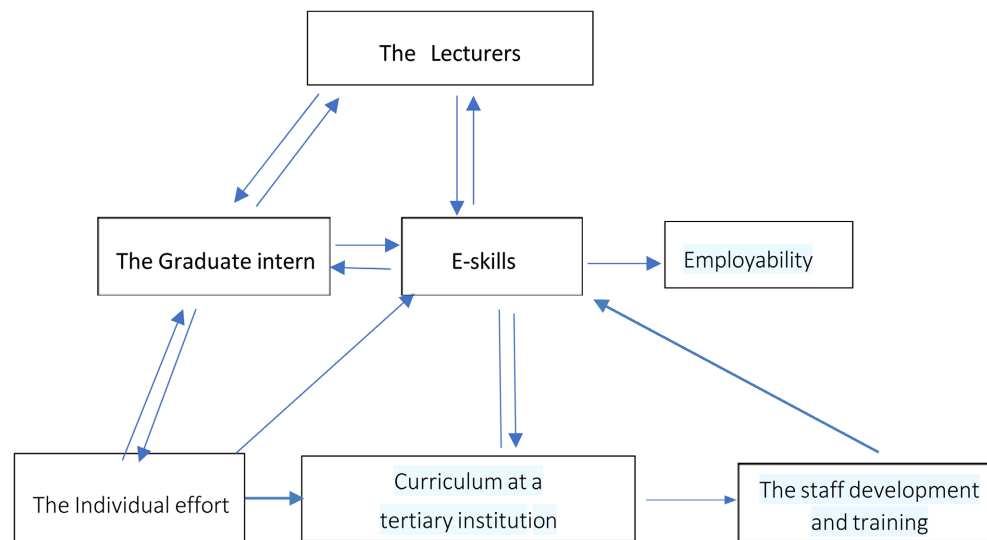
## 6. Importance of Activity Theory

The importance of activity theory involves learning about social and cultural patterns, which signifies performing transformative tasks that pave the way for development [43]. Activity theory provides a rigorous framework of illustrative examples to enhance teaching and learning contexts and outcomes [43]. However, learning contexts are associated with sociocultural power [44]. It is a cul-

tural property that supports thinking and communication between people and individuals [45]. The choice of activity theory is well-suited for this study. It helps you focus on different issues, skills, and economic growth [42]. In addition, activity theory strategies were used to improve human capital and study ICT skills in growing African economies [44]. The ICT skills in South Africa were enhanced by activity theory, which encouraged organizational performance standards. The term “e-skills” refers to the advancement of ICT competencies and skills (e-skills) that enhance the performance of public companies, small and medium enterprises, and other organizations [45]. In general, the e-skills system has increased small company productivity, career progression, and employability. These have increased the number of prosperous small enterprises while lowering the unemployment rate in society [45].

## 7. A theoretical Framework for Research

**Figure 3** shows the conceptual framework for the study that was generated from the theoretical foundation. It provides a schematic illustration of how these constructions work.



**Figure 3.** Theoretical framework.

The lecturers help the students learn the course-required abilities. This activity will give graduate intern students the chance to hone their e-skills through a variety of extracurricular activities, including volunteer work, part-time jobs, business assistance programs, and internships with cutting-edge businesses. The industry accepts the curriculum’s rigor because it gives students the skills they need and makes them more employable in organizations [30]. Skills are characterized by experience, and the nation recognizes the credentials attained. Activity fuels economic expansion [44] [45]. According to research, South African graduates lack e-skills, and educational institutions are unable to give these pupils the proper instruction [42] [44]. Therefore, it is necessary to alter higher

education standards to bridge the e-skills gap in South Africa. ICT is a recognized platform that helps students successfully create and present e-skills [45]. According to the conceptual paradigm, this study alters educational standards to improve graduates' and interns' employability. Companies today place a high value on e-skills, so graduates and interns with these abilities have job opportunities. A set of volunteers were given a questionnaire to put this idea into practice, and results were collected quantitatively.

