

## The Role of Art-Based TVET in Enhancing Career Readiness and Economic Growth in Ghana

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### Abstract

Although art-based Technical and Vocational Education and Training (TVET) possess substantial potential to drive economic transformation, its specific role in enhancing career readiness and stimulating economic growth in Ghana remains underexplored in empirical literature. Grounded in Human Capital Theory (HCT), this study examines the structural relationships between art-based TVET, career readiness, and economic growth. Using a purposive sampling technique, data were collected from 251 respondents through an online survey questionnaire. The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed model and assess the predictive relationships among the constructs. The findings reveal that career readiness significantly enhances employability and contributes to economic growth through real-world training, entrepreneurial education, and practical skills development. Although TVET specialization demonstrates a positive relationship with employability and economic outcomes, its effect is comparatively weaker than that of career readiness, indicating that not all specializations are equally aligned with labour market demands. The study's primary contribution lies in extending Human Capital Theory to the context of art-based TVET in Ghana by empirically demonstrating that career readiness serves as a critical mediating mechanism linking creative vocational education to economic growth. By shifting the discourse from general TVET outcomes to the strategic role of career readiness within art-based programmes, the study provides novel evidence that informs curriculum reform, industry-education collaboration, and policy direction in Ghana and similar developing economies.

## 1. Introduction

Sustainable development goal 8 (SDG 8) advocates for decent work for all, productive employment, and sustainable economic growth (Frey, 2018; Rai, 2019). In order to accomplish this goal, governments worldwide are now taking advantage of Technical and Vocational Education and Training's (TVET) potential to obtain economic development and give young people jobs (Ogbuanya & Izuoba, 2015; Gyimah, 2020; Olabiyi, 2023). This is due to the fact that TVET is regarded as a major force behind national growth (Paryono, 2017; Ngor & Tambari, 2017).

Oviawe et al. (2017) revealed that TVET over the years has been able to address the skill gaps of the populace by providing practical training to individuals to make them fit into industry or establish their own businesses so as to become economically independent. TVET therefore has contributed to the reduction in the unemployment rate of developing countries through skill and technology transfer (Hartl, 2009; Okolie et al., 2020). Countries such as Malaysia, China, Japan and Korea owe their economic achievements and technological advancement to TVET (Cheok & Ran, 2023; Na, 2021). Ghana as a developing country has the capability to benefit from the full potentials of TVET when necessary, measures are taken to develop and improve the TVET sub-sector through the provision of infrastructure and requisite logistics (Aboagye, 2021; Aryeetey et al., 2021). In order to meet this expectation, the government of Ghana has taken steps over the years to retool and upgrade infrastructure in TVET education institutions such as Technical Universities, Vocational Institutes and Technical Schools (Darteh, 2021; Bentum-Micah et al., 2024; Gyampoh et al., 2025).

Despite the efforts of government to promote TVET, there is a gap in integrating art education into the TVET spectrum which may limit young people who are inclined towards the creative industry. In addition, not much research has been done on the ways that art might be used in TVET to enhance Ghana's national development, particularly in sectors like innovation, job creation, tourism, and income generation. Therefore, the purpose of this study is to explore the possibility of integrating art into the TVET framework in Ghana as well as examining how art can be used as a tool to enhance career readiness and national development. It will investigate the current state of art education within TVET, identify challenges and opportunities, and assess the broader impact art-based TVET has on career readiness, economic growth, and youth employment.

By addressing this gap, the research seeks to provide insights into how Ghana can fully harness the power of TVET through the inclusion of art which may contribute to both individual skill development and the nation's socio-economic advancement. The results of the study will have practical implications for education providers in the TVET domain (i.e. Technical Universities, Technical and Vocational Institutes), the Ministry of Education, Commission for Technical and Vocational Education and Training (CTVET), Ghana Education Service (GES), Ministry of Employment, industry players and all who matter in the TVET value chain.

## 2. The Study's Theoretical Framework

This study adopts Human Capital Theory (HCT) to examine how integrating art into Technical and Vocational Education and Training (TVET) enhances students' skills and contributes to individual productivity and national socio-economic development. HCT conceptualizes education and training as strategic investments that increase individuals' knowledge, competencies, and productive capacity, thereby generating economic returns at both the individual and societal levels (Blundell et al., 1999; Becker, 2009). Within this framework, the accumulation of human capital occurs through formal education, vocational training, apprenticeships, and continuous skill development (Misko, 2008). Such investments improve employability, income potential, and labour market participation, ultimately contributing to economic growth (Hanushek & Wößmann, 2007). TVET, therefore, represents a direct and practical mechanism for building human capital because it equips learners with market-relevant and productivity-enhancing skills.

In the context of this study, the integration of art into TVET represents an expansion of human capital through the development of creative, technical, and entrepreneurial competencies. The first construct, art-based skill acquisition and development, reflects the foundational premise of Human Capital Theory, which posits that education enhances individuals' productive capabilities. Through specialized training in artistic disciplines such as design, craft production, and visual communication, students acquire both technical and creative skills that increase their value in the labour market. The second construct, employability, career prospects, and economic outcomes, directly corresponds with the central proposition of HCT that investments in education and training improve individuals' employment opportunities, productivity, and income potential. Art-based TVET equips learners with practical competencies that enable them to secure employment in creative industries or pursue professional careers within the cultural and creative economy. Consequently, individuals who possess specialized artistic and vocational skills are more likely to experience improved career prospects and economic mobility.

The third construct, art-based TVET contribution to national development, reflects the broader macroeconomic implications of human capital accumulation. According to HCT, when individuals acquire relevant skills and become more productive, their contributions collectively enhance national economic performance. Art-based TVET contributes to national development by supporting the growth of creative industries, promoting

innovation, generating employment, and strengthening cultural economies. The development of a skilled creative workforce can therefore contribute to economic diversification and sustainable development.

The fourth construct, art-based TVET influence on entrepreneurship and self-employment, aligns with the entrepreneurial dimension of human capital development. Human Capital Theory suggests that individuals with higher levels of knowledge, skills, and competencies are more capable of identifying economic opportunities and establishing productive enterprises. Art-based vocational training equips learners with practical production skills and creative problem-solving abilities that can be transformed into entrepreneurial ventures, such as small-scale creative businesses, craft enterprises, design studios, and cultural enterprises. As a result, art-based TVET can foster self-employment and stimulate the growth of small and medium enterprises within the creative sector.

Extending this theoretical lens, art-based TVET not only strengthens technical proficiency but also cultivates creativity, innovation, critical thinking, and entrepreneurial capability competencies increasingly essential in modern economies. By diversifying and strengthening students' skillsets, art-based TVET has the potential to enhance career readiness, stimulate job creation, and promote sustainable economic development in Ghana. Furthermore, this perspective aligns with Sustainable Development Goal 8 (SDG 8), which emphasizes decent work and sustained economic growth. By embedding creativity and entrepreneurial competencies within vocational education, art-based TVET can contribute meaningfully to inclusive economic transformation. Through the lens of Human Capital Theory, the study therefore conceptualizes art-based TVET as a strategic investment that develops individual capabilities, enhances employability, promotes entrepreneurship, and contributes to broader national development outcomes.

