

Enhancing Graduate Employability Skills: A Case for E-learning Environment in Higher Education Delivery

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Abstract

There is a growing demand by employers for graduates to exhibit requisite attributes that are necessary for the effective functioning of their organizations. Therefore, higher education providers are utilizing information and communication technologies (ICTs), through E-learning environments, to help propel the agenda of graduates skill acquisition and development. Thus, the objective of this study is aimed at improving our understanding of the usage of ICTs in higher education delivery and its effect on graduate's employability. Data for the study was obtained through a survey of 319 respondents made up students who have recently graduated from tertiary education institution in Ghana. In testing our research model, a Partial Least Squares Structural Equation Modelling technique (PLS-SEM) analysis was done to examine the theoretical relationship between latent constructs, and measurement paths between latent constructs and its indicators. The results revealed that the most significant feature of E-learning environment, in higher education delivery with the tendency to positively impact students career development toward employability is, interactive and collaborative learning. By reviewing fresh graduates' perception in relation to the value that E-learning environments add to their employability in the job market, this is one of the few studies questioning whether these values and benefits are capable of curbing the rising levels of skill-labor mismatch in the context of developing economies. The findings of this study suggests

that graduates who experienced more interaction during their study have a relatively positive views on their employability skills.

Keywords: ICTs Usage, Higher Education, Graduate Employability, Partial Least Squares

1. INTRODUCTION

The world currently finds itself in a mist of outstanding information and communications revolution in human history. According to the International Telecommunication Union (2020), an estimated number of 4.1 billion people were using the Internet as at 2020, indicating a 5.3% increase compared with 2019. Through digital economies, information and communication technology (ICT) is playing a very critical role in increasing and enhancing economic productivity, delivery of public and private services, and the achievement of broad socio-economic objectives in education delivery. ICTs have become a commonplace entity in all aspects of life and has basically altered the practice and procedure of nearly all forms of endeavor within business and governance (Martínez-Cerdá, et al, (2020). Indeed, countries are advancing ICT policies to underpin growth in all sectors of their economies, including higher education delivery to add value and improve graduates' employment opportunities and employability skills, and also steer development and competition.

Whiles notable research studies, including (Menon et al., 2018; Fajaryati and Akhyar; 2020; Al-Awad et al, 2020) have identified strong linkages and interconnections between higher education and the labour market of any economy in the world, studies such as (Bridgstock, 2019; Schech et al, 2017; Askhamov et al., 2016) have established that the presence, application, and implementation of online or E-learning initiatives in higher education affords graduates the opportunity to compete effectively and efficiently in the global job market. This is due to the potential ICT holds in aiding the acquisition of skills and knowledge, and the provision of occupationally oriented learning environments. The presence of E-learning environments in higher education delivery enhances graduate's employability through the development student's

occupational orientation, skills and knowledge acquisition (Singh & Singh (2017).

As advanced by (Ludvigsen & Morch, 2010), Therefore, the deployment of E-learning environments in higher education learning provides students with new sets of skills, and an opportunity to reach students with poor or no access to learning and teaching facilities (UNESCO, 2015). A study conducted by Kuhn et al, (2018) proposed that the overall effect of digital economies on employment is progressively becoming irrefutable and highly heterogeneous, hence a better-educated workforce with ICT skills, is expected to create more jobs, and promote increased labour productivity. This is in accordance with studies by (Hassan et al., 2018; Menon et al., 2018; Dascalu et al., 2017; Kalelo-Phiri et al., 2017) who argued that E-learning environments in higher education delivery will provide a rich collaborative learning experience that enhances knowledge and performance of students, and ultimately, their employability.

1.1 Employability

De Vos et al., (2021) analyses employability as the possibility of an individual to gain employment in the internal and/or external labour market. Several scholars including (Presti et al., 2021, Cuyper et al. 2008) have emphasized that it depends on continuous learning, capable to adopting to new job demands or shifts in expertise, as well as the quality of being able to acquire skills through career moves in varied organizational contexts (De Vos et al.,2011). The degree to which graduates perceives themselves to be employable is derived from their self-perception as a future employee and the types of work-related competencies they are developing.

