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Influence of Entrepreneurship Competence on Employability of Technical and Vocational Education and Training Institutions Graduates in Tanzania: The Moderating Role of Self-Efficacy

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Abstract

This paper examined the influence of entrepreneurship competence on employability among technical and vocational education and training graduates in Tanzania and the moderating role of Self-Efficacy. The main objective was to assess the relationship between entrepreneurship competences and employability of graduates using self-efficacy as a moderator. The study was guided by human capital and self-efficacy theories. An explanatory research design was employed, and data were collected using a structured questionnaire administered on a sample of 353 graduates from TVET institutions by a Kobo toolbox. Structural Equation Modelling was used for data analysis. The finding of the study revealed a positive and significant relationship between entrepreneurship competence and employability of graduates. Furthermore, a multi-group moderation analysis indicated that the relationship is positive and statistically significant in both low and high self-efficacy groups, but it is stronger in the high self-efficacy group. The study therefore concludes that entrepreneurship competence increases TVET institution graduates' employability but a significantly more increase is attained among the graduates with higher self-efficacy. Education policy makers, curriculum developers and TVET institutions in Tanzania should emphasize competence-based training to inculcate mind of competence to graduates for their employability. However, the efforts will add more value if measures to increase their self-efficacy are incorporated in the curricula and their delivery. Collaborative efforts among various stakeholders

(practitioners) and the regulator of TVET institutions is required to prepare and avail, coaching experts who will motivate students acquire entrepreneurship competencies, business incubators for effective practical entrepreneurship learning. Policy makers should include, in the education policy, measures to transform the entrepreneurship curricula's delivery in the TVET institutions so that these curricula not only strengthen entrepreneurship competencies and the graduates but they also raise their levels of self-efficacy.

Keywords

Entrepreneurship Competence, Employability, TVET Graduates, Self-Efficacy

1. Introduction

The employability of graduates is of global concern (Len & Ndamsa, 2024; Pudyanti et al., 2022). Employability refers to an individual's overall capacity and readiness to gain and maintain meaningful employment (Kozlinska et al., 2020). It encompasses a combination of skills, qualifications, knowledge, personal attributes, and attitudes that make a person valuable and attractive to potential employers. It is the ability of an individual to achieve self-sufficiency in the labor market (Rahmat et al., 2012; Kozlinska et al., 2020; Wei et al., 2023). In this study, graduates are considered the workforce who finalized their college and university programme, from diploma level and above. Over the past two decades, the unemployability of graduates has increased tremendously (Wei et al., 2023). This developed a concern across the world on the set of employability packages possessed by graduates in both developed and developing countries (Hosain et al., 2021).

Furthermore, formal education is very essential in explaining graduates' employability (Groot & De Brink, 2000; Jafari-Sadeghi et al., 2020); Bennett (2019) considers human capital theory as an essential tool for improving the productivity of an individual. The advocates of human capital theory regard formal education such as entrepreneurship education, in terms of entrepreneurship competence, among the factors that increase graduates' employability (Aboobaker, 2020; Jafari-Sadeghi et al., 2020). Self-efficacy is also described as a crucial aspect of graduates' employability (Ma et al., 2023; Schunk & DiBenedetto, 2021). Studies conducted by Wang et al. (2023) and Doanh (2021) insisted that high self-efficacy levels enhance graduates' confidence in their abilities. Such confidence makes them more proactively engaged in job search activities, networking, and entrepreneurial endeavours. It is argued that individuals with less self-efficacy are unlikely to persevere and exercise effort to overcome obstacles to their employability (Schunk & DiBenedetto, 2021).

Although the link between entrepreneurial competence and graduates' employability has been well investigated and documented, the empirical findings have been contradictory, fragmented and inconclusive. For example, while some studies report a positive and significant relationship between entrepreneurial competence and graduates' employability (Al Mamun et al., 2019; Antonelli et al., 2024;

Blokker et al., 2019; Hodzic et al., 2015), others have reported a positive but insignificant relationship (Malebana & Vhukeya, 2023; Põder et al., 2019).

In the context of Tanzania, the country has been undergoing substantial educational reforms in recent years, increasingly emphasizing entrepreneurship education, specifically on skills creation, as a means of enhancing graduates' employability (Ismail, 2022; Mokoro, 2023; Kessy, 2020). Despite such reforms, there is a notable scarcity of research that specifically addresses the Tanzanian Technical and Vocational Education and Training (TVET) systems (Garaba & Kumar, 2023; Mokoro, 2023). This study, therefore, attempted to fill that gap. Firstly, by determining the influence of entrepreneurship competence on the employability of Technical and Vocational Education and Training (TVET) institutions graduates, and secondly by introducing self-efficacy as a moderating variable. The study argues that graduates may have entrepreneurial competence, by whether that can ease their employability may be dependent on their levels of self-efficacy.

2. Literature Review

2.1. Entrepreneurship Competence

Entrepreneurship competence refers to the set of demonstrable features and skills that enable and improve efficiency or performance on a job (Jafari-Sadeghi et al., 2020). Additionally, Al Mamun et al. (2019) define it as the ability to use resources to improve the performance of the firm. Moreover, Iglesias-Sánchez et al. (2019) see entrepreneurship competence as a comprehensive set of abilities, which involves both technical and soft skills, required for individuals to excel in entrepreneurial activities. Blokker et al. (2019) view entrepreneurship competence as a combination of knowledge, skills, attitudes, and personal attributes that enable individuals to effectively recognize, create, manage, and grow entrepreneurial ventures. Thus, entrepreneurial competence represents the overall capability to succeed in the complex and dynamic world of entrepreneurship (Hodzic et al., 2015). González-López et al. (2021) conceptualize entrepreneurial competencies by using six competency areas (opportunity, relationship, conceptual, organizing, and strategic and commitment). This study adopted Jafari-Sadeghi et al.'s (2020) definition for its contemporaneousness and pertinence to the topic at hand.