### 3. Review of Related Literature and the Formulation of Hypotheses

#### 3.1 The Status of Ghana's TVET

Technical and Vocational Education and Training (TVET) has seen some adjustments since it was first introduced into Ghana's educational system (Appiah & Obinnim, 2015; Owusu-Agyeman et al., 2025). Since the creation of second-cycle vocational and technical institutes, TVET has established a presence in the higher education sector, demonstrating its function in student training at the nation's polytechnics and technical universities. Thus, in Ghana, TVET is practised at two levels of the educational system, namely upper secondary level and tertiary level in the then Polytechnics and formal Technical Universities (UNESCO, 2016). In broader terms, TVET in Ghana can be classified into formal, non-formal and informal training (Amedorme & Fiagbe, 2013; Hermann & Olesen, 2024). The formal training for TVET talks about a well-structured school environment where students are trained within a period of time and issued with certificates upon completion of their study. Non-formal TVET on the other hand is delivered based on learning objectives, time table and educational facility support but no certification is required. The informal TVET type is delivered basically on the traditional apprenticeship model (Amedorme & Fiagbe, 2013; Hermann & Olesen, 2024).

Over the years, various governmental institutions have been introduced to regulate and supervise TVET practice in Ghana (Baffour-Awuah, 2012; Folsom & Awuah, 2026). The National Vocational Training Institute (NVTI), the Council for Technical and Vocational Education and Training (COTVET), the National Board for Professional and Technicians Examinations (NABPTEX), and the Ghana Technical and Vocational Education and Training Service (Ghana TVET Service) are some of these organizations (Amedorme & Fiagbe, 2013; Mensah, 2023). However, in August 2020, with the support of the Presidential accent, COTVET and NABPTEX were consolidated into the Commission of Technical and Vocational Education and Training (CTVET) to provide effective monitoring and regulation.

Despite its goal of providing young people with the technical and professional skills required for self-sufficiency and socio-economic growth, TVET in Ghana has various challenges (Osei-Asibey, 2015; Amedorme & Fiagbe, 2013; Adusei, 2025). Some of these challenges include a scarcity of technical institutes, a lack of facilities, equipment, and resources for student training, a lack of technical instructors or facilitators for TVET, and the difficulty of advancing in one's career due to people's negative attitudes and perceptions about TVET education (Joseph, 2022; Osei-Asibey, 2015; Amedorme, and Fiagbe, 2013).

#### 3.2 Art-Based Learning In TVET

White (2020) defines art-based learning (ABL) as the utilization of creative skills, techniques, and experiences as instructional materials to support learning in non-artistic domains and fields. Art-based learning, according to Hong et al. (2023), is a reflective process that involves delayed learning in which new insights are gained via the study of art. ABL was introduced by Dr. Jeroen Lutters, a lecturer in Art Education, to provide solutions to nature's problems by thinking out of the box (Hong et al., 2023). Through a variety of artistic mediums, art-based techniques allow people to collaborate in order to learn, create, express, and think creatively and, consequently, to think differently (Khau et al., 2013; Eaves, 2014; Li & Gong, 2025). The use of ABL in TVET delivery provides both the learner and the instructor the opportunity to explore various ways of solving our daily problems (Kissi

et al., 2020). For instance, the use of visuals, texts, animation, and imagery by teachers to teach helps the learner to clearly follow the lesson as well as grasp the skills that is needed to produce basic products for utilitarian purposes (Malamed, 2015).

Art integration into TVET is one of the new educational paradigms that aligns with new educational reforms that focus on procedural skills and thinking skills of learners necessary for the fourth industrial revolution (Marshall, 2014; Mishra, 2025; Kana & Letaba, 2024). Art integration is described as a teaching technique in which students use an artistic medium to develop and demonstrate their learning (John, 2023; Ledo-Lane, 2023). Through a creative process, students link an art form to other subjects like business studies or engineering (Marshall, 2014; Mishra, 2025). Consequently, the incorporation of art into TVET promotes cooperative research and interdisciplinary solutions (Heines et al., 2024). In order to harness the transformative power of art for the development of answers to socio-ecological concerns, Heines et al. (2024) investigated the integration of art-based practices within science. Through the arts, students can connect to live experience in ways that go beyond merely visual and performance-oriented accomplishments (Sagaram, 2016; Vitols & Zisberga, 2023). The social, psychological, and emotional facets of learning, as well as other facets of life, can be readily represented and comprehended through the integration of the arts into TVET (Retief, 2025; Razali et al., 2023). As a teaching method, arts-based learning aims to give students the chance to apply experiential learning as a tactic in authentic settings and within their local communities (Sagaram, 2016; Vitols & Zisberga, 2023). This improves learning outside of the classroom and in the community, which adds to or encourages the growth of empathy for other people (Misir, 2022; Murad, 2022).

### 3.3 Significant Influence of Career Readiness and Employability of Art-Based TVET Students on Economic Growth and Entrepreneurship

The Human Capital Theory (HCT), developed by Gary Becker and Theodore Schultz in 1960 (Berker, 1964), was used to establish a theoretical link between career preparation and employability of art-based TVET students on the one hand, and economic growth and entrepreneurship on the other. This theory holds that education and skill development increase an individual's productivity, which leads to increased employability and economic growth. Therefore, art-based TVET programs equip students with specialized skills that increase their market value, making them more employable. As these students enter the labor market or start businesses, their contributions drive economic expansion and foster entrepreneurial ecosystems. A study by Nugraha et al. (2020) looked into TVET graduates' employability skills. Their findings revealed that employability skills are required to equip TVET students for the labor market. The study found that the following TVET skills are necessary for the labor market: critical thinking, creativity and innovation, management, information and technology, and problem-solving (Nugraha et al., 2020; Nayan & Nayan, 2024).

In their study, Nayan & Nayan (2024) examined the significance of employable skills to TVET. They stated in their work that lack of adequate skills in TVET limits the performance and employability. According to the study's findings, a half-trained graduate will struggle to make a living on his own, which will result in poverty and financial loss for the state. They intimated that well-trained TVET graduates have the capacity to generate revenue for themselves and the country (Nayan & Nayan, 2024). Mariano & Tantoco (2023) stated that apart from the technical skills art-based TVET students need for employability, they also need soft skills like good communication, leadership quality, good relation with subordinates and superiors and productivity. Dahalan et al. (2020) in their study investigated the readiness of TVET students in Malaysia for entrepreneurship. The findings demonstrated that TVET students' preparedness for entrepreneurship is contingent upon their willingness to start their own business and the comprehensive instruction they receive (Dahalan et al., 2020; Bassah & Noor, 2023). They contend that entrepreneurship is the most effective strategy for lowering youth unemployment and promoting economic growth.