As unemployment rates is projected to grow by half a million per by the year 2020 across the world, there has been calls for the realignment of higher education curricula to cater for the needs of employers (Menon et al., 2018). The concurrent shortage of critical skills amongst workers in most emerging economies, as the result of the inability of current higher education systems to equip future workforce with the right skills and knowledge that is required at the job market, has resulted in rising levels of skill-labor mismatch.

Literature review by this study shows that generally, studies have been conducted to examine the integration of ICTs in education.

However, these studies primarily focused on instructional design related issues such as; design, development, evaluation, and revision. There is therefore paucity of empirical research aimed at examining the impact of technology-driven learning on graduates' career development towards employability. An important question that merit attention by researchers and policymakers is whether the application of E-learning environments has the potential of impacting graduate outcomes, skill or capabilities towards employability in the job market.

This current paper seeks to fill an obvious blank spot in E-learning and employability literature by applying structural equation modelling technique to examine the potential causative components of E-learning environment including; interactive and collaborative learning, blended learning, self-efficacy, and online learning, and their influence on students' career development towards graduates' employability. The main objective of this study, therefore, is to investigate the effect of E-learning environments on graduates' employability.

1.2 Literature Review and Hypothesis Formulation

Theorists and researchers in the area of career development, and graduate employability and skills acquisition have increasingly focused on social cognitive career theory (SCCT) model to provide a useful framework for career research and exploring the influence of sociocultural context in career development. Developed by Lent & Brown (1996), SCCT has provided useful theoretical frameworks to explore researchers understanding and defined the scope and structure at which career is developed.

Grounded in Bandura's (1986) social cognitive theory, SCCT investigates how career and academic interests mature, developed, and the process of turning the choices into action. SCCT underscores the important role played in career development by cognitive variables, such as self-efficacy. Therefore, its application to expand and build on earlier work of self-efficacy and theoretical and empirical tradition (Betz & Hackett, 1986).

1.3 Interactive and Collaborative Learning

Ertmer et al (2019) maintained that interactive learning environment creates an enabling environment for the exchange of information either in real-time or subsequent, through the application and use of technology. In other words, interactive learning enable students to communicate, share, compare information, and negotiate meaning to achieve a shared goal (McCoy et al, (2020). As well, prior studies had suggested that interactive and collaborative learning is a key attribute of E-learning environments, since the application of learning through technology media such as multimedia tools, computer networks, and use of digital equipment (Domagk, et al., 2010; Leow et al., 2014). Notably, a study conducted by Hassan et al., (2018) found out that elements of interactive learning were significantly correlated with students learning activities through application of scientific tools machinery, application of ICT, solution-based learning procedures, and group work activities. This has resulted in an increased flexibility in the creation of high performance to produce graduates who are adequate in content knowledge. It is therefore expected that there will be a positive relationship between interactive learning, which is evident in E-learning environments, and students' career development. As well, the creation of E-learning environment ensures that participants have the opportunity to communicate with a diverse audience, share and compare information.

Rohayati and Friatin (2020), proposed that collaborative learning entails an instructional approach in which students work in groups toward a common academic goal, and that collaborative learning is an instructional technique in which learners at various performance levels work together in small groups toward a common goal. Mason (2020), also maintained that computer-supported collaborative learning (CSCL), a concept which is gradually emerging in the field of learning sciences is focused on understanding how people acquire knowledge with the help of computers. Collaborative inquiry learning, one of the most challenging and exciting ventures in higher education, fosters students' learning motivation and interest in science, as well as enhancing the process in which learners in groups engage in self-regulated learning, which is assisted by the lecturer. The active and constant exchange of ideas within small groups does not only increase interest among the participants, but it also enhances

critical thinking (Bell, 2010). The present research proposes a positive relationship between students' collaborative learning and career development.

1.4 Blended Learning

According to Angraini and Tiara (2020), blended learning is an innovative concept that embraces the advantages of both traditional teaching in the classroom and ICT supported learning including both offline learning and online learning. Blended learning of instructional techniques leverage technology to provide a more personalized approach to learning.