2.2. Employability

Employability refers to the ability of an individual to achieve self-sufficiency in the labor market through sustainable employment (Wei et al., 2023). Elsewhere, employability is defined as the ability to keep a current job or obtain a desired job (Okafor & Enemuo, 2022) and an individual's overall capacity and readiness to gain and maintain meaningful employment (Kozlinska et al., 2020). It encompasses the skills, qualifications, knowledge, personal attributes, and attitudes that make a person valuable and attractive to potential employers (Rahmat et al., 2012). Hosain et al. (2021) conceptualize graduates' employability as employability skills, personality and academic performance. However, this study adopted Okafor and

Enemuo's (2022) definition because it is widely accepted by entrepreneurship researchers and it encompasses all aspects of future success and personal status.

2.3. Technical and Vocational Education and Training (TVET)

Technical and Vocational Education and Training (TVET) is a term officiated in 1999 in Seoul, Republic of Korea at the World Congress, encompassing education and training activities (Sohn et al., 2017). Mesuwini et al. (2023) added that TVET encompasses education, training and technical skills development relating to a wide range of occupational fields, production, services and livelihoods. Mesuwini et al.'s (2023) definition was adopted because it represents Tanzania's tertiary training systems, graduates from which were the main focus of the current study.

2.4. Human Capital Theory

The Human capital theory, propounded by Becker (1964), states that formal education is essential to improve the productive capacity of a population. As human labor becomes a capital good, the productivity of human labor in terms of employability can be improved through formal education. Proponents of the theory viewed formal education, such as entrepreneurship education in terms of knowledge, training, and competence as a helpful resource to increase graduates' employability (Aboobaker, 2020; Jafari-Sadeghi et al., 2020). Employability depends on entrepreneurial knowledge, training and competence (Aboobaker, 2020). Among the criticisms of human capital theory is its emphasis on the capitalization of human beings, removing the noble characteristics of labor (Aboobaker, 2020). Although human capital theory primarily emphasizes the acquisition of individual skills and knowledge as a means of enhancing employability, it may overlook the broader societal and structural factors that influence employment outcomes (Adom & Asare-Yeboa, 2016). Nonetheless, the theory has withstood those criticisms and it is relied upon by several researchers in explaining entrepreneurship knowledge, training, competence and employability (Adom & Asare-Yeboa, 2016; Jafari-Sadeghi et al., 2020; Venesaar et al., 2022).

2.5. Self-Efficacy

Self-efficacy reflects an individual's sincere thoughts on whether they have the abilities perceived as important to task performance, as well as the belief that they will be able to effectively translate those skills into a chosen outcome (Bandura & Wessels, 1997). It is the extent to which individuals are confident about their entrepreneurial skills to complete various tasks (Adnyani & Suwandana, 2022). Furthermore, Ma et al. (2023) describe self-efficacy as individuals' confidence in their ability to start a business venture successfully. Nonetheless, Doanh (2021) and Blokker et al. (2019) expound on entrepreneurial self-efficacy as individuals' belief in their personal ability and capacity to successfully undertake entrepreneurial tasks, activities, and challenges. Yet, Schunk and DiBenedetto (2021) conceptualize self-efficacy as mastery experiences, vicarious experiences, social persuasion

and physiological feedback. Schunk and DiBenedetto's (2021) definition was adopted by this study as it contains the variables of interest. The idea of self-efficacy has been widely used in the literature on career theory to explain job preferences, perceived career options, and career-oriented behaviours (Storme & Celik, 2018). Moreover, Bandura et al. (2001) listed self-efficacy as one of the many socio cognitive variables of children's job goals, on which they found academic self-efficacy has the largest direct effect.

2.6. The Influence of Entrepreneurship Competence on Employability

Previous studies on the link between entrepreneurship competence and employability in developed countries—Spain, the Netherlands, Australia and Portugal reported findings. For example, Hodzic et al. (2015) used a randomly selected sample of 113 unemployed adults in Spain, and a simple Chi-Square analysis technique reported a positive and significant relationship between their entrepreneurial competency and employability. Also in Spain, Iglesias-Sánchez et al. (2019) used a cluster-based sample of 329 public university students and the multiple regression analysis technique. Their findings showed a positive and significant relationship between entrepreneurship competence and employability. In the Netherlands, Blokker et al. (2019) used a conveniently selected sample of 704 young professionals from the informal sector. Applying SEM in data analysis, their study found that entrepreneurship competence and employability are positively and significantly related.

Conversely, studying the same link in Australia, Jackson (2014) used a convently determined sample of 1008 university undergraduate students. Utilizing the multiple regression analysis technique, the results showed that entrepreneurship competence and employability are positively but insignificantly related. Similar results are reported in Estonia and Latvia by Kozlinska et al. (2020) who also reported a positive but non-significant relationship between entrepreneurship competence and employability. Moreira's study used a convenience sample of 2099 employees and utilized SEM for data analysis. Further studies by Ferreras-Garcia et al. (2021). conducted in Spain revealed positive relationship between entrepreneurship competence and employability among higher education graduates.

Put together, the findings are based mainly on conveniently selected big samples, except Hodzic et al.'s (2015) which was small and randomly selected. Another exception is the use of one institution by Iglesias-Sánchez et al. (2019). Although these conditions may question the generalizability of the findings, it is still observed that the findings are contradictory, calling for more empirical studies especially probing the conditions under which the relationship is strengthened or weakened. In such situations, Hayes (2017) recommends moderation analysis. Therefore, the first hypothesis of the present study was:

H_1: *Entrepreneurship competence has a positive effect on the employability of TVET graduates in Tanzania.*

2.7. The Moderating Role of Self-Efficacy on the Relationship between Entrepreneurship Competence and Employability

Various research showed that entrepreneurship competence accelerates individual interest by influencing self-efficacy for employability (Baiti et al., 2017; Doanh, 2021; Kusumojanto et al., 2021; Ma et al., 2023; Schunk & DiBenedetto, 2021; Wang et al., 2023; Wardana et al., 2020; Wilson et al., 2007).