According to Abdullah et al. (2022), entrepreneurs have the ability to create jobs and contribute to the nation's economic prosperity. In a related study, TVET's contribution to job creation in Nigeria was investigated by Amiesimaka & Nwankpa (2023). According to the findings of the study, TVET generates employment prospects by fostering the development of employability, entrepreneurship, and poverty-reduction skills. A study by Alhassan et al. (2024) examined how TVET aided Ghana's socio-economic growth. Their study's conclusions highlight the significance of TVET for Ghana's socio-economic advancement. While the aforementioned empirical studies (Nugraha et al., 2020; Nayan & Nayan, 2024; Mariano & Tantoco, 2023; Dahalan et al., 2020; Abdullah et al., 2022; Bassah, 2023; Amiesimaka & Nwankpa, 2023; Alhassan et al., 2024) indicate a connection between TVET students' employability and career readiness and economic growth and entrepreneurship, no research has examined the relationship between art-based TVET students' employability and economic growth and entrepreneurship in Ghana. This creates a knowledge gap, hence the need to carry out this study. Based on empirical literature, the study hypothesizes that:

*H<sub>1</sub>: Career readiness and employability of Art based TVET significantly influence economic growth and entrepreneurship.*

### 3.4 Moderating Role of TVET Subject Specialization on the Relationship Between Career Readiness and Employability/Economic Growth, and Entrepreneurship

Recent research has highlighted the moderating influence of TVET subject specialization on the relationship between entrepreneurship, employability/economic growth, and career readiness. According to empirical literature, employability is improved by specialization in high-demand industries like information technology (IT), renewable energy, the arts, and healthcare as opposed to industries with few job openings. It further opined that, a TVET graduate's job preparedness is more likely to result in employment if they specialize in a field with strong labor market demand (Nugraha et al., 2020; Mohammed, 2020; Hoque, 2023; Drus, 2025). The aforementioned findings make it abundantly evident that TVET students' areas of specialty are valued more highly than their mere skill development when it comes to their employability or capacity to adapt into the labor market. This has an implication for prospective students to offer subject combinations that are marketable.

According to Afeti & Adubra (2012), the contribution of TVET graduates to economic growth will vary depending on the field of study. They are of the view that innovation and productivity are increased by specializations that are in line with industrial and technical developments (Afeti & Adubra, 2012; Ismayati et al., 2020; Okon, 2019; Mazlan, 2015). This gives an indication that offering of subjects that foster the acquisition of 21<sup>st</sup> century skills are the most preferred. This has an implication for curriculum development to include 21<sup>st</sup> century skills and industry 4.0 skills for economic development. On the promotion of entrepreneurship, Tikoudi (2023) stated that some TVET specialties, like agri-tech, digital skills, and business management, better equip people for self-employment and entrepreneurship. It was further revealed that the likelihood of starting and maintaining a business is higher for practically-oriented subjects such as art, engineering, agriculture and information communication technology (ICT) than subjects that are theory-based. The empirical literature reviewed (Afeti & Adubra, 2012; Ismayati et al., 2020; Okon, 2019; Mazlan, 2015; Nugraha et al., 2020; Mohammed, 2020; Hoque, 2023; Drus, 2025; Tikoudi, 2023) on the moderating role of TVET specialized areas and career readiness, employability/economic growth, and entrepreneurship strengthens the positive relationship that exists among the variables. Due to the documentary evidence provided above, the following hypothesis is adduced by the study:

*H<sub>2</sub>: Art-based TVET Subject area of specialization significantly moderates the relationship between career readiness and employability and economic growth and entrepreneurship.*

### 3.5 The Correlation Between Art-based TVET Subject Area of Specialization and Economic Growth and Entrepreneurship

The relationship between art-based TVET subject area of specialization and economic growth and entrepreneurship can be explained through the Creative Economy Theory (Hopkins, 2007), which posits that creativity, cultural knowledge, and artistic innovation constitute vital drivers of modern economic development. The theory emphasizes that creative and cultural industries generate economic value through the production, distribution, and commercialization of creative goods and services. Within this framework, art-based technical and vocational education and training (TVET) plays a crucial role in developing the human capital required to sustain creative industries, thereby contributing to employment creation, entrepreneurship, and national income generation.

Art-based TVET disciplines provide students with specialized technical and creative competencies that enable them to participate effectively in cultural and creative sectors such as graphic design, fashion, ceramics, sculpture, multimedia production, and advertising. These sectors are increasingly recognized as significant contributors to economic growth and diversification in many economies (Skavronska, 2017; Adewale et al., 2025). According to Daghbashyan & Björn (2013), specialization in creative and artistic fields stimulates innovation, enhances productivity, and encourages the emergence of new enterprises within the creative industry. Similarly, Andoh (2022) & Kaanen (2025) argue that creative vocational training equips individuals with the practical competencies necessary to transform artistic talent into economically viable products and services.

Investment in creative vocational education also supports sustainable economic development by strengthening cultural industries and promoting indigenous creativity (Pavliuk, 2023). Bisalla et al. (2024) emphasize that technical training in art and design enhances the productive capacity of individuals and contributes to socio-economic transformation by enabling graduates to generate income through the commercialization of artistic products. Their findings highlight the indispensable role of art-based TVET in national development and underscore the need to strengthen artistic training to promote industrialization and financial sustainability.

Furthermore, art-based TVET contributes to economic development by fostering entrepreneurial capabilities among graduates. According to Nivin and Plettner (2009), vocational training in the arts equips learners with the technical skills required to produce marketable artefacts and creative products. When effectively harnessed, these skills can lead to the establishment of small and medium-sized enterprises within the creative sector, thereby generating employment and improving livelihoods (Broadhead et al., 2022). Graduates who specialize in art-based fields often acquire practical competencies that enable them to establish independent studios, workshops, or creative enterprises and employ other skilled workers (Corpuz, 2023; Freedman, 2025). Technical proficiency in artistic production is therefore essential for developing competitive products that can generate revenue in both local and international markets (Caves, 2000; Freedman, 2025). However, the economic potential of artistic skills can be maximized when they are complemented with entrepreneurial competencies such as business management, marketing, and financial literacy. Integrating entrepreneurship education into art-based TVET programs enhances students' capacity for self-employment and enterprise development (Iyama & Chukwuka, 2024). Entrepreneurship has widely been recognized as an important mechanism for reducing unemployment and stimulating economic growth (Dahalan et al., 2020; Kaanen, 2025). The choice of art-based TVET subject areas as a career pathway therefore provides opportunities for skill acquisition, creative problem-solving, and job creation (Dahalan et al., 2020; Corpuz, 2023). In the context of decreasing graduate unemployment, entrepreneurship has become a viable strategy for economic participation and self-reliance (Kuratko, 2003; Biney, 2021). Encouraging entrepreneurial activities among graduates of art-based TVET can stimulate economic productivity, expand employment opportunities, and reduce unemployment rates within the broader economy (Awogbenle & Iwuamadi, 2010; Uleanya, 2020).