When students are given absolute control over the time, place, path and pace of their learning, then blended learning environment has been created (Madden et. al, 2019). Contextually, the application of blended learning in higher education enhances student's competence in the usage and application of digital and electronic technology in their classrooms. Student's participation in online or internet-based conferences with experts, improves and develop their technical knowledge in technologies application (Atef & Medhat, 2015). Again, blended learning helps to collaboratively present, design, facilitate, and direct educational experience (Lomicka, 2020; Atef & Medhat, 2015), while also providing innovative educational solutions through an effective mix of traditional classroom teaching with mobile learning and online. Ultimately, the characteristics of pedagogical knowledge in blended learning, improves and develops students 'confident in social interaction either with their fellow students or lecturers as they prepare to enter into the job market.

1.5 Online learning and Blended Learning

University campuses, which earlier was mostly operating as communities of learners, is gradually metamorphosing into virtual communities, where both learners and teachers discovering new ways of transferring knowledge and learning. This is done through the adoption of a wide range of video conferencing and data exchange systems, some specially designed for education (Neştian et al, 2021). The term "online learning" is related to the use of the internet and information technology tools to provide instructional materials and facilitate interactions between students and professors. Online

learning can be delivered synchronously or Asynchronous delivery. Synchronous delivery happens in real-time, where learners and teachers interact live in a virtual space and engage in real-time online communication and discussions regardless of the physical location.

On the other hand, Asynchronous delivery does not require the real-time online presence of learners. However, it happens in accordance with learners own plan and schedules. Clark & Mayer (2016) Accordingly, Horn & Staker (2010) indicated that online learning can be fully online, where instructions are entirely undertaken through the internet, or combined with face-to-face interactions in what is known as blended learning.

Therefore, Dabbagh & Bannan-Ritland (2005), argued that a well-designed online learning programmes, provides authentic learning environments including simulations, role-plays, and debates which exposes students to real cases and work on assignments that dealt with the real-world situation in their learning (Salter, 2003). Likewise, Hazari & Johnson (2007), in their study disclosed that online learning has the capacity for interaction and is credited with promoting higher order thinking skills in students which facilitate graduate career development outcomes.

The advent of the internet, technologies have evolved to form online learning environments aimed at facilitating collaborative activities and information sharing in asynchronous and synchronous forms (Dabbagh & Bannan-Ritland, 2005).

In addition, prior studies such as (Morgan & Cox 2006; Oblinger et al.,2005) called for the need for higher education to avail students to study real-life cases and apply what they have learnt in a real working environment in different sectors such as education, health sciences, business, and information technology fields.

The flexibility, accessibility, personalization, collaboration, and priority components in employability, are also priority principles in online learning and for that matter, the imperativeness to understand how these principles are interconnected is not far-fetched, especially in the context of a developing county (Garrison et. al, 2003).

This leads us to propose that there is a positive relationship between students' online learning, and blended learning experience, and their career development

1.6 Self-Efficacy

Bandura (1986) clearly explained the concept of Self-efficacy as an individuals' judgement about his/her capabilities to organize and execute courses of action required to attain designated types of performances. Researchers have found that education is fully capable of equipping students. Arguably, education is the most central defining element of personal agency deduced from four key sources of information, namely; performance accomplishments, vicarious learning, verbal persuasion, and physiological arousal (Hackett & Betz 1995). These sources of information help to create a dynamic set of self-beliefs that are specific to performance domains and that interact with other people, behavior, environment, and contextual factors (Hackett & Betz 1995). Clearly, Self-efficacy examines the beliefs people have about their ability to successfully complete the steps required for a given task. However, these beliefs are not fixed, they constantly change based on interactions with other people, the environment, as well as an individual are one's own behavior (Hayashi, et al. 2020).