## 8. Research Design and Methodology

The study design evaluates the effectiveness of the e-skills model used to promote graduate employability. This is based on the issue statement to reduce graduate unemployment in South Africa by integrating e-skills development at tertiary institutions that would boost graduate employability. The research paradigm works to promote the idea that a fundamental living principle contains truth or logic through scientific discoveries. Researching facts is defined as keeping track of ongoing interactions between objects and developing scientific laws as the guidelines for reliable relationships between various occurrences [43]. Positive thinking makes people more motivated to pursue universal principles and truths. To reach a true statement, it gives the idea of facts in information systems [45]. The positivist paradigm is the best suited for this specific inquiry, going by the aforementioned logic. However, in this paper, the quantitative technique was mostly used. Quantitative methods are used to understand the vast amounts of data that were collected in numerical format and examined using the Statistical Package for Social Sciences. In addition, it is a methodical scientific investigation of a phenomenon's quantitative characteristics that generates evidence to support variables, examines relationships between variables, tracks data, finds cause-and-effect interactions between variables, and interprets population sample samples. The study's exploratory character led to the development of a descriptive research methodology using the best available systematic data regarding a social phenomenon. The research project seeks to reduce graduate unemployment in South Africa by systematizing e-skills at tertiary institutions, which will improve graduates' employability and capacities, under the issue description described above. However, this study looks at the approach used in the current study, and successful exploratory research techniques were used in it. In a research context, a cause to an effect at a certain time is also explored. The cause of such an incident is also hinted at, along with its implications [46].

To try to understand the situation, a survey questionnaire was used, and the selected people were pressured to reply. Research Unit The individual is the unit of analysis when a person is chosen for analysis, following [47] research. For instance, in a certain study, the following strategies acted as the analytical unit: People, businesses, associations, teams, collections, places (cities, provinces, nations, tribes, and states), and social interaction. Diverse areas of social research have chosen these hierarchies of units of analysis for the study's foundation be-

fore concluding the disciplines of information systems and social science. In this study, only interns are used. Blaikie's 2003 book *Sampling Frame and Sampling Procedure* defines a sampling frame as a procedure or a list that specifies the sample population. It is a comprehensive list of the group that was chosen. that the population is broad and the frame specific. Because they are aware that many students will return to school following the internship program, the e-firms are not prepared to train the new hires. Numerous enterprises lack the resources or equipment listed below: Since not all tertiary institutions perform research on graduate employability, some do not see information technology as a strategic advantage, others hold the belief that e-skills have not boosted graduate employability for their firms, and still others may just have this perspective. An adult sample, 18 years of age or older, who was employed as a trainee in a structured organization for the current study: To gather data and provide evidence that points to a conclusion. It is a coding procedure that transforms information into useful data [47]. According to the results of the study, tertiary institutions should implement a new e-skills model to increase the employability of graduates in South Africa. Literature study, however, supports the use of questionnaires in case studies alone as the most common methodology. A case study that focuses on recent graduates and interns was used in this investigation. The acquired findings and conclusions are examined to assess the applicability of the proposed e-skills paradigm. The experiment was carried out using the Statistical Package for Social Science (SPSS), which can handle enormous amounts of data. One-of-a-kind software called SPSS is used to enter data, analyze it, and make tables and graphs on Windows [46] [48]. However, Cronbach's Alpha, a method of coding that changes information, is employed to carry out these activities to confirm the validity of the constructs and the reliability of the questionnaire.

## 9. Summary of Result Finding

Results and conclusions 255 questionnaire responses from the experiment were utilized to analyze the results of the investigation. Age, gender, and qualification were the primary demographic statistics that were questioned. A substantial portion of the research process involves demography. The strategy that a search plans to take is influenced by the general attitude and psychology toward the profession, which differs with demographic variations: The respondents' ages were divided into 4 age categories as follows: Ages 18 to 20, 21 to 23, 24 to 26, and 27 to 29.

### 9.1. Age Distribution of the Study

According to the study's overall age distribution, the bulk of participants are between the ages of 24 and 26 (47.5%), followed by 21 to 23 (41.2%), and then 27 to 29 (amounting to 0.8%). Additionally, only a very tiny percentage of participants (10.6%) are between the ages of 18 and 20.

## 9.2. Qualification Distribution

The study's gender distribution as well as the findings and the participants' domain/area of expertise. According to the survey, 32.5% of participants were enrolled in engineering courses, compared to 21.6% who were enrolled in ICT courses, over 7.5% who were pursuing degrees in science, and a very small number who were enrolled in economics, management, and the arts.