Although existing studies (Daghbashyan & Björn, 2013; Andoh, 2022; Awogbenle & Iwuamadi, 2010; Skavronska, 2017; Adewale et al., 2025; Caves, 2000; Iyama & Chukwuka, 2024; Dahalan et al., 2020; Corpuz, 2023) indicate that vocational specialization can contribute to entrepreneurship and economic growth, empirical research specifically examining the relationship between art-based TVET subject area of specialization and economic growth and entrepreneurship remains limited. This gap in the literature justifies the need for further empirical investigation. Therefore, the following hypothesis is proposed:

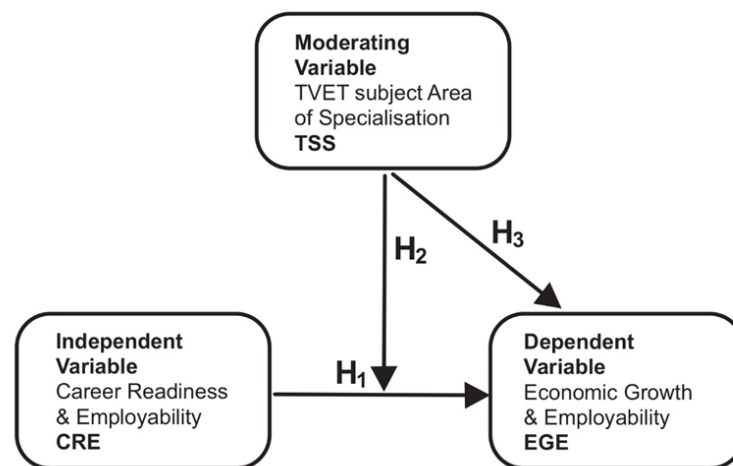
*H<sub>3</sub>: Art-based TVET subject area of specialization correlates with economic growth and entrepreneurship.*

#### 4. The Study's Conceptual Model

The conceptual model (figure 1) of this study is grounded in Human Capital Theory (HCT), which posits that education and skills development enhance individuals' productive capacity and contribute to economic growth. In this model, Career Readiness and Employability (CRE) derived from art-based TVET is treated as the independent variable, while Economic Growth and Entrepreneurship (EGE) represent the dependent variable. The model proposes that when students acquire practical artistic and vocational competencies, they become more prepared for the labour market and entrepreneurial activities, which in turn contribute to broader economic outcomes. Specifically, the model proposes that improved career readiness and employability among students of art-based TVET can stimulate economic growth and entrepreneurship through increased productivity, innovation, and enterprise creation. This relationship forms the basis of Hypothesis 1 (H1), which states that career readiness and employability significantly influence economic growth and entrepreneurship.

The model further introduces TVET Subject Area of Specialization (TSS) as a moderating variable. Specialization in particular art-based disciplines as graphic design, textiles, ceramics, or sculpture may influence how effectively career readiness and employability translate into economic outcomes. Therefore, Hypothesis 2 (H2) proposes that the art-based TVET subject area of specialization moderates the relationship between career readiness and employability and economic growth and entrepreneurship.

Additionally, specialization itself may directly contribute to economic development because different art-based disciplines equip students with distinct technical and creative competencies that can be commercialized in the labour market or through entrepreneurial ventures. This direct relationship is captured in Hypothesis 3 (H3), which states that the art-based TVET subject area of specialization correlates with economic growth and entrepreneurship. Overall, the conceptual model suggests that art-based skill development enhances employability, while subject specialization strengthens and shapes the pathway through which these competencies contribute to entrepreneurship and economic growth.



**Fig. 1** The study's conceptual framework (researchers' construct, 2025)

## 5. Methodology

### 5.1 Research Design

A cross-sectional survey design based on the quantitative research method was used to obtain data from 251 respondents at a single point in time. This approach provided a snapshot of the variables of interest and measured simultaneously across the targeted population (Creswell & Creswell, 2018; Hudson et al., 2020; Moore et al., 2020). This made the process relatively efficient and cost-effective compared to longitudinal designs (Bryman, 2016; Bengey et al., 2023). The use of the quantitative approach facilitated the collection of structured numerical data amenable to statistical analysis across the population of art and design students in Ghanaian higher education (Creswell & Creswell, 2023; Gbadegbe et al., 2024).

### 5.2 Population of the Study and Sampling Procedure

The target population of the study consisted of 700 art and design students drawn from various institutions of higher education in Ghana. This population was selected because the students were actively engaged in art-based training and were therefore well positioned to provide information relevant to the objectives of the study. The choice of multiple institutions was to mitigate institution-specific biases and improve the representativeness of the findings across the Ghanaian art and design higher education landscape. However, due to the scarce resources for the study, purposive sampling technique was adopted to select 251 respondents (constituting 30% of the target population) which is considered adequate for survey research (Etikan et al., 2016; Hossan et al., 2023). According to Leedy and Ormrod (2015), selecting about 30% of a relatively small population can provide a representative sample and reliable data for quantitative analysis and the examination of the relationships among variables investigated in the study. Additionally, the 251-sample size was selected for the study based on the recommendations of multivariate researchers like Hair et al. (2019) where a minimum case-to-variable ratio of 10:1 or 20:1 is considered to be appropriate and adequate.

In this study, the obtained sample exceeded these thresholds and satisfied the requirement for adequate sample size. Furthermore, this sample provided sufficient statistical power that exceeded 0.95, which was well above the recommended threshold of 0.80 for hypothesis-testing studies. The medium effect size ( $f^2 = 0.15$ ) and a significance level of  $\alpha = 0.05$  confirmed that the sample was large enough to detect statistically significant effects should they exist, thereby minimizing the risk of a Type II error (Nicholson et al., 2020; Kang, 2021; Giner-Sorolla et al., 2024). The data collection was performed using both online survey instrument (Google Forms) and paper printed questionnaires. The duration for data collection took two months. Permission was obtained and approval granted from relevant authorities before undertaking the actual data collection. Prior to the administration of the questionnaires, participants were informed about the nature and objective of the study, and participation was entirely voluntary. The survey questionnaire was completed by 138 male and 113 female art and design students.

### 5.2.1 Common Method Bias

Common Method Bias (CMB) poses a potential risk in this dataset since both independent and dependent variables were collected from the same respondents at a single point in time and can result in method variance that artificially inflates or deflates observed relationships (Podsakoff et al., 2003; Podsakoff et al., 2024). To mitigate this risk, the design and administration phase took into consideration several procedural remedies drawn from scholarly literature (Yao & Xu, 2021; Polas, 2025). First, participants were assured of anonymity and made aware that there were no right or wrong answers. Secondly the questionnaire was designed with simple, concise wording, with items measuring different constructs kept appropriately separated. This reduced evaluation apprehension, socially desirable responding and the psychological proximity between predictor and criterion variables. Finally, Harman's Single-Factor Test was conducted through unrotated exploratory factor analysis to assess the extent of CMB. The results are reported in the subsequent data analysis section.

### 5.3 Measures

The Human Capital Theory (HCT) was used as a theoretical framework to develop the data collection instrument (Henseler et al., 2016; Dash & Roy, 2021). The survey questionnaire was designed with three components: the first component contained the demographic characteristics of respondents and has five (5) items: gender, age range, qualification pursued at the tertiary level, TVET subject area of specialization in art and current level of study. The second component measures the impact of art education on individual skill acquisition, employability, career prospects and economic outcomes. It comprised two (2) constructs: (art-based skill acquisition and development), and (employability, career prospects and economic outcomes). The constructs contained 8 items and 6 items respectively. The third component measures art-based TVET contribution towards entrepreneurship, self-employment and national development. It contained two (2) constructs: art-based TVET contribution to national development and art-based TVET influence on entrepreneurship and self-employment. Each construct contained 8 items and 5 items respectively. With the exception of the respondents' personal details, every item was scored on a 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree." Before the survey instrument was finally administered, a pilot study with 40 art and design students was conducted to confirm that the questionnaire was appropriate. In all, a total of four (4) constructs and 32 items were contained in the questionnaire.