Preceding studies suggest level self-efficacy is a crucial aspect in the study employability of graduates (Ma & Bennett, 2024; Schunk & DiBenedetto, 2021). In the same line, previous studies, insisted that, high level of self-efficacy can enhance graduates' confidence in their abilities, leading to more proactive engagement in job search activities, networking, and entrepreneurial endeavors which facilitates employability (Doanh, 2021; Pollack & Lilly, 2008; Wang et al., 2023; Zhang et al., 2022).

While, Schunk & DiBenedetto (2021) argue that individuals with less self-efficacy level are unlikely to persevere and apply effort to overcome hurdles and enhancing their employability prospects. In this view and as encouraged by previous scholars, Wang et al. (2023) and Doanh (2021) claimed that the influence of entrepreneurship education on employability could either be moderated or mediated by different variables.

In the same note, series of studies have shown that self-efficacy is a positive modern actor of entrepreneurship studies (Asimakopoulos et al., 2019; Wilde & Hsu, 2019). Furthermore, Wang et al. (2023) and Doanh (2021), on their arguments, suggested that, the influence of entrepreneurship competence on employability can either be moderated by different variables. In line with the literature review made, and contradictory findings noted on the studies of entrepreneurship education and employability, this study therefore intend to assess the moderating effect on the self-efficacy on the relationship of entrepreneurship competence and employability of graduates; in order to strength the power of HCT in predicting employability of graduates. With regard to the reviewed literature, the study hypothesized that,

H_2: *Self-efficacy positively moderates the relationship between entrepreneurship competence and employability of graduates from TVET institutions.*

2.8. Control Variables

Control variables play a crucial role in research by ensuring the validity and reliability of the findings (Kohler et al., 2024). Statistically controlling for the effects of variables ensures the accuracy of the estimated causal-effects models. Although the control variables (CVs) in a given study are not the variables of interest, they are used to rule out alternative interpretations of the study's findings (Shiau et al., 2024). Improperly handled CVs can confound the significance of the estimated relationships among the variables of interest. For example, any change in a CV, whether due to manipulation, social desirability bias, or other reasons, could distort the correlation between the independent and dependent variables (Shiau et

al., 2024). This study focused on entrepreneurship competence, one of the dimensions of entrepreneurship education, the other dimensions being entrepreneurship knowledge and entrepreneurship training. Hence, to control for the effect of the presence of these other submissions in the estimation of the effect of entrepreneurial competence on employability, the study used the two in the model as control variables. Firstly, to improve the interpretability of the findings, and secondly, to enhance the generalizability of the findings (Ngatuni & Matoka, 2020). The conceptual model as shown in **Figure 1** indicates the control variables applied in the study.

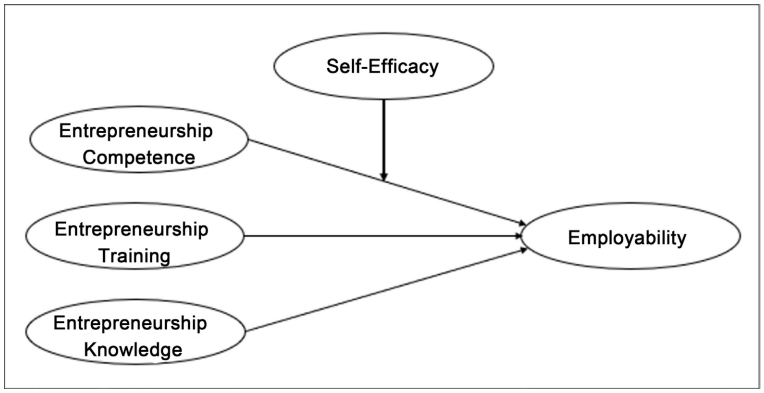

Figure 1. Conceptual model. Source: Researcher 2024.

3. Methodology

An explanatory research design with a cross-sectional survey strategy was used to collect primary data from graduates of the two TVET institutions—The Dar es Salaam Institute of Technology (DIT) and the Institute of Accountancy Arusha (IAA). The two institutions were chosen because they are well-established institutions, pioneers of the provision of technical and competence-based education systems under the TVET sector. These are government-owned institutions with strong mechanisms for ensuring academic quality, competent academic and administrative staff, regulatory compliance procedures, and consistent delivery of graduates in various areas of specialization (Li, 2020). The study population included 3042 graduates from the two institutions in the academic years of 2017/2018, 2018/2019 and 2019/202. Using Yamane's (1967) formula, the minimum sample size was estimated at 353 graduates. The fact that these students had graduated from their respective institutions several years before the data collection period made the application of probability sampling techniques challenging. Consequently, snowballing—a non-probability sampling technique was employed (Etikan et al., 2016) with the help of an online survey too prepared and administered through the Kobol toolbox. Beginning with graduates in a given year, with contacts available, each one of them was asked to share the survey tool with other graduates they had contacts of in their intake year. This was pushed through until the specified minimum sample size was achieved, hence a 100% response rate.

3.1. Variables and Measurement

3.1.1. Entrepreneurship Competence

Entrepreneurship competence was measured by seven items, adapted from González-López et al. (2021) and Jafari-Sadeghi et al. (2020). The measured items were; "I am able to identify customer's need"; "I am capable of developing business opportunity"; I am able to treat new problems as opportunities"; "I am able to take reasonable business-related risks"; "I am capable of planning the operations of the business"; and I am able to determine strategic actions and overcoming obstacles.

3.1.2. Employability of Graduate

Graduates' employability was measured by seven items adapted from Hosain et al. (2021) and Matonya (2018). The measured items were; "I have good communication skills (verbal and written)"; "I possess good problem-solving skills"; "I am able to treat new problems as opportunities"; "I am able to take reasonable business-related risks"; I am capable of planning the operations of the business"; and "I am able to determine strategic actions and overcoming obstacles".