Prior studies have sought to understand and analyze whether self-efficacy and employability are two distinct but related variables, and if they are, to investigate the direction of the relationship. Berntson, et al, (2008) revealed that employability is not an expression of efficacy beliefs, but rather, the strengthening of employability perceptions may have beneficial effects on more general efficacy beliefs. Subsequently, they argue the employability and self-efficacy were not just distinct from one another, but were distinct from one another over time. Furthermore, they resolved that self-efficacy employability are two separate variables, which reflect associated but different qualities. Individual attributes, such as knowledge of the labour market, formal education, and technical training, in addition to contextual factors, such as economic situation, may be decisive for the development of employability perceptions. Self-efficacy has been found to be significantly related to stated occupational interests and occupational choice among college students, regardless of gender (Coyer et. al 2018; Shafiei et. al, 2018). Thus, career self-efficacy may be an important variable in determining the career development of students.

1.7 Career Development and Employability

Super (1990), defined career development as the preparation for, choice of, entry into, and adjustment to work throughout the life span. In the context of contemporary higher education provision and management, this concept can be viewed as addressing an aspect of employability, or a set of related meta-skills. As Lindstrom et al, (2020) observed, the significance and implications of work and career are undergoing substantial revision and reformulation, as a result of the evolution of work in post-industrial, knowledge economies. Again, in times past, career was conceptualized in terms of personality types meant or adapted to certain work environments, developmental stages, self-efficacy for work behaviors, self-narratives of personal identity, and in terms of personal relationships (McIlveen, 2009).

McMahon & Tatham (2001) asserts that a career is more than a job in the present-day era, and therefore career can be conceptualized as a multi-faceted, complex, personal process that develops a person's lifetime, and affected by dynamic interactions amongst personal, interpersonal, societal, economic, and environmental factors. It is within this conceptual remit that we explore the potential of career development to graduates' employability. On the other hand, Smith et al., (2009), explored approaches to the delivery of career development within higher education system and established that career development initiatives in higher education, provide meaningful and sense of purpose for students through the personalization of their learning. In addition, career development guide and intensify students' effectiveness in decision-making and transitions into and through the worlds-of-work (OECD, 2004; Watts, 2005).

Cutting across graduate outcomes, and employability, career development is the impression and belief of lifelong career self-management which emphasize the development and sustainment of an individuals' economic viability over their life courses (Bridgstock, 2009). It is within this conceptual remit that the current paper explore the potential of career development learning in informing employability skills of university graduates. Therefore, it will be inadequate to focus only on the design of curriculum and programs as an aspiration towards graduate employability skills, instead, frameworks for the development of personally meaningful career

development and management skills such the creation of E-learning environment may afford and present a personally relevant and student-centered approach to higher education delivery.

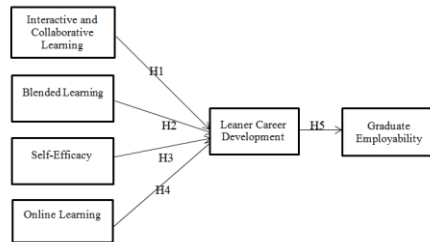


Figure 1: Theoretical Framework

Based on the above model and considering the theoretical perspective expressed above, the following hypothesis are formulated:

H1: Interactive and Collaborative learning in E-learning environment will positively impact on students' career development toward graduate employability.

H2: Blended Learning in E-learning Environments will positively impact on their career development towards employability.

H3: Blended learning element of E-learning learning Environments will positively influence students' career development towards employability.

H4: Online learning element of E-learning learning Environments will positively influence students' career development towards employability.

H6: Students Career Development will positively affect Graduate Employability

2. METHODOLOGY

The positivist approach was the driving philosophy of this study, while the data utilized was based on observable social reality. Besides, an explanatory research approach was applied to identify and establish the fundamental relationships and linkages between the various constructs to provide further insight and broader perspective into components of E-learning environments and their impact on graduate employability.