### 5.4 Ethical Clearance

Before beginning the study, the researchers obtained ethical approval from the Ho Technical University's Ethics Committee. Furthermore, the authors confirm that they carried out the study in compliance with the ethical principles specified in the 1964 Declaration of Helsinki and subsequent amendments.

### 5.5 Data Analysis

The data collected from respondents was processed using the Statistical Package for the Social Sciences (SPSS) and Partial Least Square Structural Equation Modeling (PLS-SEM) software. The PLS-SEM was utilized to investigate the direct and indirect relationships in the proposed model, while descriptive statistics were employed to analyze the respondents' demographic data (Hair et al., 2019).

### 5.6 Demographic Attributes

As captured in Table 1, the sample population included 138 (55%) males and 113 (45%) females. Majority were within the age range of 19-25 years (80.5%) with 18 years and below being the least, indicating that the sample is predominantly young adults. A significant portion of the participants held a Higher National Diploma (HND) qualification, 170 (67.7%), while the remaining 81(32.3%) have a Degree or BTech qualification. The most common subject area of specialization in Art was Graphic/Communication Design, with 123 (49.0%) participants, followed by fashion design and technology accounting for 93 (37.1%). Others included Textile Technology/Design (16; 6.4%), Painting/Picture Making (9; 3.6%), Sculpture/Metal Fabrication (6; 2.4%), and Ceramic Technology/Design (4; 1.6%). A majority of respondents were in Level 200 (160; 63.7%). Level 300 students made up 73 (29.1%), while Level 400 had 15 (6%), and Level 100 had 3 (1.2%) participants.

**Table 1** Demographic attributes of respondents

| Characteristics                            | Frequency | Percentage % |
|--------------------------------------------|-----------|--------------|
| <b>Gender</b>                              |           |              |
| Male                                       | 138       | 55           |
| Female                                     | 113       | 45           |
| Total                                      | 251       | 100          |
| <b>Age range</b>                           |           |              |
| 18 years and below                         | 5         | 2            |
| 19-25 years                                | 202       | 80.5         |
| 26-35 years                                | 36        | 14.3         |
| 36-45 years                                | 8         | 3.2          |
| Total                                      | 251       | 100          |
| <b>Academic Qualification</b>              |           |              |
| Higher National Diploma (HND)              | 170       | 67.7         |
| Degree / BTECH                             | 81        | 32.3         |
| Total                                      | 251       | 100          |
| <b>TVET subject Area of specialization</b> |           |              |
| Graphic/Communication Design               | 123       | 49.0         |
| Textile Technologist/Design                | 16        | 6.4          |
| Ceramic Technologist/Design                | 4         | 1.6          |
| Painting/Picture making                    | 9         | 3.6          |
| Sculpture/Metal fabrication                | 6         | 2.4          |
| Fashion Design and Technology              | 93        | 37.1         |
| Total                                      | 251       | 100          |
| <b>Current level of Study</b>              |           |              |
| Level 100                                  | 3         | 1.2          |
| Level 200                                  | 160       | 63.7         |
| Level 300                                  | 73        | 29.1         |
| Level 400                                  | 15        | 6            |
| Total                                      | 251       | 100          |

## 5.7 Measurement Model Assessment

The validity, reliability, and internal consistency of the measurement model employed in the study were confirmed by these statistical tests: Average Variance Extracted (AVE), Composite Reliability, and Cronbach's Alpha. As indicated in Table 2.0, all of the latest constructs' measures demonstrated acceptable levels of internal consistency. Both the Composite Reliability (CR) and Cronbach Alpha (CA) values ( $0.936 > CR \leq 0.948$ ) have beyond the suggested cutoff of 0.7 (Gebremedhin et al., 2022; Raja, 2023). The degree to which each item reflects its corresponding latent construct is indicated by the factor loadings for each item under the constructs. Loadings above 0.7 are generally considered acceptable, while those above 0.8 are considered strong (Cheung et al., 2023).

In terms of convergent validity, the indices of Average Variance Explain (AVE) values ( $0.684 < AVE \leq 0.876$ ) exceeded the suggested value of 0.5 (Fornel & Larcker, 1981), and the outer loadings range between 0.731 and 0.900. The overall loading for Career Readiness and Employability (CRE) construct is 0.858 with individual items (CRE1 to CRE5) having loadings ranging from 0.800 to 0.890. Subsequently, strong loadings were seen across all of the items, suggesting a high degree of validity and dependability. The construct: Economic Growth and Entrepreneurship (EGE) demonstrate strong loadings across its items with an average loading of approximately 0.870. The individual items ranging from 0.828 to 0.900 suggest that all items contribute positively to the construct. TVET subject area of specialization (TSS) construct reveals moderate loadings across its items with an average loading of approximately 0.7256. The loadings for individual items range from 0.731 to 0.823. This suggests a reasonable level of reliability and validity. Overall, the results indicate that the construct is well-defined

and reliably measures the concepts in the study. The results show a satisfactory level of convergent validity (Hair et al., 2014).

In order to evaluate discriminant validity, the study used the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio (Larcker, 1981; Hair et al., 2019). The determined AVE and HTMT values were within the suggested ranges (Hair et al., 2019; Hair et al., 2013). When discriminant validity is evaluated using the HTMT criterion, results below 0.85 (or 0.90 in certain situations) indicate good discriminant validity. By contrasting the square root of each construct's AVE (Average Variance Extracted) with the correlations between constructs, the Fornell-Larcker criterion evaluates discriminant validity. As shown in Table 3.0 HTMT values show the following results: The correlation between Economic Growth and Entrepreneurship (EGE) and Career Readiness, and Employability (CRE) is 0.871, which is slightly above the threshold and indicates potential overlap. The moderating effect of CRE on EGE has a value of 0.366, demonstrating good discriminant validity. Additionally, the TVET subject area of specialization (TSS) construct exhibits distinctiveness from other constructs, as all values (0.068, 0.093, and 0.051) fall well below the threshold. With CRE at 0.850 and EGE at 0.870, the diagonal values for the Fornell-Larcker criterion show the square root of the Average Variance Extracted (AVE) for each construct, indicating good discriminant validity because these values are higher than the correlations with other constructs. The correlations between the constructs are as follows: CRE and EGE show a correlation of 0.809, while the correlation between CRE and the moderating variable is 0.344. The correlation between CRE and TVET subject area of specialization (TSS) is 0.049, and the correlation between EGE and the moderating variable is 0.435. Additionally, EGE and TSS have a correlation of 0.090, while the correlation between the moderating variable and TSS is 0.827. The low correlations between CRE and TSS (0.049) and EGE and TSS (0.090), along with the moderate correlation between the moderating variable and TSS (0.827), suggest that TSS remains distinct from the other constructs. While the correlation between CRE and EGE is relatively high, the other correlations, particularly with TSS, indicate that TSS is a distinct construct. These findings confirm the validity of all the constructs utilized in the study and show strong discriminant validity.