3.1.3. Self-Efficacy

Self-efficacy was measured by six items adapted from Schunk and DiBenedetto (2021) and Wang et al. (2023). The measured items were; "I have always been successful in doing well tasks related to business"; "I do well on even the most complex business problems"; "I admire peers who are professional in conducting business activities"; "I enjoy learning about new things by observing or hearing about others' experiences"; I find it interesting to listen to others' stories and learn from their mistakes; and "I am more likely to adopt new ideas or beliefs when they are endorsed by influential individuals."

3.1.4. Entrepreneurship Training

Entrepreneurship training was measured using nine items adapted from Glaub and Frese (2011). The measured items were; "I received training that helped build my confidence" "I received training that motivated me to pursue my goals"; "I received training that provided me with practical strategies for overcoming obstacles and setbacks"; "I receive training that makes me employable"; "I received training on how to develop a proactive approach to problem-solving"; and "I received training on how to set and achieve entrepreneurial goals". The other items were; "I received training on how to become more self-directed and take ownership of my entrepreneurial journey"; "I received training on how to manage my time effectively"; and "I received training on how to promote product and service".

3.1.5. Entrepreneurship Knowledge

Entrepreneurship knowledge was measured by eleven items adapted from Karyaningsih et al. (2020) and Al Mamun et al. (2019). The measured items were; "I

know how to find the resources (e.g. financial) to set up a business"; "I have a good understanding of how to manage financial resources"; "I am aware of how to use technology to achieve business goals"; "I have good understanding on how to work on team" and "I am knowledgeable about how to identify and target potential customers". Yet the other items were; "I am aware of how to create a marketing plan"; "I understand how to increase sales"; "I have sufficient knowledge in commercializing a business idea"; "I am aware of the legal requirements for registering a new business"; "I have knowledge of how to protect intellectual property rights for a new business"; and "I understand the importance of complying with tax laws and regulations".

Respondents were asked to rate their degree of agreement to each of the measured item under each construct's measurement scale on a five-point Likert-like scale ranging from 1 = strongly disagree to 5 = strongly agree. Demographic variables such as age, gender, level of education and the time taken to seek for employment were included for the purpose of describing the sample.

3.2. Data Analysis

Structural equation modeling (SEM) technique with IBM's Amos Statistics v. 23 was used for data analysis. SEM was preferred due to its ability to analyze and test complex relationships between observed and latent variables (Glaub & Frese, 2011). First, the key assumptions underlying structural equation modeling which are normality, linearity, outliers, multicollinearity and homoscedasticity were all assessed. Normality was tested by generating and evaluating skewness and kurtosis statistics against the cut-offs of ±2 (Al Mamun et al., 2019). The skewness and kurtosis ranged from −.084 to −.957 and from −.034 to .749, respectively all within the recommended threshold, suggesting satisfaction of the normality assumption. Pearson Product Moment Correlation analysis technique was used to assess two assumptions. The first assumption was linearity—the linear relationship between the dependent and independent variables. The linearity assumption is met if most of these correlation coefficients are higher than three ($r > .3$) and statistically significant (Pallant, 2020). The second assumption was the no-multicollinearity assumption i.e., the absence of very high bivariate correlation between pairs of the independent variables. Field (2018), Kline (2023), and Tabachnick and Fidell (2019) suggest that a multicollinearity problem in the data would exist if the correlation between pairs of independent variables is higher than .9 ($r > .9$). Homoscedasticity was assessed using the scatter plot of regression standardized predicted residual versus the regression standardized predicted residual to ensure that the variance of error is constant across all levels of the independent variables. This is achieved if the residual displayed a random Patten with no systematic structure (no funnel shape). The residual displayed a random Patten with no systematic structure (no funnel shape), thus providing the evidence that homoscedasticity was attained.

Both the exploratory factor analysis (EFA) and confirmatory factor analysis

(CFA) were employed to assess the quality of the model. In EFA, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test (BT) were used evaluated against the recommended thresholds of above .6 and significance level of $p < .001$, respectively (Field, 2018; Tabachnick & Fidell, 2019). In the CFA, the goodness of fit indices were evaluated against the recommended thresholds of CMIN/DF (χ^2/df) ≤ 3, RMR ≤ .08, GFI ≥ .90, CFI ≥ .90, NFI ≥ .90, TLI ≥ .90, RFI ≥ .90, PCFI ≥ .50, and RMSEA ≤ .08 (Hair Jr. et al., 2006; Hooper et al., 2008). Multi-Group analysis was used to test whether self-efficacy strengthens, buffers or reverses the relationship between entrepreneurship competencies and graduates' employability. Before that, measurement invariance analysis was done as part of the CFA to establish whether the constructs' measurements were the same across the self-efficacy levels/groups (Collier, 2020).

4. Findings and Discussion

4.1. Sample Description

A descriptive analysis (frequencies) was carried out to understand the samples characteristics. All 353 questionnaires were included in the analysis. The results shows that IAA contributed slightly more participating graduates (51.8 percent) than DIT. The majority of respondents were male (61.2 percent). While 49 percent were aged between 20 - 30 years followed by middle aged group (45.6 percent), 58.4 percent were holders of bachelor level of education. The graduates who were still seeking employment constituted 53.5 percent of the sample. Out of the 164 employed graduates, 64 percent indicted to have spent 4 - 5 years since graduation to secure employment, see Table 1.

Table 1. Distribution of participant demographic characteristics.

Variable	Frequency	Percent
Gender		
Male	216	61.2
Female	137	38. 8
Age		
20 - 30	173	49
31 - 40	161	45.6
41 - 50	17	4.8
51+	2	.6
Level of education		
Bachelor	206	58.4
Masters	129	36.5
Ph.D.	18	5.1
Institution of study		
DIT	170	48.2

Continued

IAA	183	51.8
Employment status		
Employed	108	3.6
Self employed	56	15.9
Seeking employment	189	53.5
Duration to employment		
1 - 3 years	44	26.8
4 - 5 years	105	64.0
6+	15	49.1

Source: Field data; 2024.