Table 1. Operational Definition of Constructs and Hypothesized Relationships

Construct	Operational Definitions	Source	Hypothesized Relationship
Perceived Usefulness (PU)	Personal beliefs regarding the contributions of a specific system to an individual's working performance	Davis, et al. 1989, Venkatesh et al. 2003, Tarhini et al. 2016. [123, 206, 207]	(PU→BIU)
Perceived Ease of Use (PEOU)	The level to which an individual believes that using a particular system would be free from effort	Davis et al. 1989, Venkatesh et al. 2003, Arbaugh, 2000) [123, 207, 208]	PEOU→BIU
Self-Efficacy (SE)	The capability to demonstrate and self-organize the behaviors required to achieve given goals within a framework of individual skills.	Compeau and Higgins, 1995b, Tan and Teo, 2000) [210-211]	SE→BIU
Technological Readiness (TR)	The degree of access to, and availability of technological infrastructure to support E-learning implementation	Borotis and Poullymenakou, 2004; Keramati et al. 2011[133,194]	TR→ELR
Institutional Readiness (IR)	An enabling organizational environment that supports the development and sustainability of E-learning	Kahiigi, (2012)[172] (James-Springer, 2016; Keramati et al. 2011)[187,194]	IR→ELR

2.1 Measurement Development

In this study, the development of the survey instruments was guided by Churchill's (1979) proposal for designing a survey instrument, in this case, ensuring constructs reliability and validity jointly referred to as "psychometric properties" of measurement scales (Bhattacharjee, 2012). To a large extent, the questionnaire was developed on the basis of the literature review and the adaption of previous items that have demonstrated rigorous and significant validity in the field of E-learning adoption and application in higher education delivery, and more specifically, in the context of skills acquisition and graduate employability.

The following constructs, namely; interactive learning, collaborative learning, blended learning, self-efficacy, outcome expectancy, career development and graduate employability, were used in the study. The questionnaire consists of two parts. Section A of the questionnaire relate to the demographic characteristics of the respondents such as; gender, age, highest educational qualification, type of industry, functional area, and E-learning system application used in school. Section B related to the research model's endogenous and exogenous variables questions, which were powered on a seven-

point Likert Scale ranging from 1= 'strongly disagree' to 7= 'strongly agree'.

2.2 Data Collection

The target population for this study were students who have recently graduated from tertiary education institutions and undertaking their mandatory National Service in either state- or privately-owned organizations in different sectors of the economy including; financial, educational, telecommunication, and commerce. The reason for targeting national service personnel was based on the fact that they represent the largest cohort of young graduates who enter the job market at any point in time in Ghana. Besides, it was required that selected participants might have graduated from a higher education institution that implemented or have components of E-learning such as; Interactive and Collaborative learning, Blended learning, Mobile and Ubiquitous learning, and Online learning environments.

The questionnaire was administered using survey monkey an online survey tool to a sample of 387 national service personnel's working in eight and five public and privately-owned enterprises, respectively, in the Eastern Region of Ghana. A link to the questionnaire was sent to the participants by responses were collected in real time by the researchers. Face to face data collection was also used whereby participants were asked to fill the questionnaire which responses were later collected by the researchers. These two procedures were chosen because it allows better response rate, especially in situations where participants do not appropriately complete questionnaires unless the researcher urges them to do that on his/her presence or have to answer the questionnaire at their own convenient. However, bearing in mind, minimum contact was made during the questionnaire filling process to reduce researcher bias. After a period of three weeks in administering the questionnaire, a total of 330 questionnaires were retrieved, out of which 11 were identified as unsuitable for further analysis because they were incomplete. Hence, 319 questionnaires were correctly filled, representing a highly acceptable response rate of 96.6%.

2.3 Data Analysis

In testing the research model, partial least squares structural equation (PLS-SEM) technique, a second-generation multivariate analytic technique capable of processing latent constructs, and also simultaneously assesses the measurement and structure models (Wold, 1982; Chin, 1998), was used. In order words, PLS-SEM simultaneously models structural path, that is, theoretical relationship between latent constructs, and measurement paths between latent constructs and its indicators (Ashill, 2011). Whiles PLS-SEM software, SmartPLS 3 was used to analyze the data. As Anderson & Gerbing (1988) proposed, the two-step approach analytical procedures were applied to the measurement and structural models. Besides, the bootstrapping method (5,000 resamples) was employed to test the significance level of path coefficients and loadings.