**Table 2** Latent construct validity, reliability, and factor loadings

| Construct and Items                        | Loadings | VIF   | CR    | CA    | AVE   |
|--------------------------------------------|----------|-------|-------|-------|-------|
| Career Readiness and Employability (CRE)   |          |       | 0.948 | 0.936 | 0.722 |
| CRE <sub>1</sub> (ASAD10)                  | 0.863    | 2.967 |       |       |       |
| CRE <sub>2</sub> (ASAD6)                   | 0.8      | 2.375 |       |       |       |
| CRE <sub>3</sub> (ASAD7)                   | 0.89     | 3.926 |       |       |       |
| CRE <sub>4</sub> (ASAD 8)                  | 0.868    | 3.315 |       |       |       |
| CRE <sub>5</sub> (ASAD9)                   | 0.867    | 3.027 |       |       |       |
| Economic Growth and Entrepreneurship (EGE) |          |       | 0.94  | 0.92  | 0.758 |
| EGE <sub>1</sub> (ATCD22)                  | 0.828    | 2.222 |       |       |       |
| EGE <sub>2</sub> (ATCD23)                  | 0.859    | 2.552 |       |       |       |
| EGE <sub>3</sub> (ATIE30)                  | 0.877    | 2.923 |       |       |       |
| EGE <sub>4</sub> (ATIE31)                  | 0.9      | 3.523 |       |       |       |
| EGE <sub>5</sub> (ATIE32)                  | 0.887    | 3.073 |       |       |       |
| TVET Subject Area of Specialization (TSS)  |          |       | 0.938 | 0.923 | 0.684 |
| TSS <sub>1</sub> (DC4*ASAD10)              | 0.784    | 2.453 |       |       |       |
| TSS <sub>2</sub> (DC4*ASAD6)               | 0.731    | 2.191 |       |       |       |
| TSS <sub>3</sub> (DC4*ASAD7)               | 0.823    | 3.412 |       |       |       |
| TSS <sub>4</sub> (DC4*ASAD8)               | 0.82     | 3.36  |       |       |       |
| TSS <sub>5</sub> (DC4*ASAD9)               | 0.82     | 2.944 |       |       |       |
| TSS <sub>6</sub> (DC4*ECPE14)              | 0.735    | 1.992 |       |       |       |
| TSS <sub>7</sub> (DC4*ECPE15)              | 0.776    | 2.331 |       |       |       |

**Table 3** Discriminant validity based on the Fornell, Larcker, and HTMT criterion

| Constructs                                    | CRE   | EGE   | TSS   |
|-----------------------------------------------|-------|-------|-------|
| <b>Fornell-larcker Criterion</b>              |       |       |       |
| Career Readiness and Employability            | 0.85  |       |       |
| Economic Growth and Entrepreneurship          | 0.809 | 0.87  |       |
| Moderating CRE and EGE                        | 0.344 | 0.435 | 0.827 |
| TVET subject area of specialization           | 0.049 | 0.09  | 0.037 |
| <b>Heterotrait-Monotrait criterion (HTMT)</b> |       |       |       |
| Career Readiness and Employability (CRE)      |       |       |       |
| Economic Growth and Entrepreneurship (EGE)    | 0.871 |       |       |
| Moderating CRE and EGE                        | 0.366 | 0.467 |       |
| TVET subject area of specialization (TSS)     | 0.068 | 0.093 | 0.051 |

## 5.8 Analysis of Structural Model

Using the Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI), the researchers performed a model appropriateness test to gauge the degree of conformance of the study model's overall fit index. According to the results shown in table 4.0, the model indices (NFI = 0.923; SRMR = 0.045, which is less than 0.08) are within the acceptable range (Henseler et al., 2016; Hair et al., 2019; Kholifah et al., 2022). Furthermore, the bootstrap discrepancies' 95% quantile is still below the range of the dUL and dG disparities, which are 0.187 and 0.139, respectively. The saturated model performs well overall, according to the fit indices, especially when the SRMR and NFI values are high and show a good fit. As opposed to the saturated model, the estimated model exhibits somewhat higher d\_ULS, d\_G, and Chi-Square values, indicating a drop in fit.

**Table 4** Summary of model fit indices results

| Fit indices | Saturated Model | Estimated Model | Desired Level   | Assessment |
|-------------|-----------------|-----------------|-----------------|------------|
| SRMR        | 0.045           | 0.046           | < 0.08          | Acceptable |
| d_ULS       | 0.187           | 0.195           | Lower is better | Not ideal  |
| d_G         | 0.139           | 0.143           | Lower is better | Not Ideal  |
| Chi-Square  | 199.27          | 206.32          | Lower is better | Not Ideal  |
| NFI         | 0.923           | 0.921           | > 0.90          | Acceptable |

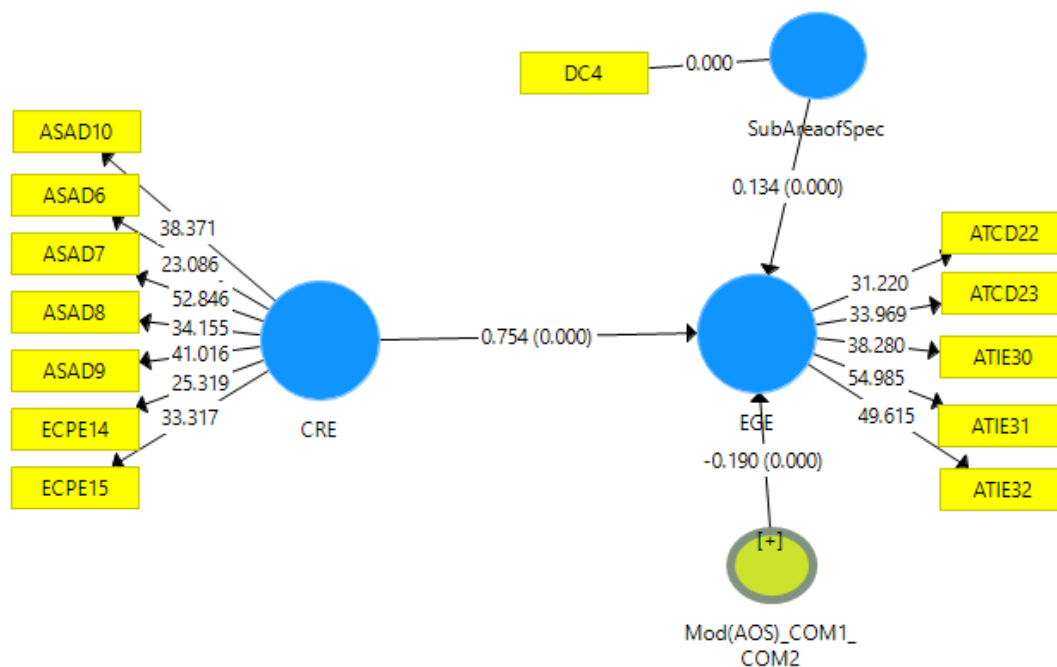


Fig. 2 Structural model analysis results

Table 5 Evaluation of path coefficient and hypotheses

| Hypotheses     | Path                                                                        | Path coefficient | T statistics | p Values | Interpretation              |
|----------------|-----------------------------------------------------------------------------|------------------|--------------|----------|-----------------------------|
| H <sub>1</sub> | Career Readiness -> Economic Growth and Entrepreneurship                    | 0.754            | 14.441       | < 0.001  | Strong positive effect      |
| H <sub>2</sub> | Moderating CRE and EGE -> Economic Growth and Entrepreneurship              | -0.19            | 3.481        | < 0.001  | Significant negative effect |
| H <sub>3</sub> | TVET subject area of specialization -> Economic Growth and Entrepreneurship | 0.134            | 3.776        | < 0.001  | Weak positive effect        |