4.2. Model Formulation and Validation

4.2.1. Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) was used to assess sampling adequacy using the threshold of KMO > .6 (Field, 2018). Bartlett's test (BT) was also used to determine whether the correlation matrix of the measurements is significantly different from zero (an identity matrix). A threshold of correlation > .7 ($p < .001$) was used, below which the sample would have been judged to be unfit for factor analysis (Field, 2018). The results show KMO = .966, which is higher than the threshold of .6 (Tabachnick & Fidell, 2019), indicating that the sampling adequacy was met. The Bartlett's test of sphericity returned $\chi^2_{(703)} = 12731.5$, $p < .001$, indicating that the correlation matrix is statistically different from an identity matrix. Thus, the data qualified for exploratory factor analysis (EFA). The Principal Component Analysis Approach (PCA) was employed to carry out the EFA. The results show that the measurement items loaded to their designated factors (factor loadings > .5) (Tabachnick & Fidell, 2019), leading to the predicted factor structure of five constructs. The validity and reliability of study's constructs were assessed. The results show Cronbach's Alpha coefficients ranging from .927 to .968, all above .9, showing excellent reliability of each construct's measurement scale (George & Mallery, 2022). Moreover, the Average Variance Extracted (AVE) values ranged from .505 to .784, all above .5 indicating that divergent validity of the construct was achieved, see **Table 2**.

Table 2. Reliability and validity test results.

Construct	No. items	Cronbach's Alpha	AVE
EKN	10	.952	.613
ETR	8	.948	.599
SEC	6	.968	.784
EMP	7	.927	.505
EOC	7	.938	.513

Source: Researcher, 2024.

4.2.2. Bivariate Correlation Analysis

The bivariate correlation coefficient was calculated to assess the linearity and no-multicollinearity assumptions. First, the results show correlation coefficients between the dependent variable and independent variables ranging from .420 to .704, all above .3 and statistically significant at $p < .001$ level, supporting the linearity assumption (Pallant, 2020). Second, the results (**Table 3**) also show correlation coefficients between pairs of the independent variables ranging from .275 to .571, all below the threshold of .9 (Field, 2018; Kline, 2023; Tabachnick & Fidell, 2019), suggesting the absence of multicollinearity problem in the data, see **Table 3**.

Table 3. Bivariate correlation analysis between study variables.

Variable	EMP	SEC	EKN	EOC
EMP	1			
SEC	.420**	1		
EKN	.544**	.299**	1	
EOC	.704**	.554**	.477**	1
ETR	.602**	.275**	.571**	.552**

Notes: **. $p < .001$ (2-tailed). Source: Researcher, 2024.

4.3. Confirmatory Factor Analysis

Having passed the EFA, Confirmatory Factor analysis was performed in order to test whether the data approved the hypothesized measurement model based on the theory. The measurement models for individual constructs assessed to determine whether there was a relationship between the observed variables and their underlying latent construct. The results confirmed that the models fitted the data, confirming that the set indices observed variables grouped together to measure the underlying construct. Then the overall measurement model was constructed and evaluated.

4.3.1. Evaluation of the Overall Measurement Model

The overall measurement model with all study construct was assessed. The results shows that the model fitted the data well with CMIN/DF (χ^2/df) = 1.663, RMR = .034, GFI = .90, CFI = .991, NFI = .942 TLI = .990, RFI = .937, PCFI = .917, and RMSEA = .023; all meeting the recommended thresholds, see **Figure 2**.

4.3.2. Evaluation of the Structural Model

The results of the structural model show fit indices of CMIN/DF (χ^2/df) = 1.198, RMR = .031, GFI = .914, CFI = .991, NFI = .947, TLI = .990, RFI = .942, PCFI = .909, and RMSEA = .024; all within the recommended thresholds. It was therefore concluded that the structural model was fit for hypothesis testing, see **Figure 3**.

4.3.3. Hypothesis Testing

Regression estimates were obtained from the structural model to test the study's hypotheses. The results show that entrepreneurship competencies were positively

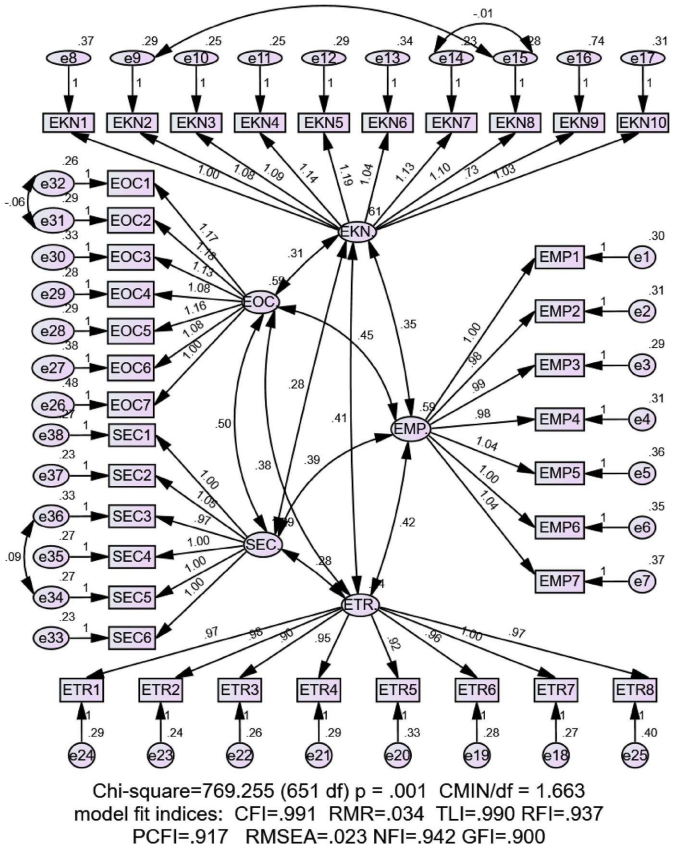

Figure 2. The overall measurement model. Source: Researcher, 2024.