## 9.3. The Lecturers

The questions were designed to help identify the main factors that contribute to the skills gap between what is taught in universities and what is required for industrial occupations. The most likely explanations were provided, and the interns' comments were recorded, with strongly agreeing to signal the issue as the most pressing and strongly disagreeing to indicate that the issue was not causing the gap to form.

## 9.4. The Lecturer Issued a Construct

The data shown below were extrapolated using the graphic depiction of the aforementioned statistic. 5.3% of interns strongly disagree with, 10.9% disagree with, 15.0% are indifferent, 27.1% agree with, and 41.7% strongly agree with the assertion that instruction is of poor quality. Regarding the second question, which was about unsuitable or inadequately qualified teachers, 14.9% of interns were indifferent, 15.3% agreed, 27.3% strongly agreed, 16.9% strongly disagreed, and 25.7% disagreed.

However, 19.2% of interns strongly disagreed, 28.8% disagreed, 12.0% were indifferent, 15.6% agreed, and 24.4% highly agreed. Interns were asked about the high employee turnover, and they responded as follows: 15.0% disagreed, 22.9% were indifferent, 23.3% agreed, and 31.6% were extremely agreeable. 7.1% strongly disagreed. The interns responded to the last instructor's question about layoffs as follows: 17.0% strongly disagree, 28.9% disagree, 18.6% are neutral, 17.0% agree, and 18.6% extremely agree.

## 9.5. The Construction of Staff Development and Training

The outcomes displayed below stated that 17.3% of interns strongly disagree with, 30.3% disagree with, 18.5% are neutral, 15.0% agree with, and 18.9% strongly agree with is that it should not be done to teach and develop personnel. Senior executives' lack of commitment to employees was another complaint voiced; 15.7% of interns strongly disagreed, 29.9% disagreed, 14.6% disagreed, 21.7% disagreed, and 29.9% disagreed. When it comes to the other issue, which concerns older employees' incapacity to pick up new information and abilities, 18.1% of interns strongly disagree, 29.9% disagree, 15.7% concur 16.5% of respondents agree, and 20.1% strongly agree, workforce is unable to keep up with change. 15.7% of interns are indifferent, 19.9% disagree, 29.5% disagree, 18.9% agree, and 18.9% strongly agree. The undermotivation of the personnel raises

further issues. 18.5% of interns highly agree, 9.4% strongly disagree, 26.0% disagree, 24.0% are indifferent, and 22.0% agree. A question on the expanding scope of the work was also posed to the interns, and 8.6% of them severely disagreed, 13.7% disagreed, 17.3% disagreed, 29.8% agreed, and 30.6% highly agreed. When asked about the lack of experience or recently hired employees, the final question for the part on staff training and development, 15.7% of the interns severely disagreed, 29.5% disagreed, 15.7% were neutral, 20.1% agreed, and 18.9% highly agreed.