H<sub>1</sub> was supported because the relationship between Career Readiness and employability and Economic Growth and entrepreneurship was positive and significant ( $\beta = 0.754$ ;  $t\text{-value} = 14.441$ ;  $p = 0.001$ ). The path coefficient of 0.754, as displayed in Table 5.0, suggests a robust positive correlation between employability, economic growth, and career readiness. Having a p-value below 0.001, the T statistic is significantly high (14.441). This implies that significant increases in economic growth and employability are anticipated to result from advances in career readiness. Since there was a substantial negative moderation between economic growth and entrepreneurship and career readiness and employability ( $\beta = -0.19$ ;  $t\text{-value} = 3.481$ ;  $p = 0.001$ ), H<sub>2</sub> was not supported. The moderating effect of career preparation and economic growth and employability are significantly correlated negatively, as indicated by the path coefficient of -0.19. The statistical significance of this link is shown by the T statistics (3.481) and p-value (< 0.001). This implies that the beneficial effects of career readiness on economic growth and employability may be hampered by the moderating effect.

The association between TVET subject area of specialization and employability and economic growth was weakly positive ( $\beta = 0.134$ ;  $t\text{-value} = 3.776$ ;  $p = 0.001$ ), so H<sub>3</sub> was not supported. The path coefficient of 0.134 suggests that there is a weakly positive correlation between employability, economic growth, and the TVET subject area of specialization. The p-value (< 0.001) and T statistic (3.776) show a statistically significant link, albeit a weaker one than that seen in H<sub>1</sub>. According to this, career readiness has a stronger impact on

employability and economic growth than TVET specialty, despite the latter having a stronger influence. Employability and career readiness have a large positive impact on economic growth and entrepreneurship, while the moderating effect of career readiness has a considerable negative impact, according to the study of the path coefficients and the evaluation of the hypotheses. Furthermore, the TVET subject area of specialization positively affects economic growth and entrepreneurship in a weak but statistically significant way. With p-values less than 0.001, every association is statistically significant, providing compelling evidence against the null hypothesis for every path.

## 5.9 Explanatory Power, Effect Size and Predictive Relevance ( $R^2$ , $f^2$ and $Q^2$ )

Following Hair et al.'s (2019) recommendation, effect size ( $f^2$ ), explanatory power ( $R^2$ ), and predictive relevance ( $Q^2$ ) of the model were examined together with statistical significance to enable a more comprehensive assessment of the structural model performance. In this study, the  $R^2$  value (0.75) for Economic Growth and Entrepreneurship indicates a substantial proportion of variance explained by the predictor variables (Career Readiness, TVET subject area of specialization, and their moderating interaction) collectively accounting for 75% of the variance in Economic Growth and Entrepreneurship (Hair et al., 2019). This demonstrates strong explanatory power of the model and confirmed that the selected predictors are meaningful determinants within the TVET framework. Regarding effect sizes, Career Readiness demonstrated a large effect size, consistent with strong path coefficient ( $\beta = 0.754$ ), which confirms its practical significance beyond statistical significance. The moderating effect of Career Readiness on Economic Growth and Entrepreneurship yielded a small-to-medium effect size, despite being statistically significant ( $\beta = -0.19$ ;  $p < 0.001$ ), suggesting that its practical impact on the dependent construct is modest and negative in direction (Cohen, 1988; Hair et al., 2019). This indicates that while the moderation is statistically detectable, its substantive contribution to explaining variance in Economic Growth and Entrepreneurship remains limited.

The TVET subject area of specialization demonstrated a small effect size, consistent with its comparatively modest path coefficient ( $\beta = 0.134$ ), indicating a limited practical contribution to Economic Growth and Entrepreneurship despite being statistically significant ( $p < 0.001$ ) (Cohen, 1988; Hair et al., 2019). This suggests that while TVET specialization plays a statistically detectable role in the model, its substantive influence on Economic Growth and Entrepreneurship is considerably weaker than that of Career Readiness. The predictive relevance value ( $Q^2$ ) confirms that the structural model demonstrates adequate predictive relevance for Economic Growth and Entrepreneurship, indicating that Career Readiness, TVET subject area of specialization, and their moderating interaction predict economic and entrepreneurial outcomes better than sample-specific estimation (Hair et al., 2019). This confirms that the model possesses meaningful out-of-sample predictive power for the dependent construct.

The structural model assessment revealed that while all hypothesized paths achieved statistical significance ( $p < 0.001$ ), a comprehensive evaluation extending beyond statistical significance to include explanatory power ( $R^2$ ), effect size ( $f^2$ ), and predictive relevance ( $Q^2$ ) provided a more nuanced understanding of the model's practical and theoretical contributions. The substantial  $R^2$  value confirms that Career Readiness, TVET subject area of specialization, and their moderating interaction collectively account for a significant proportion of variance in Economic Growth and Entrepreneurship. Career Readiness emerged as the primary driver of Economic Growth and Entrepreneurship, demonstrated by its large effect size ( $f^2$ ), affirming its dominant and practically meaningful role within the TVET context. Although TVET subject area of specialization contributes positively to Economic Growth and Entrepreneurship, its small effect size ( $f^2$ ) indicates a supportive yet limited practical contribution relative to Career Readiness. The moderating interaction, while statistically significant, introduced complexity into the model by yielding a modest negative effect size ( $f^2$ ), suggesting that contextual conditions may attenuate the direct positive influence of Career Readiness on Economic Growth and Entrepreneurship. Furthermore, the positive  $Q^2$  value confirms that the structural model possesses meaningful predictive relevance, demonstrating its capacity to predict economic and entrepreneurial outcomes beyond sample-specific estimation (Hair et al., 2019; Cohen, 1988). Collectively, these findings affirm that the structural model is statistically robust, practically meaningful, and predictively relevant, thereby providing compelling empirical support for the theoretical framework underpinning the study.

## 6. Results and Discussion

Using a quantitative method, this study examined the relationship between economic growth, employability, career readiness, and entrepreneurship while utilizing the contribution of art to technical and vocational education and training (TVET) for socio-economic development. The findings offer important insights into the interplay between career readiness, TVET specialization, and economic growth and entrepreneurship, with strong implications for policy, practice, and theory.