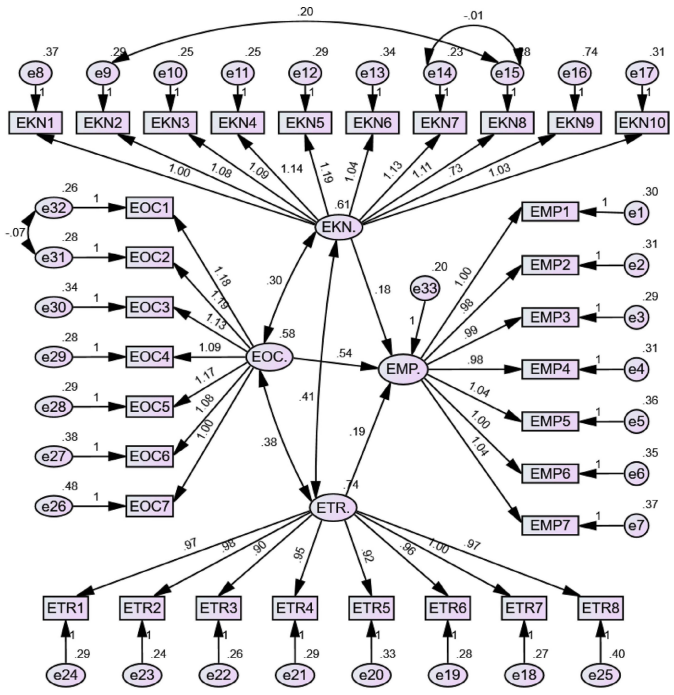

Figure 3. Overall structural model. Source: Researcher, 2024.

and statistically related to employability (B = .541, $p < .001$). This indicates that holding entrepreneurship training and entrepreneurship knowledge constant, a unit increase in entrepreneurship competencies would lead to .541 increase in the graduates' employability, supporting hypothesis one (H1), see Table 4.

Table 4. Influence of ECO on Employability, Controlling ETR and EKN.

			Unstandardized Estimate	Standardized Estimate	S.E.	C.R.	*p*	Remarks
EMP.	<---	ECO.	.541	.540	.058	9.397	***	Supported
EMP2	<---	ETR.	.191	.214	.047	4.080	***	Supported
EMP3	<---	EKN.	.181	.185	.048	3.769	***	Supported

Note: ***$p < .001$. Source: Researcher, 2024.

4.4. Moderation Analysis

Moderation analysis was performed to determine whether SEC strengthens, weakens or reverses the relationship between entrepreneurship competence and graduates' employability. Since the self-efficacy construct was measured by a five-point Likert-like scale, mean scores were computed and used to categorize the construct into three groups. The groups were the low self-efficacy group if the mean score was less than 3, moderate self-efficacy group if the mean score was 3, and high self-efficacy if the mean score was greater than three. The results show that that 63.2 percent of the respondents were categorized into the high self-efficacy group while 34.3 percent were categorized into the low self-efficacy group. For statistical reasons, the moderate self-efficacy group with only 2.5 percent of the respondents was excluded in the subsequent analysis, see Table 5.

Table 5. Description of SEC in three groups.

SEC	Frequency	Percent
Low	121	34.3
Moderate	9	2.5
High	223	63.2
Total	**353**	**10.0**

Source: Researcher, 2024.

4.4.1. Measurement Invariance

Measurement invariance testing, a requirement for the multi-group moderation analysis, was conducted to ensure that the measures of a given construct are consistent between the two self-efficacy groups. This step further ensures that measurement models yield a comparable representation of the same construct under various circumstances (Hair Jr. et al., 2010). Xu and Tracey (2017) recommend the use of metric invariance to determine if the measures of a latent variable (i.e. the observed variables) varied between groups. Two tests were carried out to assess

the measurement invariance—namely, configural invariance and metric invariance.

4.4.2. Testing for Configural Invariance

The fully unconstrained model was fitted to both low and high self-efficacy groups for entrepreneurial competence and graduates' employability to assess the configural invariance. The results show a CMIN values of 114.988 for the unconstrained model which is statistically significant ($p < .001$), see Table 6.

Table 6. Assessment of the configural invariance model.

Model	NPAR	CMIN	DF	*p*	CMIN/DF
Unconstrained	152	114.988	904	.000	1.262
Measurement weights	124	1266.995	932	.000	1.359
Structural weights	121	1288.587	935	.000	1.378
Structural covariance's	115	1495.835	941	.000	1.590
Structural residuals	114	1531.058	942	.000	1.625
Measurement residuals	82	1631.579	974	.000	1.675
Saturated model	1056	.000	0		
Independence model	64	9999.279	992	.000	1.080

Source: Researcher, 2024.

In line with the results in Table 6, the multi-group CFA generated the following indices: TLI = .926, CFI = .927, RMSEA = .044, NFI = 0,837, PCFI = .910 GFI = .784 and CMIN/df = 1.675, as shown in Figure 4. These fit indices showed a satisfactory configural model fit. It was, therefore, concluded that the factor structure is a good fit for both low and high self-efficacy groups.

In assessing the moderating effect of SEC on the relationship between ECO and EMP, important tests including the configural invariance and the Chi-square difference tests were assessed. The finding revealed that, the models with low and high SEC attained the configural non-invariance as evidenced by the model fit indices as shown in Figure 4 where all model fit indices were within the prescribed cut-offs hence implying the best fit of data to the model across the two groups of SEC with the corresponding Chi-squared difference of 144.217 being statistically significant at $p < .0001$. Then, the comparative analysis of the unconstrained as well as the constrained model was conducted, thereby being followed by the path-by path analysis, see Table 7.