### 9.6. Individual Effort Construct

The findings shown below are extrapolated from the visual depiction of the aforementioned statistic. Regarding the issue: I consider my level of e-skills competency sufficient for my career: The percentages of interns who strongly disagree range from 9.1% to 23.2%, while the percentages who agree a range from 31.5% to 15.7%. Below is a collection of additional questions and their corresponding extracted answers from the interns. My ICT abilities help me do my work responsibilities more quickly: A total of 30.6% agree, 25.9% strongly agree, 15.3% strongly disagree, 14.5% disagree, 13.7% disagree, and 15.3% disagree. elderly staff's inability to learn new information or skills: 15.7% of interns are indifferent, 18.9% disagree, 24.0% disagree, and 18.9% strongly disagree. 17.7% of people agree, and 23.6% strongly agree. My current institutional resources help me improve my computer abilities. The following percentages of interns strongly disagree: 10.2%, 17.3%, 18.1%, 32.3%, and 22.0%. Using online tests and other exam materials, I periodically assess my e-skills. According to interns, 33.2% strongly agree, 10.0% strongly disagree, 16.4% disagree, 16.4% are neutral, 24.0% agree, and 16.4% are neutral. I can navigate on my own to improve my computer skills: 16.4% of interns are indifferent, 12.4% strongly disagree, 20.8% disagree, 27.2% agree, and 23.2% definitely agree. I possess the ICT proficiency to improve my analytical abilities. 26.3% strongly agree, 14.7% are neutral, 22.7% disagree, 13.9% strongly disagree, and 22.3% disagree among interns. I consciously try to respond to the interview questions I see posted on many blogs and forums: 29.9% of interns highly agree, 10.6% strongly disagree, 13.8% disagree, 14.6% are neutral, 31.1% agree, and 14.6% are neutral. I have some anxiety about e-skills: 25.6% of the interns agree, 25.6% strongly agree, 10.2% strongly disagree, 24.8% disagree, and 13.8% are indifferent. I don't have the necessary course content understanding to land a job: 19.2% of the interns strongly disagree, followed by 19.4% who disagree, 29.4% who disagree, 11.8% who are indifferent, and 20.4% who agree. Spending time on outside coaching while still conducting ongoing research is challenging for me. 17.5% strongly disagree, 18.5% disagree, 15.4% are neutral, 34.3% agree, and 22.8% strongly agree among the interns. The latest ICT technologies are demanding to grasp because they are difficult to adopt: 34.1% of interns highly agree, 9.8% strongly disagree, 20.0% disagree, 17.3% are indifferent, 18.8% agree, and 18.8% agree strongly. My perspective on e-skills

will help me improve my knowledge and technical abilities: 35.0% of interns highly agree, 9.1% definitely disagree, 20.1% disagree, 15.0% are indifferent, and 20.9% agree. E-skills are essential in practically every industry: A total of 26.0% strongly agree, 10.2% strongly disagree, 19.7% disagree, 14.6% are neutral, 29.5% agree, and 29.5% agree. I must make time to learn new e-skills to keep my expertise current. 13.3% of interns are indifferent, 22.7% agree, 14.5% strongly disagree, 18.8% disagree, and 30.6% agree. I receive adequate support to build my e-skills outside of my coursework: 15.0% of interns strongly disagree, 24.0% strongly agree, 23.2% disagree, 15.0% are indifferent, and 22.8% agree. I won't be able to obtain employment in the market without improving my e-skills: 29.0% of interns highly agree, 28.0% strongly agree, 9.8% strongly disagree, 22.8% disagree, 20.9% are neutral, and 18.5% agree. E-skills are becoming increasingly important for people to grasp as innovation keeps growing: The percentage of interns who strongly disagree ranges from 12.9% to 23.9%, while the percentage who agree ranges from 22.5% to 18.0%. The available resources (from the institution and outside training partners) provide the individual with an exceptional e-skills edge: 29.5% of interns agree, 14.6% are indifferent, 18.9% disagree, 11.8% strongly disagree, and 18.9% disagree.

### 9.7. Tertiary Institutions

The findings shown below are extrapolated from the visual depiction of the statistics. Regarding the inquiry, the knowledge provided was sufficient for the essential competencies I may expect from my future career, according to 15.3% of interns who strongly disagree, 17.6% who disagree, 16.9% who are indifferent, 23.1% who agree, and 27.1% who greatly agree. The answers to some of the additional questions are listed below. The information from my training materials was of a very good grade for the e-skills I needed: A total of 26.4% of the interns agree, 14.6% are indifferent, 22.4% disagree, 13.8% strongly agree, and 22.8% disagree. I need to schedule a time to study new e-skills if I want to maintain my knowledge up to date. Among the interns, there are 19.3% highly agree, 13.0% strongly disagree, 15.7% disagree, 21.3% are neutral, and 30.7% agree. According to the above statistic's graphic portrayal, I find it simpler to improve my computer abilities using already-existing resources: Thirty-six percent (30.6%) of the interns agree, 16.5% disagree, 14.5% are indifferent, 13.7% strongly disagree, and 24.7% disagree. I require any more training to understand upcoming technologies: The interns differ on the following points: 12.6% disagree, 16.5% disagree, 27.2% agree, and 36.6% strongly disagree. 7.1% strongly disagree. My analytical and computer abilities are on par with industry standards: The following percentages of interns strongly disagree 12.5%, 13.3%, 19.2%, 22.7%, and 32.2%. In addition to my course work, my university provides specific coaching assistance: The interns differ on the following points: 9.8% disagree, 17.7% disagree, 38.6% agree, and 26.4% strongly disagree, 7.5% strongly disagree. I want the exams and the curriculum to be created with input from experts in the field: The following