The results provide strong empirical support for Hypothesis 1( $H_1$ ), indicating that the relationship between career readiness and the combined outcomes of employability and economic growth is significant and positive (path coefficient = 0.754;  $t = 14.441$ ;  $p < 0.001$ ). Strong statistical significance and a high path coefficient highlight

how important it is to prepare people for the workforce. Practically, this suggests that when career readiness is enhanced through skill development, job preparedness, and entrepreneurial training, it will substantially boost employability outcomes and contribute positively to broader economic growth. In particular, there would be substantial gains in both employment opportunities and the economic development of Ghana if TVET art teachers and policymakers prioritize improving this aspect of TVET education delivery. Educational institutions must therefore embed real-world skillsets into curricula to better equip graduates for economic development. Practically, this suggests that strengthening career readiness through skill development, real-world training, and entrepreneurial education can improve employment outcomes and foster broader economic development, especially in contexts like Ghana where economic transformation is tied to human capital investment. Theoretically, these findings reinforce the relevance of Human Capital Theory (Becker, 1993) in understanding how the integration of art into TVET would improve student's skill set and contribute to broader socio-economic outcomes. This aligns with La (2024), who posits that the integration of art into TVET programs fosters individual economic productivity and supports national development goals. It affirmed that career readiness is pivotal to driving socio-economic development. Overall, this strong positive relationship underscores the urgency of investing in career readiness initiatives as a strategic lever for national economic growth and entrepreneurial development. This finding aligns with previous studies that emphasized workforce preparedness, entrepreneurial competencies, and employability skills as critical drivers of national economic performance (OECD, 2020; World Economic Forum, 2022). By embedding creative and design-oriented competencies within vocational curricula, students do not only acquire technical proficiency but also cultivate additional transferable skills that are increasingly valued in modern labor markets. Furthermore, the findings lend credence to the idea that career preparedness serves as a catalyst for sustainable economic growth when it is methodically integrated into educational and training programs (UNESCO-UNEVOC, 2022). These theoretical and empirical findings highlight how crucial it is to rethink conventional TVET models in order to incorporate interdisciplinary approaches that develop holistic human capital and prepare students to prosper in changing economic environments.

However, the findings for Hypothesis 2 ( $H_2$ ) present a nuanced perspective. Despite being statistically significant, the moderating effect between economic growth and career readiness was found to be negative (path coefficient = -0.19;  $t = 3.481$ ;  $p < 0.001$ ). According to the negative path coefficient, the moderating variable was unable to have a beneficial impact on economic growth and entrepreneurship. Despite its statistical significance, the negative direction of the effect indicates that external and contextual factors such as policy constraints, unfavorable economic conditions, or labour market and institutional barriers may significantly undermine the effectiveness of career readiness initiatives. This outcome raises critical questions about the nature of the social environment and its capacity to either enhance or hinder the full potential of career readiness interventions within TVET. It implies that without supportive economic policies, accessible job markets, and robust entrepreneurial infrastructure, career readiness alone may not successfully translate into improved employability or economic growth outcomes. These findings are consistent with the arguments made by scholars like McGrath & Powell (2016), who emphasized that individual competencies alone are insufficient in environments characterized by systemic economic or social constraints. It highlights the need for a holistic ecosystem where supportive policies, accessible markets, and infrastructure complement education initiatives to fully translate career readiness into tangible economic outcomes. In practical terms, this study emphasizes the pressing need for a more comprehensive strategy that takes into account both individual readiness and the systemic factors required to optimize the effects of educational interventions. Practically, this underscores that policymakers must not only invest in developing individuals' skills but must also simultaneously address systemic and environmental barriers to maximize impact (ILO, 2022).

In theory, it emphasizes how intricate the connection is between economic development and education, stressing the need for supportive institutional and social contexts to support job ready programs. Theoretically, it advances the discourse by supporting integrated models of human capital theory that consider both supply (skills) and demand (economic opportunities) side factors. This result supports the views of scholars who argue that individual competencies, while important, must be supported by favorable systemic conditions to achieve sustainable economic growth and entrepreneurship. The results for Hypothesis 3 ( $H_3$ ) revealed a positive but weak relationship between TVET subject area specialization and economic growth and entrepreneurship (path coefficient = 0.134;  $t = 3.776$ ;  $p < 0.001$ ). Although statistically significant, the limited strength of this association indicates that while TVET specialization contributes to employability and growth, its impact is relatively modest compared to career readiness. The weak path coefficient implies that not all TVET subject areas are equally aligned with labor market demands or contribute meaningfully to economic outcomes. This could indicate gaps in curricular relevance and market responsiveness by reflecting a mismatch between the skills taught in particular programs and the real needs of industry. This outcome mirrors concerns raised by recent studies (UNESCO, 2023; Powell, 2022) that many TVET programs, particularly in developing contexts, suffer from misalignments with labor market needs. It suggests that not all TVET specializations are equally valuable for economic development, and that curriculum modernization, stronger industry linkages, and a focus on future-oriented skills are critical. Practically, these findings highlight the urgent need for ongoing curriculum reforms, greater industry

collaboration, and targeted skills development initiatives within TVET systems to ensure that specializations are responsive to evolving economic needs. The results advocate for a redesign of TVET programs to ensure relevance, flexibility, and responsiveness to evolving market demands. Although the results theoretically support the idea that technical and vocational education generally contributes to economic growth, they caution against the idea that specialization is enough. Instead, specialized education must be paired with broader entrepreneurial, career readiness, and employability skills to maximize its developmental impact. This finding, in theory, reinforces the broader argument for the contribution of technical and vocational education to economic development by emphasizing that specialization is insufficient on its own without more comprehensive integration of entrepreneurial and career-readiness skills. While TVET specialization plays a role in promoting economic growth and employability, it must be part of a larger, integrated educational strategy to be truly effective. In sum, the study's findings collectively argue that while both career readiness and TVET specialization are important for promoting economic growth and entrepreneurship, career readiness has a much stronger impact, and its effects are highly contingent on the broader socio-economic environment. The research supports the need for a multi-dimensional approach that should not only focus on individual-level skill development but also ensures systemic and policy-level support to unlock the full potential of educational interventions. These insights are crucial for informing future reforms in TVET and general education policies in Ghana and other similar developing economies.

## 7. Conclusion

This study investigated the complex linkages between career readiness, employability, economic growth, and entrepreneurship in the context of technical and vocational education and training (TVET), with a focus on the role of art in promoting socio-economic development. The findings provide compelling evidence that job preparedness is critical in improving employability and promoting economic growth, especially when reinforced with real-world training, entrepreneurial education, and skill development. This supports the fundamental premise of Human Capital Theory, which holds that investing in individuals' skills provides significant socio-economic rewards.

However, the negative moderating effect identified suggests that individual level interventions alone are insufficient in the absence of enabling systemic and institutional conditions. Structural barriers such as policy gaps, labor market limitations, and economic instability can significantly dampen the positive impacts of career readiness. Therefore, a supportive ecosystem comprising favorable policies, accessible job markets, and entrepreneurial infrastructure is essential for translating educational investments into tangible economic outcomes. Furthermore, while TVET subject area specialization contributes to employability and entrepreneurship, its impact remains modest unless closely aligned with labor market demands. This underscores the need for ongoing curriculum reforms, stronger industry-education linkages, and an interdisciplinary approach that integrates creativity, innovation, and entrepreneurial competencies into TVET programs.

In sum, the study advocates for a holistic, multi-dimensional strategy that addresses both the supply-side (skills development) and the demand-side (systemic and market conditions) of the education-to-employment pathway. To fully realize TVET's revolutionary potential and achieve inclusive economic growth and sustainable development, Ghana and other developing nations must adopt an integrated approach.

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## Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

## Author Contribution

*The authors are responsible for the study conception, research design, data collection, data analysis, result interpretation and manuscript drafting.*

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