4.4.3. Testing for Metric Invariance

The metric invariance test was carried out to assess whether the measured indicators are measuring the same thing across the two self-efficacy groups. This was achieved by comparing the factor loadings of the constrained model to those of the unconstrained model. The measurement weights should not be statistically significantly different across the two groups. The results revealed the Chi-square

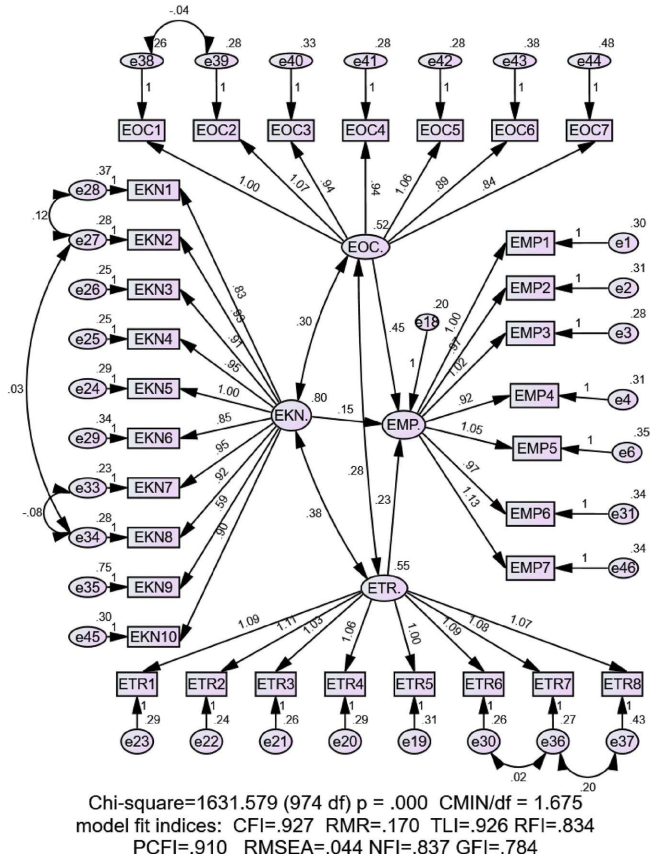

Figure 4. Structure model for mult-group CFA. Source: Researcher, 2024.

Table 7. Results of comparative analysis of unconstrained and constrained mode.

	Chi-square	df	*p*-value	Invariant
Overall Model				
Unconstrained	1288.587	935		
Fully constrained	1432.804	962		
Number of groups		2		
Difference	144.217	31	.000	**NO**
Constrained path				
EMP <--- EOC	1897.974	936	.000	
Chi-square Thresholds				
90% *Confidence*	991.86	936		
Difference	296.727	1	.100	
95% *Confidence*	1008.28	936		
Difference	28.307	1	.050	
99% *Confidence*	1039.58	936		
Difference	249.007	1	.010	

Source: Field Data, 2024.

statistic of 15.685 being not statistically significant at a 5% level ($p = .097$). These results imply that the observed indicators measured the same thing across the two self-efficacy groups, see Table 8.

Table 8. Metric invariance test results.

Model	DF	CMIN	p	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement weights	28	15.685	.9703	.004	.004	−.001	−.001
Structural covariance	38	24.429	.0432	.022	.025	.003	.003
Measurement residuals	73	43.031	.0023	.029	.031	−.003	−.003

Source: Researcher, 2024.

4.4.4. Path-by-Path Moderation Analysis

The presence of non-invariance further suggests that the effect of independent variables on the dependent variable might be different hence necessitating for the further moderation analysis called path-by-path analysis.

After constraining the ECO <--- EMP path, we performed a path analysis. The results showed that the computed Chi-squared values were (1897.974) which were even larger as compared to the threshold Chi-square value of 1039.58 at 5% as shown in Table 7. The results indicate the presence of a statistically significant moderating effect of SEC on the relationship between ECO and EMP.

5. Moderation Hypothesis Testing

Finally, a comparison was made between the low and high SEC groups regarding the impact of ECO on EMP. As shown in Table 9, EMP increased by .301 for every unit increase in ECO in the low SEC group. This increase was statistically significant at ($p < .001$) which is ($p = .000$). The study found that employability rose by .362 for every unit rise in ECO score using the standardized estimations. On the other hand, the EMP increased by .465 in the high SEC group for every unit rise in ECO, and this increase was statistically significant ($p < .001$) = .000 within both groups. This suggested that, the effect of moderator variable is consistent across the different group. The results show that, the moderator variable influences the relationship between independent variable (ECO) and dependent variable (EMP) similarly across the group. Thus, it may be said that Hypothesis of this study was supported that the moderator affected the ECO and EMP uniformly across all group positively.

Table 9. Moderating effect of SEC on the relationship between ECO and EMP.

Variables			Unstandardized Estimate	Standardized estimate	S.E.	C.R.	p	Label
Low SEC group								
EMP.	<---	EOC.	.301	.362	.080	3.754	***	b1_1
High SEC group								
EMP.	<---	EOC.	.465	.435	.080	5.782	***	b1_2

Source: Researcher, 2024.

6. Discussion of Findings

The main purpose of this study was to assess the influence of entrepreneurship competence on the employability of TVET graduates in Tanzania, using self-efficacy as moderator variable. The study employed Human Capital Theory as a main theory as used by Venesaar et al. (2022) on assessing the relationship between entrepreneurship competence and employability of graduates from TVET institutions while employing self-efficacy theory to moderate the relationship.