percentages of interns: 31.0% strongly agree, 7.8% strongly disagree, 18.0% disagree, 16.9% are neutral, 26.3% agree, 26.3% strongly agree. I'd want to take part in a workshop to improve my industry-focused abilities, whether it's free or paid: 18.1% of interns are indifferent, 5.9% strongly disagree, 13.4% disagree, 26.4% agree, and 36.2% agree. I routinely follow developments in hot fields like cloud, big data, wireless security, etc. indifferently, and 26.4% strongly agree. The college offers excellent e-skills awareness programs: 10.4%, 18.5%, 17.7%, 29.3%, and 24.1% of interns strongly disagree with each other. Instructors mandate that students utilize e-skills to study the following: Of the interns who responded, 26.9% strongly agreed, 8.8% disapproved, 18.1% disagreed, 21.3% were neutral, and 24.9% agreed. The following equipment is available in my computer lab so that I may develop my e-skills: 15.3% of interns are in agreement, 24.8% are in agreement, 33.5% disagree, 8.7% strongly disagree, and 17.8% are neutral. Our technical personnel and teachers are well-versed in e-skills: 32.2% of the interns agree, 25.5% strongly agree, 10.5% strongly disagree, 16.7% disagree, and 15.1% are indifferent. The institution's e-skill support staff is capable and powerful: 39.0% agree, 22.9% strongly agree, 17.4% are neutral, 9.7% strongly disagree, 11.0% disagree, and 11.0% disagree. I use institutionally funded e-skill resources and find that 21.4% of interns strongly agree whereas 12.8% of interns disagree strongly, 13.6% disagree, 18.1% are neutral, and 18.1% are neutral. I pay for some of my e-skill resources: 19.0% of interns are indifferent, 9.8% strongly disagree, 14.3% disagree, 23.7% agree, and 34.3% agree. The public is always welcome to use the information center and computer lab: the proportions of interns are 10.4% highly disagree, 18.4% disagree, 14.0% are neutral, 33.6% agree, 18.4% agree, and 23.6% strongly disagree. The institutions occasionally cover the cost of our outside training: The interns are split into five groups: one-fifth strongly disagree, one-fifth disagree, one-fifth are neutral, one-fifth agree, and one-fifth highly agree.

## 10. Summary of Contribution

- The following has been a research contribution to this study: Our research has offered a solution to the problem of graduate unemployment, which is becoming more and more of a problem in our society. However, this study has created a new paradigm that has been incorporated into higher institutions to generate graduates with e-skills.
- The newly developed model has been evaluated, and the findings indicate that, if the system is implemented in society, it will not only reduce graduate unemployment by increasing their employability but also increase productivity and manufacturing while also assisting in the growth of the South African economy.

## 11. Conclusions

Any developing economy and society must consider unemployment. It can have

an impact on lives and economies, particularly those of recent tertiary graduates [39]. As a result, there is a pressing need to investigate this issue and suggest ways to reduce unemployment if it cannot be adequately addressed in society. In this study, graduates and interns received most of the attention, and it was found that, despite their education, most graduates are unemployed in the job market. This is because, in today's technologically advanced industries, most companies need skilled workers to complete the tasks; graduates lack these skills, making them unemployed [48] and a resolution is required.

This study develops a methodology for incorporating e-skills into postsecondary institutions, which should aid in producing graduates with e-skills who will be employable in the sectors. The results from experiments utilizing the Statistical Package for the Social Science (SPSS) and Cronbach's Alpha indicate the importance of e-skills for graduate employment.

## 12. Future Work

Future research should consider the implementation of employing apps as a support for teaching and learning in a digital technology environment that will establish system integration and computing to facilitate teaching at institutions around South Africa. However, it would boost technical e-skills for students across South Africa by allowing undergraduate and graduate students to get familiar with multimedia tools, computer networks, and software programming. Additionally, it will enable graduate students to use and put to use scientific instruments and machinery, ICT applications, web-based software applications, practical projects, solution-based learning processes, and autonomous work as they get ready to enter the workforce.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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