In addition, the reliability, convergent, and discriminant validity of the measurement model was assessed.

1.4 Convergent Validity Assessment

According to Hair et al., (2010) convergent validity is the degree to which indicators of a latent construct converge or share high proportions of variance in common. Convergent validity is established when all indicator (observed) variables load highly on their assigned factors, for instance, 0.5 or higher. Thus, it measures the extent to which items are free from random error, and as such, capable of providing consistent results. As demonstrated in Table 1, all factor loadings are higher than the value of 0.6.

Alternatively, average variance extracted (AVE) which measures the variation explained by the latent variable to the random measurement error, is a commonly utilized criterion for assessing convergent validity. Thus, Fornell & Larcker (1981), recommended that an AVE value of at least 0.5 is an indication that the latent construct is on average able to explain 50 percent of the variance of its indicators, hence demonstrating adequate convergent validity. This requirement is fulfilled in this research, as it is demonstrated that AVE values for all the constructs shown in Table 4 are above the recommended threshold of 0.5. Finally, with regards to composite reliability, all the scores are well above the cutoff value of 0.7 as

proposed by Hair et al. (2010).

2.5 Discriminant Validity Assessment

Discriminant validity assesses the degree to which the measures of different constructs differ from one another. The establishment of discriminant validity can be in two ways. The first method is by examining cross-loadings that are obtained by correlating each latent variable component values with all other items (Chin, 1998), while the second is by comparing the square root of the average variance extracted (AVE) for each construct with the correlations among constructs. If the square root of each AVE is much larger than any correlation among any pair of latent variables, and it should be higher than .50 (Chin, 1998; Fornell & Larcker, 1981), then the validity of the measurement model is established. In this study, as demonstrated in Table 5, the correlation values are less than the square root of AVE values, hence, suggestive of acceptable discriminant validity.

Table 2. Results of Convergent Validity Assessment

Model Constructs	Measurement Item	Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Interactive and Collaborative Learning	ILCL1	0.634	0.858	0.552
	ICL2	0.599		
	ICL3	0.795		
	ICL4	0.816		
	ICL5	0.837		
Blended Learning	BL1	0.766	0.836	0.567
	BL2	0.819		
	BL3	0.848		
	BL4	0.540		
Career Self-Efficacy	CSE1	0.917	0.890	0.623
	CSE2	0.825		
	CSE3	0.839		
	CSE4	0.739		
	CSE5	0.588		
Online Learning	OL1	0.896	0.923	0.631
	OL2	0.868		
	OL3	0.774		
	OL4	0.785		
	OL5	0.711		
	OL6	0.753		
	OL7	0.756		
Students career Development	CL1	0.754	0.804	0.579
	CL2	0.811		

	CL3	0.715		
Graduate Employability	GE1	0.816	0.780	0.811
	GE2	0.885		

Table 3 Results of Discriminant Validity Assessment

	BL	GE	ICL	CSE	OL	SCD
Blended Learning (BL)	0.753					
Graduate Employability (GE)	0.616	0.901				
Interactive and Collaborative Learning (ICL)	0.568	0.637	0.743			
Career Self-Efficacy (CSE)	0.546	0.766	0.722	0.790		
Online Learning (OL)	0.573	0.609	0.670	0.743	0.794	
Student’s Career Development (SCD)	0.667	0.541	0.681	0.634	0.580	0.761

2.6 Structural Model and Hypothesis Testing

After the construct measures have been proved to be reliable and valid, the next stage is to assess the structural model results, displayed in Table 2. Prior to the assessment of the structural model, we conducted the test on all the variables for multicollinearity. The assessment of the variance inflation factor (VIF) demonstrated the non-existence of multicollinearity, and all variance inflation factors obtained were lower than 1.234, which is far less than the conservative threshold of 5.0, as recommended by (Rogerson, 2001).