The results supported the hypothesis, which predicted that entrepreneurship competence would have a beneficial effect on employability of graduates in TVET institutions in Tanzania. This is in consistent with previous studies by Malhotra et al. (2022), Al Mamun et al. (2019), which discovered a positive and significant correlation between graduates' employability and their grasp of entrepreneurship competencies. The study indicates that graduates with a background in entrepreneurship competence are more likely to find employment. This finding is substantiated by studies that found a positive and substantial link between ECO and EMP, including Jackson (2014), Hodzic et al. (2015), Iglesias-Sánchez et al. (2019), and Ferreras-Garcia et al. (2021). Graduates with entrepreneurship competences are likely to perceive themselves with ability to self-employment. Further the finding confirmed that students who are well trained and acquired entrepreneurship competence were capable on demonstrating communication skill, ability of solving problems on their business, they have strong analytical skills, responsive to adopt changes appeared in the market places, as well assumed to have good academic grades for their employability.

Additionally, the finding established that, both high- and low-level group of SEC turned into a positive and significant relationship as a result of the effect of moderation analysis. The findings confirmed that the level of self-efficacy did not moderate the relationship between entrepreneurship competence and employability of TVET graduates. This showed that there is no significant difference between high and low group of self-efficacy that influence entrepreneurship competence on employability of TVET graduates. However, it was noticed that there was variation on contribution toward employability between the groups of SEC. The study confirmed further that, young professional's graduates who were competently trained on entrepreneurial competence, who tend to developed high levels of career competencies were more satisfied with their career and, subsequently, perceived themselves to be more internally motivated to performance hence employable.

Moreover, the results validated that the influence of moderation analysis resulted in a favorable and significant association for both the high- and low-level groups of SEC. This indicated that there is no discernible difference in the self-efficacy levels of the high and low groups when it comes to the impact of entrepreneurial competency on TVET graduates' employability.

Evidence showed that graduates with a high level of SEC possessed some degree of resisting temptation in performing actions which were influenced by their

performance (Van Gelderen et al., 2015). Most importantly the behavior of an individual towards performance could be viewed in the literature to have both internal and external control (Abelha et al., 2020; Blokker et al., 2019). With internal control, graduates were assumed to have adequate knowledge, abilities, skills and some discipline (competence) embedded when performing the behavior or task. In external control, graduates are considered the approval of peers and referenced groups to influence them into coming up with a positive attitude towards the behavior. The external control includes information patterning to employment, the ability to solve challenges they encountered when securing chances for their employment, reflecting the levels of self-efficacy attained (Abelha et al., 2020; Blokker et al., 2019; Van Gelderen et al., 2015).

In connection to theoretical contribution, the SEC in relation to entrepreneurship competence and employability had no developed effect since there is no difference in the significance levels between the two groups, as such the strength of the relationship between ECO and EMP in Human Theory remained as it was for both groups.

7. Conclusions and Recommendations

The study conclusion is divided into two subsections as follows; the first is the conclusion based on the influence of entrepreneurship competence on employability of graduates from technical and vocational education. The second conclusion is based on assessing the moderating effect when subjecting the determinants of entrepreneurship competence, into multi-group moderation analysis using the level of self-efficacy.

The findings of this study supported the predictions of HCT. Hence, it's clear that HCT is the most important theory in examining and predicting the employability of TVET graduates as is the case in this study. In relation to the objective, the study concluded that entrepreneurship competence had a positive and significant effect on employability of TVET graduates in Tanzania. The increase of entrepreneurship competence led to an increased employability of graduates.

Entrepreneurship competence is described as the set of demonstrable features and skills that enable and improve the efficiency or performance of a job. It was also confirmed in this study that graduates who acquired entrepreneurship competence develop intrinsic motivation towards action thus motivated to perform. However, there are other factors toward performance of an individual towards work out of competence. This includes environment, academic performance, practical experience, networking, mentorship and guidance, as well as ability to manage one's emotions.

Moderation analysis attempted to assess the effect of the level of self-efficacy on the relationship between Entrepreneurship competence and employability of TVET graduates.

With respect to the moderation effect on the relationship between entrepreneurship competence and employability of graduates, the results proved that level

of SEC had no significant effect. Both groups, low and high SEC displayed similar significant effect, however, variation was revealed on standardized estimate contribution. Group with low SEC showed low contribution toward employability, while high SEC group displayed high contribution towards employability.

In summing up the conclusion, stakeholders in TVET should ensure that, entrepreneurship competence in TVET institutions are enhanced. This can be done by reviewing entrepreneurship curriculum to be practically oriented that fostering problem solving, creativity and innovation in order to enhance graduates' confidence in their entrepreneurship capabilities. The TVET providers should be exposed to experiential learning by incorporating real word projects, internship, startup simulations to help students to develop entrepreneurship competences that align with the job market and entrepreneurship activities. In the same line graduates should be exposed to soft skills training on their course of learning. Things like communication skills, team work adaptability, and career services.

Therefore, the education policy makers, curriculum developers and TVET institutions in Tanzania should emphasize competence-based training to inculcate mind of competence to graduates for their employability. This calls for collaborative effort with various stakeholders (practitioners) coaching experts, business incubators for effective learning on entrepreneurship education for realization of entrepreneurship competence. Regulators for TVET training should also ensure that, training institutions transform themselves in the way they teach, enhancing the quality of their products and establishing some mechanisms for helping students to secure jobs.

The study has the following limitation, the current researcher adopted a survey method of approach, which is inadequate in dealing with the problem identified deeply. Therefore, future researchers could adopt a mixed methodology of quantitative and qualitative research approaches; perhaps this would bring about a much robust result. Secondly, the study sample was drawn from graduates in two selected government TVET institutions, subsequent researchers may use graduates from private TVET institutions and may extend the sample size. Likewise, subsequent researchers could wish to investigate the contribution of short of entrepreneurship competence courses programmes on employability of graduates.

This study is more useful to the regulators of TVET institutions, curriculum developers and tutors in TVET institutions understand the influence of entrepreneurship competence on graduate employability. Thus, we need to strength the training on entrepreneurship focuses on building graduates' competence for their employability.

Conflicts of Interest

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

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