Table 4 Results of Hypothesize

Hypothesis	Proposed Relationship	Path Coefficient	T-Value	P-Value	Study Results
H1	ICL →CD		5.853	0.003	Supported
H2	BL →CD		2.996	0.000	Supported
H3	CSE →CD		2.330	0.020	Supported
H4	OL →CD		0.178	0.859	Not Supported
H5	CD →GE		36.327	0.000	Supported

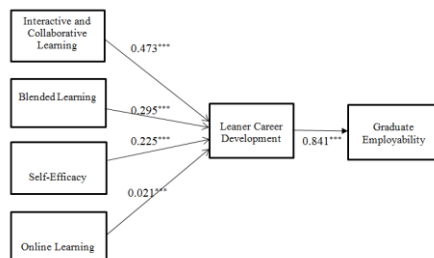


Figure 2: Results of Hypothesis

The model explained 77.7% in the variation in graduate employability, and 84% variance of student's career development. Out of the five hypothesized relationships stated in this study, four are supported. As postulated in H1, interactive and collaborative learning features in an E-learning environment positively and significantly impacts higher education student's career development. As presented in Figure 2, the path coefficient $\beta = 0.473^{***}$, supports H1. Also, H2 states that other characteristics of E-learning Environments, that is online learning, affects students' career development. This is confirmed by the path coefficient, $\beta = 0.295^{***}$. Similarly, self-efficacy in E-learning environment positively influence students career development (path coefficient $\beta = 0.225^{***}$), providing support for H3. Although H4 demonstrated a positive effect of blended learning on student's career development, it was insignificant, thus not supported or confirmed (path coefficient $\beta = 0.021^{***}$). Furthermore, the results revealed a significant positive relationship between career development and graduates' employability (path coefficient $\beta = 0.841^{***}$), thus confirming hypothesis H5.

3. DISCUSSION AND CONCLUSION

Primarily, the purpose of this research was to examine the application and implementation of E-learning environments in higher education delivery, and its impact on graduates' employability. A conceptual model that extends SCCT to include components of E-learning environments constructs as main dominants were proposed. The model incorporated a set of E-learning environments components and SCCT constructs including, interactive and collaborative learning, online learning, blended learning, self-efficacy, and career development to examine graduate employability in the context of higher education. Prior researchers have shown enough empirical evidence or basis on the positive effect on learner's performance from the adoption of innovations in the technology of teaching and learning, as well as effect of improving educational attainment on economic and productivity growth (Sun et al, 2008; Altbach, & Knight, 2007; Chan et al., 2008). In this research three out of the four direct relationships between ILCL, OL, and SE, with CD were supported with 70.7% of the model variance explained, while BL was not

supported. Moreover, interactive and collaborative learning was found to be the most important factor in predicting student's career development toward their employability.

This outcome provides invaluable insight concerning the use of information communication technologies (ICTs) in higher education teaching and learning vis-à-vis graduate skills development and how they fit into the current labor market spectrum. In other words, national service personnel have become conscious of the fact that the application of technology, learning through technology media such as multimedia tools and computer networks, and software programming, improve could improve their technical skills and use of digital equipment, as they prepare and enter the job market. This calls for the establishment of stronger collaboration between universities and corporate bodies to ensure that higher education students are afforded the opportunity to utilize and put into service the application of scientific tools machinery, application of ICT, utilization of web-based software, practical projects, solution-based learning procedures, and group work activities.

Besides, the study revealed that the utilization of blended learning in E-learning environments contributes considerably to the development of higher education student's career skills. This result is important because it puts in the spotlight participants perceived believe that instructional techniques that leverage technology to provide more personalized approach to learning, where students are given absolute control over the time, place, path and pace of their learning, develop the prospective workforce of any economy through the acquisition requisite technical knowledge in technologies application.

In interpreting or understanding the findings of this research, there are certain concerns or limitations that one must pay attention to and must be addressed in future studies. First, all participants of this research were students who have recently graduated from tertiary education institutions and undertaking their mandatory national service, which did not allow proper comparison between them and people who already employed and are engaged in further studies. Perception of full-time workers who are in the process of furthering their education, by acquiring higher education may differ due to their maturity, and they largely work while studying. Thus, future studies

focusing on national service and as well as workers pursuing higher education will be insightful.

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